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As confidentially submitted to the Securities and Exchange Commission on August 15, 2019
This draft registration statement has not been publicly filed with the Securities and Exchange Commission and all information herein remains confidential.

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933
IMARA INC.
(Exact name of registrant as specified in its charter)

Delaware	2834	81-1523849
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

116 Huntington Avenue, 6th Floor
Boston, Massachusetts 02116
(617) 231-6021
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Rahul D. Ballal, Ph.D.
President and Chief Executive Officer
IMARA Inc.
116 Huntington Avenue, 6th Floor
Boston, Massachusetts 02116
(617) 231-6021
(Name, address, including zip code, and telephone number, including. area code, of agent for service)

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Boston, Massachusetts 02116
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Approximate date of commencement of proposed sale to the public: As soon as practicable after this registration statement is declared effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ☐

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☐
		Emerging growth company	☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided in Section 7(a)(2)(B) of the Securities Act. ☐

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to Be Registered	Proposed Maximum Aggregate Offering Price(1)	Amount of Registration Fee(2)
Common stock, par value $0.001 per share	$	$

(1) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(o) under the Securities Act of 1933, as amended. Includes the offering price of additional shares of common stock that the underwriters have the option to purchase. See "Underwriters."
(2) Calculated pursuant to Rule 457(o) based on an estimate of the proposed maximum aggregate offering price.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

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The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and we are not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED , 2019
PRELIMINARY PROSPECTUS

Shares

Common Stock

We are offering shares of our common stock. This is our initial public offering and no public market currently exists for our common stock. We anticipate that the initial public offering price will be between $ and $ per share. We intend to apply to list our common stock on the Nasdaq Global Market under the symbol "IMRA."

We are an "emerging growth company" as defined under the U.S. federal securities laws and, as such, may elect to comply with reduced public company reporting requirements for this prospectus and future filings. See "Prospectus Summary—Implications of Being an Emerging Growth Company."

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page 11 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

	PER SHARE	***TOTAL***
Initial public offering price	*$*	*$*
Underwriting discounts and commissions (1)	*$*	*$*
Proceeds, before expenses, to us	*$*	*$*

(1) See "Underwriters" for a description of all compensation payable to the underwriters.

We have granted the underwriters an option for a period of 30 days to purchase up to additional shares of common stock.

The underwriters expect to deliver the shares of common against payment in New York, New York on or about , 2019.

MORGAN STANLEY *CITIGROUP* *SVB LEERINK*

Prospectus dated , 2019

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Neither we nor the underwriters have authorized anyone to provide you with any information other than that contained in this prospectus, any amendment or supplement to this prospectus or in any free writing prospectus we may authorize to be delivered or made available to you. We and the underwriters take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or any sale of shares of our common stock. Our business, financial condition, results of operations and prospects may have changed since that date.

For investors outside the United States: We have not, and the underwriters have not, done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the shares of common stock and the distribution of this prospectus outside the United States.

PROSPECTUS SUMMARY

This summary highlights information contained elsewhere in this prospectus and does not contain all of the information that you should consider in making your investment decision. Before investing in our common stock, you should carefully read this entire prospectus, including our consolidated financial statements and the related notes thereto and the information set forth in the sections titled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations." Unless the context otherwise requires, we use the terms "company," "we," "us" and "our" in this prospectus to refer to IMARA Inc. and our wholly owned subsidiary.

Overview

We are a clinical-stage biopharmaceutical company dedicated to developing and commercializing novel therapeutics to treat patients suffering from rare inherited genetic disorders of hemoglobin, known as hemoglobinopathies. Our pipeline is built on the differentiated therapeutic potential of our initial product candidate, IMR-687, which is an oral, once-a-day, potentially disease-modifying treatment for sickle cell disease, or SCD, and b-thalassemia. IMR-687 is a highly selective, potent small molecule inhibitor of phosphodiesterase-9, or PDE9, that has a multimodal mechanism of action that acts primarily on red blood cells, or RBCs, and has the potential to act on white blood cells, or WBCs, adhesion mediators and other cell types that are implicated in SCD. We are conducting a Phase 2a clinical trial of IMR-687 in adult patients with SCD, and we expect to report interim data from this trial in the second half of 2019 and top-line data in mid-2020. We also intend to initiate a Phase 2 clinical trial of IMR-687 for the treatment of patients with b-thalassemia in the first half of 2020. Our goal is to leverage IMR-687's differentiated mechanism of action, its ease of administration and stable drug properties to potentially serve a broad range of patients suffering from hemoglobinopathies around the world, including those in underserved regions.

Hemoglobinopathies are a diverse range of rare inherited genetic disorders in which there is abnormal production or absence of hemoglobin, the iron-containing protein in RBCs responsible for transporting oxygen in the blood. Hemoglobinopathies can be broadly categorized into two groups. The first group of hemoglobinopathies, which includes SCD, results from structural abnormalities in hemoglobin that cause RBCs to become inflexible and elongated, ultimately blocking blood flow to organs, which can lead to vaso-occlusive crises, or VOCs. SCD is characterized by debilitating pain, progressive multi-organ damage and early death. The second group of hemoglobinopathies, which includes b-thalassemia, results from decreased or absent production of hemoglobin, thereby producing smaller, paler RBCs that do not deliver adequate oxygen to vital tissues. b-thalassemia is often grouped into two subsets: patients who are non-transfusion dependent, or NTDT, or patients who are transfusion dependent, or TDT. If left untreated, b-thalassemia causes severe anemia, splenomegaly, skeletal abnormalities, organ failure and early death. Both groups of hemoglobinopathies share similar pathophysiology and have limited treatment options, which results in a significant unmet medical need for patients. The global prevalence of SCD and b-thalassemia are estimated to be approximately 4.4 million and 288,000 patients, respectively. SCD and b-thalassemia are both designated as rare diseases in the United States and the European Union. For SCD, prevalence is estimated to be approximately 100,000 patients in the United States and 134,000 patients in the European Union. For b-thalassemia, total combined prevalence in the United States and the European Union is estimated to be approximately 19,000 patients.

Managing hemoglobinopathies and their various clinical manifestations is complex, and patients have few accessible treatment options. Currently approved therapies for SCD have significant limitations, including safety concerns, complex dosing regimens, variable response rates and potential adverse effects from long term use. There are no currently approved oral therapies for b-thalassemia. Blood transfusions are used to treat both SCD and b-thalassemia, but are suboptimal due to limited patient access and serious potential complications that include iron overload, adverse immune response and transmission of transfusion-associated infections. Allogeneic hematopoietic stem cell transplant, or HSCT, is also available as a potentially curative treatment for

both disorders, but it is rarely used due to the difficulty in finding a matched donor and an approximately 5% mortality rate. More recent approaches to treating both disorders are emerging, such as gene therapy and gene editing, however, these are complex, costly, difficult to administer and potentially only suitable for a limited subset of patients.

Our product candidate, IMR-687, is a highly selective and potent small molecule inhibitor of PDE9. PDE9 selectively degrades cyclic guanosine monophosphate, or cyclic GMP, an active signaling molecule that plays an important role in vascular biology. Lower levels of cyclic GMP are found in patients with SCD and b-thalassemia and are associated with reduced blood flow, increased inflammation, greater cell adhesion and reduced nitric oxide mediated vasodilation. Blocking PDE9 acts to increase cyclic GMP levels, which is associated with reactivation of fetal hemoglobin, or HbF, a natural hemoglobin produced during fetal development. Increased levels of HbF in RBCs have been demonstrated to improve symptomology and substantially lower disease burden in both patients with SCD and patients with b-thalassemia. In addition, increasing cyclic GMP is associated with lower WBC activation and reduced adhesion across various cell types, both of which also contribute to SCD. We believe IMR-687 has several differentiating features that make it an optimal therapeutic for SCD and b-thalassemia, as supported by our preclinical data:

- **Highly Potent PDE9 Inhibitor**: IMR-687 is a highly potent PDE9 inhibitor, as measured by induction of cyclic GMP across escalating doses. IMR-687 has been designed to rapidly increase cyclic GMP, which translates to HbF induction and potentially reduced WBC adhesion.
- **Differentiated Selectivity and Tolerability Profile**: IMR-687 is highly specific to PDE9 and not selective for other phosphodiesterase family members. Toxicology studies of IMR-687, including fertility and juvenile studies, support its potential benefit as a long-term therapy in adults and children. We believe this selectivity will allow us to optimize dose while minimizing off-target effects.
- **Minimal Brain Penetration**: IMR-687 was observed to have low brain penetration in preclinical *in vivo* models relative to other PDE9 inhibitors that have been studied. We believe this will reduce the potential impact of PDE9 inhibition on central nervous system development and function.
- **Drug Product Stability**: IMR-687 has been shown to be stable at high temperatures and in humid conditions, potentially enabling worldwide access, including in underserved regions where SCD and b-thalassemia are endemic.

In an SCD *in vitro* model, we measured the ability of IMR-687 to increase cyclic GMP levels in an RBC cell line as compared to hydroxyurea, or HU, a U.S. Food and Drug Administration, or FDA, approved therapy for SCD. In this study, we observed that IMR-687 induced cyclic GMP production in a dose-dependent manner at an approximately 30-fold lower drug concentration than HU. In addition, at an equivalent drug concentration of 10 µM of IMR-687, we observed an approximately ten-fold increase in cyclic GMP levels as compared to HU. We also evaluated IMR-687 in a mouse model of SCD that expresses human sickle hemoglobin. We observed that IMR-687 demonstrated statistically significant increases in HbF-positive RBCs, statistically significant decreases in the percentage of sickled RBCs and decreases in markers of hemolysis, or destruction of RBCs, and WBC adhesion. In our Phase 1 randomized, double-blind, placebo-controlled clinical trial in healthy volunteers, single and multiple ascending doses of IMR-687 were reported to be well tolerated to a maximum dose of 4.5 mg/kg per day and no serious adverse events were reported. In a b-thalassemia *in vivo* preclinical model, we observed that IMR-687 demonstrated statistically significant increases in hemoglobin, statistically significant increases in total RBC counts and the promotion of RBC maturation, a key mechanistic component in reducing b-thalassemia pathology.

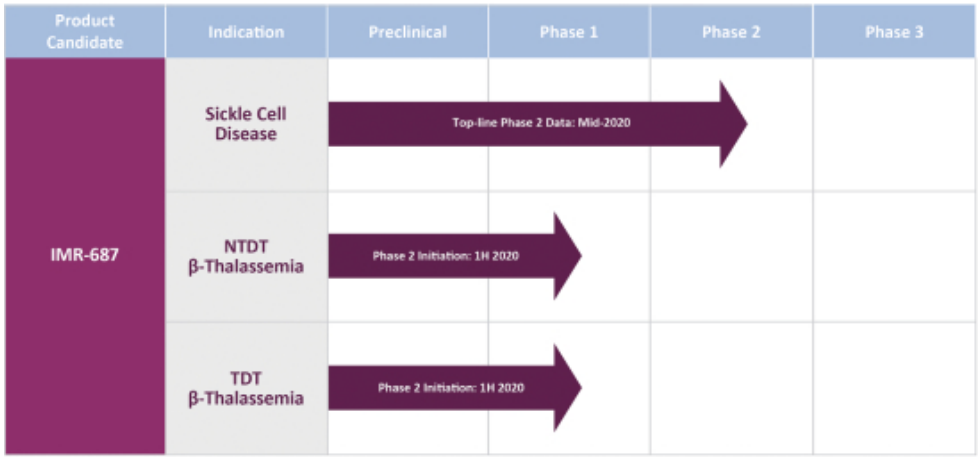
Based on these promising data, we initiated our Phase 2a randomized, double-blinded, placebo-controlled clinical trial of IMR-687 in adult patients with SCD. The goals of this trial are to evaluate the safety, tolerability, pharmacokinetics, or PK, exploratory pharmacodynamics, or PD, and clinical outcomes of IMR-687

administered once daily for 16 or 24 weeks in two populations of patients with SCD: one on monotherapy IMR-687 and one on background HU in combination with IMR-687. We expect to report top-line data from this trial in mid-2020. We have also initiated an open label extension trial, which allows patients from the Phase 2a clinical trial to continue into a long-term, four-year trial to evaluate safety and tolerability of IMR-687. Finally, we plan to commence a Phase 2 clinical trial of IMR-687 in adult patients with b-thalassemia in the first half of 2020.

Our management team has extensive experience in the successful clinical development and commercialization of therapeutic products at a number of pharmaceutical and biotechnology companies. We believe this breadth of experience and track record combined with our broad network of established relationships with leaders in the industry and medical community provide us with the skills necessary to build a leading biopharmaceutical company. We have been backed by a group of leading life-sciences investors, including New Enterprise Associates, OrbiMed Advisors, Arix Bioscience, RA Capital, Rock Springs Capital, Pfizer Venture Investments, Lundbeckfonden Ventures, Bay City Capital and Alexandria Venture Investments.

Our Pipeline

We are advancing a pipeline of therapeutic programs to address hemoglobinopathies with significant unmet medical need. The following chart summarizes key information about our programs:



Our Strategy

Our goal is to become a leading biopharmaceutical company focused on the development and commercialization of novel therapies for the treatment of hemoglobinopathies. To achieve this, we are focused on the following key strategies:

- ***Rapidly advance IMR-687 through clinical development for the treatment of SCD.*** There remains a significant unmet medical need to develop differentiated disease-modifying, oral therapies to treat SCD. We are currently conducting a Phase 2a clinical trial of IMR-687 in adult patients with SCD and expect to report top-line data from this trial in mid-2020. In addition, we intend to expand clinical development of IMR-687 into developing world regions and other patient populations, including adolescent and pediatric patients and those with milder forms of the disease.

- ***Expand clinical development of IMR-687 for the treatment of ß-thalassemia.*** Based on the similar pathophysiology and symptomology shared between SCD and b-thalassemia, we believe there is a compelling rationale to expand clinical development of IMR-687 into b-thalassemia. Various preclinical studies, as well as favorable safety data from our Phase 1 trial, further support the development of IMR-687 in this indication. We plan to initiate a Phase 2 clinical trial in adult patients with b-thalassemia in the first half of 2020.
- ***Continue efforts to expand our pipeline.*** We believe that our extensive expertise and experience with IMR-687 will allow us to expand development of IMR-687 into adjacent rare blood cell disorders where there remains a significant unmet medical need. We intend to conduct internal discovery to expand development of IMR-687 into additional hemoglobinopathies, while simultaneously pursuing external business development to identify novel product candidates.
- ***Maximize the commercial opportunity of our product portfolio.*** We have retained worldwide development and commercial rights to IMR-687 and are pursuing a clinical and regulatory development strategy for IMR-687 in the United States, Europe and certain other international regions. As we advance IMR-687 through clinical development, we intend to establish a focused marketing and sales infrastructure in order to maximize the commercial opportunity in the United States and Europe, and potentially other international regions.
- ***Strategically evaluate licensing and collaboration opportunities to maximize value.*** We may selectively evaluate the merits of entering into licensing and collaboration agreements for regions in which we are unlikely to pursue independent development and commercialization, or where a collaborator could provide specialized expertise and capabilities to create additional value.

Risks Associated with Our Business

Our business is subject to a number of risks of which you should be aware before making an investment decision. These risks are discussed more fully in the “Risk Factors” section of this prospectus. These risks include, but are not limited to, the following:

- We have incurred significant losses since our inception, and we expect to incur losses over the next several years.
- We are early in our development efforts and heavily dependent on the success of our sole product candidate, IMR-687. If we are unable to successfully complete clinical development, obtain regulatory approval for, and commercialize IMR-687, or experience delays in doing so, our business will be materially harmed.
- We will need substantial additional funding. If we are unable to raise capital when needed, we could be forced to delay, reduce or eliminate our product development programs or commercialization efforts.
- Our limited operating history may make it difficult for you to evaluate the success of our business to date and to assess our future viability.
- We have identified conditions and events, namely our need to raise additional capital, that raise substantial doubt about our ability to continue as a going concern.
- Clinical drug development involves a lengthy and expensive process, with an uncertain outcome. We may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of any product candidates.
- Because we are developing IMR-687 using new endpoints and methodologies, the FDA or other regulatory authorities may not consider the endpoints of our clinical trials to predict or provide clinically meaningful results.

- We face substantial competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.
- If we fail to comply with our obligations under our existing license agreement with H. Lundbeck A/S, or under any future intellectual property licenses, or otherwise experience disruptions to our business relationships with our current or any future licensors, we could lose intellectual property rights that are important to our business.
- If we are unable to obtain, maintain, enforce and protect patent protection for our technology and product candidates or if the scope of the patent protection obtained is not sufficiently broad, our competitors could develop and commercialize technology and products similar or identical to ours, and our ability to successfully develop and commercialize our technology and product candidates may be adversely affected.
- After this offering, our executive officers, directors and principal stockholders, if they choose to act together, will continue to have the ability to control all matters submitted to stockholders for approval.

Corporate Information

We were incorporated under the laws of the State of Delaware on January 26, 2016. Our principal executive offices are located at 116 Huntington Avenue, 6th Floor, Boston, Massachusetts 02116, and our telephone number is (617) 231-6021. Our website address is www.imaratx.com. The information contained on, or that can be accessed through, our website is not a part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

We own or have rights to trademarks, service marks and trade names that we use in connection with the operation of our business, including our corporate name, logos and website names. Other trademarks, service marks and trade names appearing in this prospectus are the property of their respective owners. Solely for convenience, some of the trademarks, service marks and trade names referred to in this prospectus are listed without the ® and ™ symbols, but we will assert, to the fullest extent under applicable law, our rights to our trademarks, service marks and trade names.

Implications of Being an Emerging Growth Company

We are an "emerging growth company" as defined in the Jumpstart Our Business Startups Act, or the JOBS Act, enacted in April 2012. As a result, we may take advantage of reduced reporting requirements that are otherwise applicable to public companies, including delaying auditor attestation of internal control over financial reporting, providing only two years of audited financial statements and related Management's Discussion and Analysis of Financial Condition and Results of Operations in this prospectus and reducing executive compensation disclosures.

We may remain an emerging growth company for up to five years from the date of the first sale in this offering. However, if certain events occur prior to the end of such five-year period, including if we become a "large accelerated filer," our annual gross revenue exceeds $1.07 billion, or we issue more than $1.0 billion of non-convertible debt in any three-year period, we will cease to be an emerging growth company prior to the end of such five-year period.

We have elected to take advantage of certain of the reduced disclosure obligations in the registration statement of which this prospectus is a part and may elect to take advantage of other reduced reporting requirements in future filings. In particular, in this prospectus, we have provided only two years of audited financial statements and have not included all of the executive compensation related information that would be required if we were not an emerging growth company. As a result, the information that we provide to our stockholders may be different than what you might receive from other public reporting companies in which you hold equity interests. We have irrevocably elected to avail ourselves of the extended transition period for complying with new or revised accounting standards and, therefore, we will be subject to the same new or revised accounting standards as private companies.

THE OFFERING

Common stock offered by us	shares
Option to purchase additional shares	We have granted the underwriters an option for a period of 30 days to purchase up to additional shares of our common stock.
Common stock to be outstanding after this offering	shares (or shares if the underwriters exercise their option to purchase additional shares in full)
Use of proceeds	We estimate that the net proceeds to us from this offering will be approximately $ million, or approximately $ million if the underwriters exercise in full their option to purchase up to additional shares of our common stock, based on an assumed initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. We intend to use the net proceeds from this offering, together with our existing cash and cash equivalents, to advance development of IMR-687 for the treatment of patients with SCD and ß-thalassemia and for working capital and other general corporate purposes, including potential pipeline expansion. See “Use of Proceeds.”
Risk factors	You should read the “Risk Factors” section of this prospectus beginning on page 11 for a discussion of factors to consider carefully before deciding to invest in shares of our common stock.
Proposed Nasdaq Global Market symbol	“IMRA”

The number of shares of our common stock to be outstanding after this offering is based on 64,958,232 shares of our common stock outstanding as of June 30, 2019, after giving effect to the conversion of 60,533,313 shares of our preferred stock into an equal number of shares of common stock upon the closing of this offering.

The number of shares of our common stock to be outstanding after this offering excludes:

- 11,838,614 shares of common stock issuable upon exercise of stock options outstanding as of June 30, 2019 at a weighted-average exercise price of $0.71 per share;
- 338,713 shares of common stock available for future issuance as of June 30, 2019 under our 2016 Stock Incentive Plan, as amended; and
- and additional shares of our common stock that will become available for future issuance under our 2019 Equity Incentive Plan and our 2019 Employee Stock Purchase Plan, respectively, each of which will become effective immediately prior to the effectiveness of the registration statement of which this prospectus is a part, as well as any automatic increases in the number of shares of common stock reserved for future issuance under these plans.

Unless otherwise indicated, all information in this prospectus assumes:

- no exercise of the outstanding options described above;
- no exercise by the underwriters of their option to purchase additional shares of our common stock;
- the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 60,533,313 shares of our common stock upon the closing of this offering; and
- the filing and effectiveness of our restated certificate of incorporation and the adoption of our amended and restated bylaws upon the closing of this offering.

SUMMARY CONSOLIDATED FINANCIAL DATA

We have derived the consolidated statement of operations data for the years ended December 31, 2017 and 2018 from our audited consolidated financial statements appearing at the end of this prospectus. The consolidated statement of operations data for the six months ended June 30, 2018 and 2019 and the consolidated balance sheet data as of June 30, 2019 have been derived from our unaudited consolidated financial statements appearing at the end of this prospectus and have been prepared on the same basis as the audited consolidated financial statements. In the opinion of management, the unaudited data reflects all adjustments, consisting only of normal, recurring adjustments, necessary for a fair statement of the financial information in those statements.

Our historical results are not necessarily indicative of the results that may be expected in the future, and our interim results are not necessarily indicative of results to be expected for a full fiscal year or any other interim period. You should read the following summary consolidated financial data together with our consolidated financial statements and the related notes appearing at the end of this prospectus and the "Selected Consolidated Financial Data" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" sections of this prospectus.

	Year Ended December 31,		Six Months Ended June 30,	
	2017	2018	2018	2019
	(in thousands, except share and per share data)			
Consolidated Statement of Operations Data:				
Operating expenses:				
Research and development	$ 7,918	$ 8,239	$ 4,137	$ 7,926
General and administrative	987	2,438	942	1,825
Total operating expenses	8,905	10,677	5,079	9,751
Loss from operations	(8,905)	(10,677)	(5,079)	(9,751)
Total other income (expense), net	9,126	(660)	(300)	160
Net income (loss)	$ 221	$ (11,337)	$ (5,379)	$ (9,591)
Net income attributable to series A preferred stock—basic	221	—	—	—
Net loss attributable to common stockholders—basic and diluted	$ —	$ (11,337)	$ (5,379)	$ (9,591)
Net loss per share attributable to common stockholders—basic and diluted(1)	$ —	$ (2.56)	$ (1.22)	$ (2.17)
Weighted-average common shares outstanding—basic and diluted(1)	3,779,695	4,424,919	4,424,919	4,424,919
Pro forma net loss per share attributable to common stockholders—basic and diluted(1)		$ (0.35)		$ (0.18)
Pro forma weighted-average common shares outstanding—basic and diluted(1)		32,707,631		53,926,162

(1) See Note 11 of the notes to our consolidated financial statements appearing at the end of this prospectus for further details on the calculation of basic and diluted net loss per share attributable to common stockholders and on the calculation of pro forma basic and diluted net loss per share attributable to common stockholders.

	As of June 30, 2019		
	Actual	Pro forma(1)	Pro forma as adjusted(2)
	(in thousands)		
Consolidated Balance Sheet Data:			
Cash and cash equivalents	$ 45,233	$ 45,233	$
Working capital(3)	41,957	41,957	
Total assets	45,894	45,894	
Total liabilities	3,745	3,745	
Convertible preferred stock	77,764	—	
Accumulated deficit	(40,881)	(40,881)	
Total stockholders' (deficit) equity	(35,615)	42,149	

(1) The pro forma balance sheet data give effect to the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 60,533,313 shares of common stock upon the closing of this offering and the filing and effectiveness of our restated certificate of incorporation upon the closing of this offering.

(2) The pro forma as adjusted balance sheet data gives further effect to our issuance and sale of shares of common stock in this offering at an assumed initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

Pro forma as adjusted balance sheet data is illustrative only and will change based on the actual initial public offering price and other terms of this offering determined at pricing. Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, would increase or decrease pro forma as adjusted cash and cash equivalents, working capital, total assets and total stockholders' equity by approximately $ million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the number of shares we are offering. A 1,000,000 share increase or decrease in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase or decrease pro forma as adjusted cash and cash equivalents, working capital, total assets and total stockholders' equity by $ million, assuming the assumed initial public offering price per share remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

(3) Working capital is defined as current assets less current liabilities.

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the risks and uncertainties described below together with all of the other information contained in this prospectus, including our consolidated financial statements and the related notes appearing at the end of this prospectus, before deciding to invest in our common stock. The risks described below are not the only risks facing our company. The occurrence of any of the following risks, or of additional risks and uncertainties not presently known to us or that we currently believe to be immaterial, could cause our business, prospects, operating results and financial condition to suffer materially. In such event, the trading price of our common stock could decline, and you might lose all or part of your investment.

Risks Related to Our Financial Position and Need for Additional Capital

We have incurred significant losses since our inception, and we expect to incur losses over the next several years.

Since inception, we have incurred significant operating losses. Our net loss was $11.3 million for the year ended December 31, 2018 and $9.6 million for the six months ended June 30, 2019. As of June 30, 2019, we had an accumulated deficit of $40.9 million. To date, we have financed our operations primarily through the issuance of convertible preferred stock. We have devoted substantially all of our financial resources and efforts to research and development, including clinical trials and preclinical studies of IMR-687. We are still in the early stages of development of our only product candidate, IMR-687, and we have not completed development of IMR-687 nor have we identified and pursued any other product candidates. We expect to continue to incur significant expenses and operating losses over the next several years. Our operating expenses and net losses may fluctuate significantly from quarter to quarter and year to year. We anticipate that our expenses will increase substantially as we:

- continue to advance clinical development of IMR-687, including our ongoing Phase 2a clinical trial in patients with sickle cell disease, or SCD;
- expand our planned development efforts for IMR-687 and pursue a Phase 2 clinical trial of IMR-687 in patients with b-thalassemia;
- continue to incur third party manufacturing costs to support our clinical trials of IMR-687 and, if approved, commercialization;
- seek regulatory and marketing approvals for IMR-687;
- establish a sales, marketing and distribution infrastructure to commercialize IMR-687, if approved;
- commence development activities for any additional product candidates we may identify;
- acquire or in-license products, product candidates, technologies and/or data referencing rights;
- maintain, expand, enforce, defend and protect our intellectual property;
- hire additional clinical, quality control, manufacturing and other scientific personnel;
- add operational, financial and management information systems and personnel, including personnel to support our product development and planned future commercialization efforts and our operations as a public company; and
- make any milestone payments to H. Lundbeck A/S, or Lundbeck, under our exclusive license agreement with Lundbeck, or the Lundbeck Agreement, upon the achievement of specified clinical or regulatory milestones.

We have never generated revenue from product sales and may never achieve or maintain profitability.

To become and remain profitable, we must succeed in developing, and eventually commercializing, a product or products that generate significant revenue. The ability to achieve this success will require us to be

effective in a range of challenging activities, including completing preclinical testing and clinical trials of IMR-687 and any other product candidates we may identify and pursue, obtaining regulatory approval for these product candidates and manufacturing, marketing and selling any products for which we may obtain regulatory approval. We are only in the preliminary stages of most of these activities. We may never succeed in these activities and, even if we do, may never generate revenues that are significant enough to achieve profitability. Because of the numerous risks and uncertainties associated with pharmaceutical product development, we are unable to accurately predict the timing or amount of increased expenses or when, or if, we will be able to achieve profitability.

Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would depress the value of our company and could impair our ability to raise capital, expand our business, maintain our research and development efforts, diversify our pipeline of product candidates or even continue our operations. A decline in the value of our company could also cause you to lose all or part of your investment.

We are heavily dependent on the success of IMR-687, our only product candidate.

We currently have no products that are approved for commercial sale and may never be able to develop marketable products. We expect that a substantial portion of our efforts and expenditures over the next several years will be devoted to IMR-687, which is currently our only product candidate. Accordingly, our business currently depends heavily on the successful development, regulatory approval and commercialization of IMR-687. We cannot be certain that IMR-687 will receive regulatory approval or be successfully commercialized even if we receive regulatory approval. If we were required to discontinue development of IMR-687 or if IMR-687 does not receive regulatory approval or fails to achieve significant market acceptance, we would be delayed by many years in our ability to achieve profitability, if ever, and may not be able to generate sufficient revenue to continue our business.

We will need substantial additional funding. If we are unable to raise capital when needed, we could be forced to delay, reduce or eliminate our product development programs or commercialization efforts.

We expect to devote substantial financial resources to our ongoing and planned activities, including our Phase 2a clinical trial of IMR-687 in patients with SCD and planned Phase 2 clinical trial in patients with b-thalassemia. We expect our expenses to increase substantially in connection with our ongoing and planned activities, particularly as we advance our preclinical activities and clinical trials of and seek regulatory approval for IMR-687 and other product candidates we may identify. In addition, if we obtain regulatory approval for IMR-687 and any other product candidates we may identify and pursue, we expect to incur significant commercialization expenses related to product manufacturing, sales, marketing and distribution. Furthermore, upon the closing of this offering, we expect to incur additional costs associated with operating as a public company.

Identifying potential product candidates and conducting preclinical testing and clinical trials is a time-consuming, expensive and uncertain process that takes years to complete, and we may never generate the necessary data or results required to obtain regulatory approval and achieve product sales. In addition, any product candidates, if approved, may not achieve commercial success. Commercial revenues, if any, will not be derived unless and until we can achieve sales of products, which we do not anticipate for many years, if at all. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations.

As of June 30, 2019, we had cash and cash equivalents of $45.2 million. We believe that the net proceeds from this offering, together with our existing cash and cash equivalents as of June 30, 2019, will enable us to fund our operating expenses and capital expenditure requirements through . However, we have based this estimate on assumptions that may prove to be wrong, and our operating plan may change as a result of many factors currently unknown to us. As a result, we could deplete our capital resources sooner than we currently expect.

Our future capital requirements will depend on many factors, including:

- the time and cost necessary to complete our ongoing Phase 2a clinical trial of IMR-687 in patients with SCD, to initiate and complete one or more pivotal clinical trials of IMR-687 and to pursue regulatory approvals for IMR-687 in SCD, and the costs of post-marketing studies that could be required by regulatory authorities;
- the progress and results of our Phase 2a clinical trial of IMR-687 in patients with SCD;
- our ability to advance IMR-687 in b-thalassemia patients through clinical development, and the timing and scope of these development activities;
- the costs of obtaining clinical and commercial supplies of IMR-687 and any other product candidates we may identify and develop;
- our ability to successfully commercialize IMR-687 and any other product candidates we may identify and develop;
- the manufacturing, selling and marketing costs associated with IMR-687 and any other product candidates we may identify and develop, including the cost and timing of establishing our sales and marketing capabilities;
- the amount and timing of sales and other revenues from IMR-687 and any other product candidates we may identify and develop, including the sales price and the availability of coverage and adequate third-party reimbursement;
- the time and cost necessary to respond to technological and market developments;
- the extent to which we may acquire or in-license other product candidates and technologies;
- our ability to attract, hire and retain qualified personnel; and
- the costs of maintaining, expanding and protecting our intellectual property portfolio.

We will continue to rely on additional financing to achieve our business objectives. Adequate additional financing may not be available to us on acceptable terms, or at all. In addition, we may seek additional capital due to favorable market conditions or strategic considerations, even if we believe we have sufficient funds for our current or future operating plans. If adequate funds are not available to us on a timely basis or on terms acceptable to us, we may be required to delay, limit, reduce or terminate preclinical studies, clinical trials or other development activities for one or more product candidates or discovery stage programs or delay, limit, reduce or terminate our establishment of sales and marketing capabilities or other activities that may be necessary to commercialize any product candidates.

Raising additional capital may cause dilution to our stockholders, including purchasers of our common stock in this offering, restrict our operations or require us to relinquish rights to our technologies or product candidates.

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations, strategic alliances and marketing, distribution or licensing arrangements. We do not have any committed external source of funds. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect your rights as a common stockholder. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, selling or licensing our assets, making capital expenditures or declaring dividends.

If we raise additional funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue

streams, research programs or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed or on terms acceptable to us, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Our limited operating history may make it difficult for you to evaluate the success of our business to date and to assess our future viability.

We commenced activities in 2016 and are a clinical-stage company. Our operations to date have been limited to organizing and staffing our company, business planning, raising capital, developing our technology, and undertaking preclinical studies and early-stage clinical trials of our sole product candidate, IMR-687. We have not yet demonstrated our ability to successfully develop any product candidate, obtain regulatory approvals, manufacture a commercial scale product or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful product commercialization. Consequently, any predictions you make about our future success or viability may not be as accurate as they could be if we had a longer operating history or a history of successfully developing and commercializing products.

In addition, as our business grows, we may encounter unforeseen expenses, difficulties, complications, delays and other known and unknown factors. We will need to transition at some point from a company with a research and development focus to a company capable of supporting commercial activities. We may not be successful in such a transition.

We expect our financial condition and operating results to fluctuate significantly from quarter-to-quarter and year-to-year due to a variety of factors, many of which are beyond our control. Accordingly, you should not rely upon the results of any quarterly or annual periods as indications of future operating performance.

We have identified conditions and events that raise substantial doubt about our ability to continue as a going concern.

We may be forced to delay or reduce the scope of our development programs and/or limit or cease our operations if we are unable to obtain additional funding to support our current operating plan. We have identified conditions and events that raise substantial doubt about our ability to continue as a going concern. As of June 30, 2019, we had $45.2 million in cash and cash equivalents. Based on our available cash resources, we believe we do not have sufficient cash and cash equivalents on hand to support current operations for at least one year from the date of issuance of the financial statements appearing at the end of this prospectus. This condition raises substantial doubt about our ability to continue as a going concern for at least one year from the date of issuance of the financial statements appearing at the end of this prospectus. Nevertheless, our consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty. We will need to raise additional capital in this offering and/or otherwise to fund our future operations and remain as a going concern. However, we cannot guarantee that we will be able to obtain sufficient additional funding in this offering or otherwise or that such funding, if available, will be obtainable on terms satisfactory to us. In the event that we are unable to obtain sufficient additional funding, there can be no assurance that we will be able to continue as a going concern.

Our ability to use our NOLs and research and development tax credit carryforwards to offset future taxable income may be subject to certain limitations.

We have a history of cumulative losses and anticipate that we will continue to incur significant losses in the foreseeable future; thus, we do not know whether or when we will generate taxable income necessary to utilize our net operating losses, or NOLs, or research and development tax credit carryforwards. As of December 31, 2018, we had federal NOLs of $25.7 million and state NOLs of $26.2 million.

In general, under Section 382 of the Internal Revenue Code of 1986, as amended, or the Code, and corresponding provisions of state law, a corporation that undergoes an "ownership change," generally defined as a greater than 50 percentage point change (by value) in its equity ownership by certain stockholders over a three year period, is subject to limitations on its ability to utilize its pre-change NOLs and research and development tax credit carryforwards to offset future taxable income. We have not conducted a study to assess whether any such ownership changes have occurred. We may have experienced such ownership changes in the past and may experience such ownership changes in the future as a result of this offering and/or subsequent changes in our stock ownership (which may be outside our control). As a result, if, and to the extent that, we earn net taxable income, our ability to use our pre-change NOLs and research and development tax credit carryforwards to offset such taxable income may be subject to limitations.

There is also a risk that due to regulatory changes, such as suspensions on the use of NOLs, or other unforeseen reasons, our existing NOLs could expire or otherwise become unavailable to offset future income tax liabilities. As described below in "Comprehensive tax reform legislation passed in 2017 could adversely affect our business and financial condition," the Tax Cuts and Jobs Act, or the TCJA, includes changes to U.S. federal tax rates and the rules governing NOL carryforwards that may significantly impact our ability to utilize our NOLs to offset taxable income in the future. Additionally, state NOLs generated in one state cannot be used to offset income generated in another state. For these reasons, even if we attain profitability, we may be unable to use a material portion of our NOLs and other tax attributes.

Risks Related to the Discovery, Development and Commercialization of Our Product Candidates

We are early in our development efforts and heavily dependent on the success of our sole product candidate, IMR-687. If we are unable to successfully complete clinical development, obtain regulatory approval for, or commercialize IMR-687, or experience delays in doing so, our business will be materially harmed.

To date, we have invested a majority of our efforts and financial resources in the preclinical and clinical development of IMR-687. Our future success is heavily dependent on our ability to successfully develop, obtain regulatory approval for and commercialize IMR-687. IMR-687 is currently our only product candidate and we are testing it in a Phase 2a clinical trial in SCD and we plan to test it in a Phase 2 clinical trial in b-thalassemia. It may be a significant time before IMR-687 can advance into a pivotal trial, if at all. We cannot be certain that IMR-687 will be successful in clinical trials or receive regulatory approval.

The success of IMR-687 will depend on several factors, including the following:

- successfully completing clinical trials;
- acceptance by the U.S. Food and Drug Administration, or FDA, or other regulatory agencies of regulatory filings for IMR-687;
- expanding and maintaining a workforce of experienced scientists and others to continue to develop IMR-687;
- obtaining and maintaining intellectual property protection and regulatory exclusivity for IMR-687;
- making arrangements with third-party manufacturers for, or establishing, commercial manufacturing capabilities;
- establishing sales, marketing and distribution capabilities and successfully launching commercial sales, if and when approved, whether alone or in collaboration with others;
- acceptance of IMR-687, if and when approved, by patients, the medical community and third-party payors;
- effectively competing with other therapies;

- obtaining and maintaining coverage, adequate pricing and adequate reimbursement from third-party payors, including government payors;
- patients' willingness to pay out-of-pocket for IMR-687 in the absence of coverage and/or adequate reimbursement from third-party payors; and
- maintaining a continued acceptable safety profile following receipt of any regulatory approvals.

Many of these factors are beyond our control, including clinical outcomes, the regulatory review process, potential threats to our intellectual property rights and the manufacturing, marketing and sales efforts of any future collaborator. If we are unable to develop, receive marketing approval for and successfully commercialize IMR-687 in either SCD or b-thalassemia, or if we experience delays as a result of any of these factors or otherwise, we may need to spend significant additional time and resources to identify other product candidates, advance them through preclinical and clinical development and apply for regulatory approvals, which would adversely affect our business, prospects, financial condition and results of operations.

Clinical drug development involves a lengthy and expensive process, with an uncertain outcome. We may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of any product candidates.

The risk of failure for IMR-687 and any other product candidates we may develop is high. It is impossible to predict when or if IMR-687 and any other product candidates we may develop will prove effective or safe in humans or will receive regulatory approval. Before obtaining marketing approval from regulatory authorities for the sale of any product candidate, we must complete preclinical development and then conduct extensive clinical trials to demonstrate the safety and efficacy of such product candidate in humans. We have not yet begun or completed a pivotal clinical trial of IMR-687, which is currently our only product candidate. Clinical trials may fail to demonstrate that IMR-687 and any other product candidates we may develop are safe for humans and effective for indicated uses. Even if the clinical trials are successful, changes in marketing approval policies during the development period, changes in or the enactment or promulgation of additional statutes, regulations or guidance or changes in regulatory review for each submitted product application may cause delays in the approval or rejection of an application.

Before we can commence clinical trials for a product candidate, we must complete extensive preclinical testing and studies that support our planned investigational new drug applications, or INDs, and other regulatory filings in the United States and abroad. We cannot be certain of the timely completion or outcome of our preclinical testing and studies and cannot predict if the FDA or other regulatory agencies will accept our proposed clinical programs or if the outcome of our preclinical testing and studies will ultimately support the further development of any product candidates. As a result, we cannot be sure that we will be able to submit INDs or similar applications for our preclinical programs on the timelines we expect, if at all, and we cannot be sure that submission of INDs or similar applications will result in the FDA or other regulatory authorities allowing clinical trials to begin. Furthermore, product candidates are subject to continued preclinical safety studies, which may be conducted concurrent with our clinical testing. The outcomes of these safety studies may delay the launch of or enrollment in future clinical trials and could impact our ability to continue to conduct our clinical trials.

Clinical testing is expensive, difficult to design and implement, can take many years to complete and is uncertain as to outcome. We cannot guarantee that any clinical trials will be conducted as planned or completed on schedule, or at all. A failure of one or more clinical trials can occur at any stage of testing, which may result from a multitude of factors, including, but not limited to, flaws in study design, dose selection issues, placebo effects, patient enrollment criteria and failure to demonstrate favorable safety or efficacy traits.

We may experience numerous unforeseen events during, or as a result of, clinical trials that could delay or prevent our ability to receive marketing approval or commercialize IMR-687 and any other product candidates we may develop, including:

- regulators or institutional review boards, or IRBs, may not authorize us or our investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- we may experience delays in reaching, or fail to reach, agreement on acceptable clinical trial contracts or clinical trial protocols with prospective trial sites;
- regulators may decide the design of our clinical trials is flawed, for example if our trial protocol does not evaluate treatment effects in trial subjects for a sufficient length of time;
- clinical trials of IMR-687 and any other product candidates we may develop may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon product development programs;
- we may be unable to establish clinical endpoints that applicable regulatory authorities would consider clinically meaningful, or, if we seek accelerated approval, biomarker efficacy endpoints that applicable regulatory authorities would consider likely to predict clinical benefit;
- preclinical testing may produce results based on which we may decide, or regulators may require us, to conduct additional preclinical studies before we proceed with certain clinical trials, limit the scope of our clinical trials, halt ongoing clinical trials or abandon product development programs;
- the number of patients required for clinical trials of IMR-687 and any other product candidates we may develop may be larger than we anticipate, enrollment in these clinical trials may be slower than we anticipate or participants may drop out of these clinical trials at a higher rate than we anticipate;
- our third-party contractors may fail to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all;
- we may decide, or regulators or IRBs may require us, to suspend or terminate clinical trials of IMR-687 and any other product candidates we may develop for various reasons, including non-compliance with regulatory requirements or a finding that the participants are being exposed to unacceptable health risks;
- regulators or IRBs may require us to perform additional or unanticipated clinical trials to obtain approval or we may be subject to additional post-marketing testing requirements to maintain regulatory approval;
- regulators may revise the requirements for approving IMR-687 and any other product candidates we may develop, or such requirements may not be as we anticipate;
- the cost of clinical trials of IMR-687 and any other product candidates we may develop may be greater than we anticipate;
- the supply or quality of IMR-687 and any other product candidates we may develop or other materials necessary to conduct clinical trials of such product candidates may be insufficient or inadequate;
- IMR-687 and any other product candidates we may develop may have undesirable side effects or other unexpected characteristics, causing us or our investigators, regulators or IRBs to suspend or terminate the trials; and
- regulators may withdraw their approval of a product or impose restrictions on its distribution, such as in the form of a risk evaluation and mitigation strategy, or REMS.

If we are required to conduct additional clinical trials or other testing of IMR-687 beyond those that we currently contemplate, if we are unable to successfully complete clinical trials or other testing of IMR-687 or any

other product candidates we may develop, if the results of these trials or tests are not positive or are only modestly positive or if there are safety concerns, we may:

- be delayed in obtaining marketing approval for any product candidates;
- not obtain marketing approval at all;
- obtain approval for indications or patient populations that are not as broad as intended or desired;
- obtain approval with labeling or a REMS that includes significant use or distribution restrictions or safety warnings;
- be subject to additional post-marketing testing requirements; or
- have the product removed from the market after obtaining marketing approval.

Our product development costs will also increase if we experience delays in testing or in obtaining marketing approvals. We do not know whether any of our preclinical studies or clinical trials will begin as planned, will need to be restructured or will be completed on schedule, or at all. We may also determine to change the design or protocol of one or more of our clinical trials, including to add additional patients or arms, which could result in increased costs and expenses and/or delays. Significant preclinical study or clinical trial delays also could shorten any periods during which we may have the exclusive right to commercialize any product candidates or allow our competitors to bring products to market before we do and impair our ability to successfully commercialize any product candidates and may harm our business and results of operations.

Because we are developing IMR-687 using new endpoints and methodologies, the FDA or other regulatory authorities may not consider the endpoints of our clinical trials to predict or provide clinically meaningful results.

There are currently limited therapies approved to treat SCD, and there are no therapies approved to treat the underlying cause of SCD. We have concentrated our product research and development efforts on developing a novel therapeutic for the treatment of SCD, and our future success depends on the success of this therapeutic approach. The clinical trial requirements of the FDA and other comparable regulatory agencies and the criteria these regulators use to determine the safety and efficacy of any product candidate vary substantially according to the type, complexity, novelty and intended use and market of the potential product. To date, there are only two FDA-approved drugs for SCD, hydroxyurea and L-glutamine (marketed as Endari), and there are no approved therapies that target phosphodiesterase 9, or PDE9. As a result, the design and conduct of clinical trials for a therapeutic product candidate such as IMR-687 that targets PDE9 in SCD patients is subject to unknown risks, and we may experience setbacks with our ongoing or planned clinical trials of IMR-687 in SCD because of the limited clinical experience with its mechanism of action in these patients.

In particular, regulatory authorities in the United States and the European Union have not issued definitive guidance as to how to measure and achieve efficacy in treatments for SCD. As a result, the design and conduct of clinical trials of IMR-687 may take longer, be more costly or be less effective as part of the novelty of development in SCD. We may use new or novel endpoints or methodologies, such as both red and white blood cell biomarkers in our IMR-687 clinical trials, and the FDA or other regulatory authorities may not consider the endpoints of our clinical trials to provide clinically meaningful results. Even if applicable regulatory authorities do not object to our proposed endpoints in an earlier stage clinical trial, such regulatory authorities may require evaluation of additional or different clinical endpoints in later-stage clinical trials. Additionally, if we pursue accelerated approval or other expedited regulatory approval mechanisms for IMR-687, the FDA or another regulatory authority may determine that the biomarker efficacy endpoint we select for evaluation is not sufficiently predictive of clinical benefit to support accelerated approval.

Even if the FDA does find our clinical trial success criteria to be sufficiently validated and clinically meaningful, we may not achieve the pre-specified endpoint to a degree of statistical significance deemed

approvable in any pivotal or other clinical trials we may conduct for IMR-687. Further, even if we do achieve the pre-specified criteria, our trials may produce results that are unpredictable or inconsistent with the results of the more traditional efficacy endpoints in the trial. The FDA also could give overriding weight to other efficacy endpoints over a primary endpoint, even if we achieve statistically significant results on that primary endpoint, if we do not do so on our secondary or other efficacy endpoints. The FDA also weighs the benefits of a product against its risks and the FDA may view the efficacy results in the context of safety as not being supportive of approval. Other regulatory authorities in the European Union and other countries may make similar findings with respect to these endpoints.

The outcome of preclinical studies and earlier-stage clinical trials may not be predictive of the success of later-stage clinical trials.

The outcome of preclinical testing and earlier-stage clinical trials may not be predictive of the success of later-stage clinical trials. IMR-687 and any other product candidates we may develop may fail to show the desired safety and efficacy in clinical development despite positive results in preclinical studies or having successfully advanced through initial clinical trials. For example, in clinical trials, IMR-687 may not be effective at increasing red blood cell biomarkers that include HbF, F-cells, hemoglobin, and reducing reticulocytes, indirect bilirubin, and LDH. Furthermore, in clinical trials, IMR-687 may not impact adhesion/white blood cell markers such as P-selectin, E-selectin, or VCAM. Even if IMR-687 successfully increases or decreases, as applicable, these biomarkers in clinical trials, such increase or decrease may not result in overall clinical benefit. A lack of clinical benefit may be due to insufficient dosing or for other reasons. Additionally, any positive results generated in our Phase 2a clinical trial of IMR-687 in adults with SCD would not ensure that we will achieve similar results in larger, pivotal clinical trials or in clinical trials of IMR-687 in pediatric populations with SCD. Several companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials even after achieving promising results in preclinical testing and earlier-stage clinical trials, and we cannot be certain that we will not face similar setbacks. Moreover, preclinical and clinical data are often susceptible to varying interpretations and analyses, and many companies that have believed their product candidates performed satisfactorily in preclinical studies and clinical trials have nonetheless failed to obtain marketing approval of their products. Furthermore, the failure of any product candidate to demonstrate safety and efficacy in any clinical trial could negatively impact the perception of any other product candidates then under development and/or cause the FDA or other regulatory authorities to require additional testing before approving any other product candidates.

Interim top-line and preliminary results from our clinical trials that we announce or publish from time to time may change as more patient data become available and are subject to audit and verification procedures, which could result in material changes in the final data.

From time to time, we may publish interim top-line or preliminary results from our clinical trials. Interim results from clinical trials that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Preliminary or top-line results also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, interim and preliminary data should be viewed with caution until the final data are available. Differences between preliminary or interim data and final data could significantly harm our business prospects and may cause the trading price of our common stock to fluctuate significantly.

As an organization, we have never conducted pivotal clinical trials, and we may be unable to do so for IMR-687 or any other product candidates we may develop.

We will need to successfully complete pivotal clinical trials in order to obtain the approval of the FDA, the European Medicines Agency, or EMA, or other regulatory agencies to market IMR-687 or any future product candidate. Carrying out later-stage clinical trials is a complicated process. As an organization, we have not

previously conducted any later stage or pivotal clinical trials. In order to do so, we will need to expand our clinical development and regulatory capabilities, and we may be unable to recruit and train qualified personnel. Consequently, we may be unable to successfully and efficiently execute and complete necessary clinical trials in a way that leads to approval of IMR-687 or future product candidates. We may require more time and incur greater costs than our competitors and may not succeed in obtaining regulatory approvals of product candidates that we develop. Failure to commence or complete, or delays in, our planned clinical trials, could prevent us from or delay us in commercializing our product candidates.

If we experience delays or difficulties in the enrollment of patients in clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented.

Identifying and qualifying patients to participate in clinical trials for IMR-687 and any other product candidates we may develop is critical to our success. Successful and timely completion of clinical trials will require that we enroll a sufficient number of patients who remain in the trial until its conclusion. We may not be able to initiate or continue clinical trials for IMR-687 and any other product candidates we may develop if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or similar regulatory authorities outside of the United States. For example, the prevalence of patients with SCD and b-thalassemia in the United States and Europe is estimated to be low. Accordingly, there are limited patient pools from which to draw for clinical trials of IMR-687. We may not be able to identify, recruit, and enroll a sufficient number of patients to complete our clinical trials of IMR-687 because of the perceived risks and benefits of IMR-687, the availability of competing therapies and clinical trials, the proximity and availability of clinical trial sites for prospective subjects and the subject referral practices of physicians, among other factors.

Patient enrollment is affected by a variety of other factors, including:

- the prevalence and severity of the disease under investigation;
- the eligibility criteria for the trial in question;
- the perceived risks and benefits of the product candidate under trial;
- the requirements of the trial protocols;
- the availability of existing commercially-available treatments for the indications for which we are conducting clinical trials;
- the ability to recruit clinical trial investigators with the appropriate competencies and experience;
- efforts to facilitate timely enrollment in clinical trials;
- the patient referral practices of physicians;
- the ability to monitor patients adequately during and after treatment;
- the proximity and availability of clinical trial sites for prospective patients;
- the conduct of clinical trials by competitors for product candidates that treat the same indications as IMR-687 and any other product candidates we may develop;
- the ability to identify specific patient populations for biomarker-defined trial cohort(s); and
- the cost to, or lack of adequate compensation for, prospective patients.

Our inability to locate and enroll a sufficient number of patients for our clinical trials would result in significant delays, could require us to abandon one or more clinical trials altogether and could delay or prevent our receipt of necessary regulatory approvals. Enrollment delays in our clinical trials may result in increased development costs for IMR-687 and any other product candidates we may develop, which would cause the value of our company to decline and limit our ability to obtain additional financing.

Changes in methods of product candidate manufacturing or formulation may result in additional costs or delay.

As product candidates proceed through preclinical studies to late-stage clinical trials towards potential approval and commercialization, it is common that various aspects of the development program, such as manufacturing methods and formulation, are altered along the way in an effort to optimize processes and results. Such changes carry the risk that they will not achieve these intended objectives. Any of these changes could cause IMR-687 to perform differently and affect the results of planned clinical trials or other future clinical trials conducted with the materials manufactured using altered processes. Such changes may also require additional testing, FDA notification or FDA approval. This could delay completion of clinical trials, require the conduct of bridging clinical trials or the repetition of one or more clinical trials, increase clinical trial costs, delay approval of IMR-687 and jeopardize our ability to commence sales and generate revenue.

If serious adverse events or unacceptable side effects are identified during the development of IMR-687 and any other product candidates we may develop, we may need to abandon or limit our development of those product candidates.

Clinical trials by their nature utilize a sample of the potential patient population. We have only begun to evaluate IMR-687 in a limited number of subjects at a limited duration of exposure. Accordingly, any rare and severe side effects of IMR-687 may be uncovered only in later stages of our current and future clinical development. Many product candidates that initially showed promise in early stage testing have later been found to cause side effects that prevented their further development. If IMR-687 and any other product candidates we may develop are associated with undesirable side effects in clinical trials or have characteristics that are unexpected in clinical trials or preclinical testing, we may need to abandon their development or limit development to more narrow uses or subpopulations in which the side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective. In pharmaceutical development, many compounds that initially show promise in early-stage or clinical testing are later found to cause side effects that delay or prevent further development of the compound.

Additionally, if results of our clinical trials reveal unacceptable side effects, we, the FDA or the IRBs at the institutions in which our studies are conducted could suspend or terminate our clinical trials or the FDA or comparable foreign regulatory authorities could order us to cease clinical trials or deny approval of IMR-687 and any other product candidates we may develop for any or all targeted indications. Treatment-related side effects could also affect patient recruitment or the ability of enrolled patients to complete any of our clinical trials. In addition, while not considered adverse events, in our Phase 1 clinical trial of IMR-687 in healthy volunteers, individual subjects were noted to have sporadic heart rates of greater than 100 bpm, including placebo subjects. One subject at 4.5 mg/kg per day had multiple readings greater than 100 bpm, including at study start, prior to any administration of study drug. If we elect or are forced to suspend or terminate any clinical trial of IMR-687 and any other product candidates we may develop, the commercial prospects of such product candidate will be harmed, and our ability to generate product revenue from such product candidate will be delayed or eliminated. Any of these occurrences could materially harm our business.

We are also developing IMR-687 in combination with other therapies, which exposes us to additional risks.

We are developing IMR-687 both as a monotherapy and in combination with hydroxyurea, a currently approved therapy for SCD, and may develop future product candidates in combination with one or more currently approved therapies. Even if any product candidate we develop were to receive marketing approval or be commercialized for use in combination with other existing therapies, we would continue to be subject to the risks that the FDA or similar regulatory authorities outside of the United States could revoke approval of the therapy used in combination with our product candidate or that safety, efficacy, manufacturing or supply issues could arise with these existing therapies. This could result in our own products being removed from the market or being less successful commercially.

If any product candidate receives marketing approval and we, or others, later discover that the drug is less effective than previously believed or causes undesirable side effects that were not previously identified, our ability to market the drug could be compromised.

We conduct, and intend to conduct in the future, clinical trials of product candidates in carefully defined subsets of patients who have agreed to enter into clinical trials. Consequently, it is possible that our clinical trials may indicate an apparent positive effect of a product candidate that is greater than the actual positive effect, if any, or alternatively fail to identify undesirable side effects. If any product candidate receives regulatory approval, and we, or others, later discover that it is less effective than previously believed, or causes undesirable side effects, a number of potentially significant negative consequences could result, including:

- withdrawal or limitation by regulatory authorities of approvals of such product;
- seizure of the product by regulatory authorities;
- recall of the product;
- restrictions on the marketing of the product or the manufacturing process for any component thereof;
- requirement by regulatory authorities of additional warnings on the label, such as a “black box” warning or contraindication;
- requirement that we implement a REMS or create a medication guide outlining the risks of such side effects for distribution to patients;
- commitment to expensive post-marketing studies as a prerequisite of approval by regulatory authorities of such product;
- the product may become less competitive;
- initiation of regulatory investigations and government enforcement actions;
- initiation of legal action against us to hold us liable for harm caused to patients; and
- harm to our reputation and resulting harm to physician or patient acceptance of our products.

Any of these events could prevent us from achieving or maintaining market acceptance of a particular product candidate, if approved, and could significantly harm our business, financial condition, and results of operations.

We may not be successful in our efforts to identify or discover additional product candidates and may fail to capitalize on programs or product candidates that may present a greater commercial opportunity or for which there is a greater likelihood of success.

If we do not successfully develop and eventually commercialize products, we will not obtain product revenue in future periods, resulting in significant harm to our financial position and adversely affecting our share price. Research programs to identify new product candidates require substantial technical, financial and human resources. Although IMR-687 is currently in clinical development, we may fail to identify other potential product candidates for clinical development. Similarly, a key element of our business plan is to expand the breadth of indications for IMR-687 for the treatment of b-thalassemia. A failure to establish IMR-687 as a viable treatment for b-thalassemia could harm our business prospects.

Additionally, because we have limited resources, we may forego or delay pursuit of opportunities with certain programs or product candidates or for indications that later prove to have greater commercial potential. For example, we currently intend to focus our capital resources primarily on the development of IMR-687. However, the development of IMR-687 may ultimately prove to be unsuccessful or less successful than another potential product candidate in our pipeline that we might have chosen to pursue on a more aggressive basis with our capital resources. If we do not accurately evaluate the commercial potential for a particular product

candidate, we may relinquish valuable rights to that product candidate through strategic collaboration, licensing or other arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate. Alternatively, we may allocate internal resources to a product candidate in a therapeutic area in which it would have been more advantageous to enter into a partnering arrangement.

Outside of the United States, we are conducting a Phase 2a clinical trial of IMR-687 in patients with SCD at clinical sites in the United Kingdom and currently plan to conduct additional clinical trials for IMR-687 at other non-U.S. sites, and the FDA may not accept data from trials conducted in such locations.

We are currently conducting a Phase 2a clinical trial of IMR-687 in patients with SCD at clinical sites in the United Kingdom, and we plan to conduct additional clinical trials outside the United States. Although the FDA may accept data from clinical trials conducted outside the United States, acceptance of these data is subject to conditions imposed by the FDA. For example, the clinical trial must be well designed and conducted and be performed by qualified investigators in accordance with ethical and Good Clinical Practice, or GCP, principles. The trial population must also adequately represent the U.S. population, and the data must be applicable to the U.S. population and U.S. medical practice in ways that the FDA deems clinically meaningful. In addition, while these clinical trials are subject to the applicable local laws, FDA acceptance of the data will depend on its determination that the trials also complied with all applicable U.S. laws and regulations. If the FDA does not accept the data from any trial conducted or from particular clinical trial sites located outside the United States, it would likely result in the need for additional trials, which would be costly and time-consuming and could delay or permanently halt our development of the applicable product candidates.

Even if any product candidate receives marketing approval, it may fail to achieve the degree of market acceptance by physicians, patients, third-party payors and others in the medical community necessary for commercial success.

If any product candidate receives marketing approval, it may nonetheless fail to gain sufficient market acceptance by physicians, patients, third-party payors and others in the medical community. Sales of medical products depend in part on the willingness of physicians to prescribe the treatment, which is likely to be based on a determination by these physicians that the products are safe, therapeutically effective and cost effective. In addition, the inclusion or exclusion of products from treatment guidelines established by various physician groups and the viewpoints of influential physicians can affect the willingness of other physicians to prescribe the treatment. We cannot predict whether physicians, physicians' organizations, hospitals, other healthcare providers, government agencies or private insurers will determine that our product is safe, therapeutically effective and cost effective as compared with competing treatments. Efforts to educate the medical community and third-party payors on the benefits of IMR-687 and any other product candidates we may develop may require significant resources and may not be successful. If IMR-687 and any other product candidates we may develop do not achieve an adequate level of acceptance, we may not generate significant product revenues and we may not become profitable. The degree of market acceptance of IMR-687 and any other product candidates we may develop, if approved for commercial sale, will depend on a number of factors, including:

- the efficacy and potential advantages compared to alternative treatments, such as, in the case of IMR-687, hydroxyurea and ZYNTEGLO;
- the effectiveness of sales and marketing efforts;
- the cost of treatment in relation to alternative treatments, including any similar generic treatments;
- the clinical indications for which the product is approved;
- the convenience and ease of administration compared to alternative treatments;
- the willingness of the target patient population to try new therapies and to continue treatment over time and of physicians to prescribe these therapies;

- the strength of marketing and distribution support;
- the timing of market introduction of competitive products;
- the availability of third-party coverage and adequate reimbursement, and patients' willingness to pay out of pocket for required co-payments or in the absence of third-party coverage or adequate reimbursement;
- the prevalence and severity of any side effects; and
- any restrictions on the use of our products, if approved, together with other medications.

If we are unable to establish sales, marketing and distribution capabilities or enter into sales, marketing and distribution agreements with third parties, we may not be successful in commercializing any product candidates if and when they are approved.

We do not have a sales or marketing infrastructure and have no experience in the sale, marketing or distribution of pharmaceutical products. To achieve commercial success for any product for which we have obtained marketing approval, we will need to establish a sales, marketing and distribution organization, either ourselves or through collaborations or other arrangements with third parties.

In the future, we expect to build a sales and marketing infrastructure to market IMR-687 and any other product candidates we may develop in the United States and potentially in Europe, if and when approved by the respective regulatory authority. There are risks involved with establishing our own sales, marketing and distribution capabilities. For example, recruiting and training a sales force is expensive and time-consuming and could delay any product launch. If the commercial launch of a product candidate for which we recruit a sales force and establish marketing capabilities is delayed or does not occur for any reason, we would have prematurely or unnecessarily incurred these commercialization expenses. These efforts may be costly, and our investment would be lost if we cannot retain or reposition our sales and marketing personnel.

Factors that may inhibit our efforts to commercialize our products on our own include:

- our inability to recruit, train and retain adequate numbers of effective sales, marketing, coverage or reimbursement, customer service, medical affairs and other support personnel;
- the inability of sales personnel to educate adequate numbers of physicians on the benefits of any future products;
- the inability of reimbursement professionals to negotiate arrangements for formulary access, reimbursement and other acceptance by payors;
- the inability to price our products at a sufficient price point to ensure an adequate and attractive level of profitability;
- restricted or closed distribution channels that make it difficult to distribute our products to segments of the patient population;
- the lack of complementary products to be offered by sales personnel, which may put us at a competitive disadvantage relative to companies with more extensive product lines; and
- unforeseen costs and expenses associated with creating an independent sales and marketing organization.

If we are unable to establish our own sales, marketing and distribution capabilities and we enter into arrangements with third parties to perform these services, our product revenues and our profitability, if any, are likely to be lower than if we were to market, sell and distribute any products that we develop ourselves. In addition, we may not be successful in entering into arrangements with third parties to sell, market and distribute

any product candidates or may be unable to do so on terms that are acceptable to us. We likely will have little control over such third parties, and any of them may fail to devote the necessary resources and attention to sell and market our products effectively. If we do not establish sales, marketing and distribution capabilities successfully, either on our own or in collaboration with third parties, we will not be successful in commercializing any product candidates.

We face substantial competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.

The development and commercialization of new drug products is highly competitive. We face competition with respect to IMR-687, and will face competition with respect to any product candidates that we may seek to develop or commercialize in the future, from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide. There are a number of large pharmaceutical and biotechnology companies that currently market and sell products or are pursuing the development of products for the treatment of the same disease indications we are pursuing. Some of these competitive products and therapies are based on scientific approaches that are the same as or similar to our approach, and others are based on entirely different approaches. Potential competitors also include academic institutions, government agencies and other public and private research organizations that conduct research, seek patent protection and establish collaborative arrangements for research, development, manufacturing and commercialization.

In the area of SCD, we expect to face competition from HU (marketed under trade names including DROXIA by Bristol-Myers Squibb Company, as well as in generic form) and L-glutamine, which are currently the only FDA-approved therapies for the treatment of SCD. In the area of ß-thalassemia, we expect to face competition from ZYNTEGLO (marketed by bluebird bio, Inc.), which is currently only approved in Europe for the treatment of ß-thalassemia and for which FDA approval is currently being sought. In addition, with respect to SCD, we are aware of several product candidates in clinical development, including several product candidates for which FDA approval is currently being sought, which could be competitive with product candidates that we may successfully develop and commercialize. Novartis AG, or Novartis, Global Blood Therapeutics, Inc., Pfizer, Inc., EpiDestiny, Inc., or EpiDestiny (in collaboration with Novo Nordisk A/S, or Novo), Aruvant Sciences, Inc., Sangamo Therapeutics Inc., or Sangamo (in collaboration with Bioverativ Inc.), Cyclerion, Inc., Fulcrum Therapeutics, Inc., Intellia Therapeutics, Inc. (in collaboration with Novartis), Editas Medicine, Inc. and CRISPR Therapeutics AG, or CRISPR (in collaboration with Vertex Pharmaceuticals Incorporated, or Vertex), among potentially other companies, are developing therapeutic approaches for patients with SCD. Acceleron Pharma Inc. (in collaboration with Celgene Corp.), Bellicum Pharmaceuticals, Inc., Kiadis Pharma N.V., EpiDestiny (in collaboration with Novo), Orchard Therapeutics plc, Sangamo (in collaboration with Bioverativ, Inc.) and CRISPR (in collaboration with Vertex), among potentially other companies, are developing therapeutic approaches for patients with b-thalassemia. See “Business—Competition” for additional information regarding competing products and product candidates.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. In addition, our ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of generic products. If any product candidates achieve marketing approval, we expect that they would be priced at a significant premium over competitive generic products.

Many of the companies against which we are competing or against which we may compete in the future have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do.

Mergers and acquisitions in the pharmaceutical and biotechnology industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller and other early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These third parties compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

If the market opportunities for IMR-687 and any other product candidates we may develop are smaller than we believe they are, our revenue may be adversely affected and our business may suffer. Moreover, because the target patient populations we are seeking to treat are small, and the addressable patient population even smaller, we must be able to successfully identify patients and capture a significant market share to achieve profitability and growth.

We focus our research and product development on treatments for rare inherited genetic disorders of hemoglobin. The prevalence of SCD is approximately 100,000 individuals in the United States and 134,000 individuals in the European Union. Similarly, the prevalence of b-thalassemia globally is estimated to be 288,000 individuals and the aggregate prevalence of b-thalassemia in the European Union and United States is estimated to be 19,000 individuals. Given the small number of patients who have the diseases that we are targeting, it is critical to our ability to grow and become profitable that we continue to successfully identify patients with these rare diseases. Our projections of both the number of people who have these diseases, as well as the subset of people with these diseases who have the potential to benefit from treatment with IMR-687 and any other product candidates we may develop, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including the scientific literature, surveys of clinics, patient foundations or market research that we conducted, and may prove to be incorrect or contain errors. New studies may change the estimated incidence or prevalence of these diseases. The number of patients may turn out to be lower than expected. The effort to identify patients with diseases we seek to treat is in early stages, and we cannot accurately predict the number of patients for whom treatment might be possible. Additionally, the potentially addressable patient population for IMR-687 and any other product candidates we may develop may be limited or may not be amenable to treatment with IMR-687 and any other product candidates we may develop, and new patients may become increasingly difficult to identify or gain access to, which would adversely affect our results of operations and our business. Further, even if we obtain significant market share for IMR-687 and any other product candidates we may develop, because the potential target populations are very small, we may never achieve profitability despite obtaining such significant market share.

Our target patient populations are relatively small, and there are currently limited standard of care treatments directed at SCD. As a result, the pricing and reimbursement of IMR-687 and any other product candidates we may develop, if approved, is uncertain, but must be adequate to support commercial infrastructure. If we are unable to obtain adequate levels of reimbursement, our ability to successfully market and sell IMR-687 and any other product candidates we may develop will be adversely affected.

We rely on contract manufacturing organizations, or CMOs, to manufacture IMR-687 and expect to rely on CMOs to manufacture any other product candidates we may develop. If we are unable to enter into such arrangements as expected or if such organizations do not meet our supply requirements, development and/or commercialization of IMR-687 and any other product candidates we may develop may be delayed.

We do not have any manufacturing facilities. We currently rely on a single manufacturer of active pharmaceutical ingredient, or API, for IMR-687 and a different single manufacturer for finished drug product, and we expect to continue to rely on third parties to manufacture clinical supplies of IMR-687 and any other product candidates we may develop and commercial supplies of our products, if and when approved for marketing by applicable regulatory authorities, as well as for packaging, sterilization, storage, distribution and other production logistics. If we are unable to enter into such arrangements on the terms or timeline we expect, development and/or commercialization of IMR-687 and any other product candidates we may develop may be

delayed. Reliance on third-party manufacturers may expose us to different risks than if we were to manufacture product candidates ourselves. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or manufacture any product candidates in accordance with regulatory requirements, if there are disagreements between us and such parties or if such parties are unable to expand capacities to support commercialization of any product candidates for which we obtain marketing approval, we may not be able to fulfill, or may be delayed in producing sufficient product candidates to meet, our supply requirements. These facilities may also be affected by natural disasters, such as floods or fire, or geopolitical developments, or such facilities could face manufacturing issues, such as contamination or regulatory concerns following a regulatory inspection of such facility. In such instances, we may need to locate an appropriate replacement third-party facility and establish a contractual relationship, which may not be readily available or on acceptable terms, which would cause additional delay and increased expense, and may have a material adverse effect on our business.

Our third-party manufacturers are subject to inspection and approval by the FDA before we can commence the manufacture and sale of any product candidates, and thereafter subject to FDA inspection from time to time. Failure by our third-party manufacturers to pass such inspections and otherwise satisfactorily complete the FDA approval regimen with respect to IMR-687 and any other product candidates we may develop may result in regulatory actions such as the issuance of FDA Form 483 notices of observations, warning letters or injunctions or the loss of operating licenses.

We or our third-party manufacturers may also encounter shortages in the raw materials or API necessary to produce IMR-687 and any other product candidates we may develop in the quantities needed for our clinical trials or, if IMR-687 and any other product candidates we may develop are approved, in sufficient quantities for commercialization or to meet an increase in demand, as a result of capacity constraints or delays or disruptions in the market for the raw materials or API, including shortages caused by the purchase of such raw materials or API by our competitors or others. Even if raw materials or API are available, we may be unable to obtain sufficient quantities at an acceptable cost or quality. The failure of us or our third-party manufacturers to obtain the raw materials or API necessary to manufacture sufficient quantities of IMR-687 and any other product candidates we may develop could delay, prevent or impair our development efforts and may have a material adverse effect on our business.

Even if we are able to commercialize any product candidates, the products may become subject to unfavorable pricing regulations, third-party coverage or reimbursement practices or healthcare reform initiatives, which could harm our business.

The regulations that govern marketing approvals, pricing, coverage and reimbursement for new drug products vary widely from country to country. Current and future legislation may significantly change the approval requirements in ways that could involve additional costs and cause delays in obtaining approvals. Some countries require approval of the sale price of a drug before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we might obtain marketing approval for a product in a particular country, but then be subject to price regulations that delay our commercial launch of the product, possibly for lengthy time periods, and negatively impact the revenues we are able to generate from the sale of the product in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more product candidates, even if any product candidates obtain marketing approval.

Our ability to commercialize any product candidates successfully will depend in part on the extent to which coverage and adequate reimbursement for these products and related treatments will be available from government health administration authorities, private health insurers and other organizations. Government authorities and other third-party payors, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels. A primary trend in the U.S. healthcare industry and elsewhere is cost containment. Government authorities and other third-party payors have

attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. Coverage and reimbursement may not be available for any product that we commercialize and, even if these are available, the level of reimbursement may not be satisfactory. Reimbursement may affect the demand for, or the price of, any product candidate for which we obtain marketing approval. Obtaining and maintaining adequate reimbursement for our products may be difficult. There can be no assurance that any product candidates, even if they are approved for sale in the United States or in other countries, will be considered medically reasonable and necessary for a specific indication or cost-effective by third-party payors. We may be required to conduct expensive pharmacoeconomic studies to justify coverage and reimbursement or the level of reimbursement relative to other therapies. If coverage and adequate reimbursement are not available, we may not be able to successfully commercialize any product candidate for which we obtain marketing approval.

There may be significant delays in obtaining coverage and reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the drug is approved by the FDA or similar regulatory authorities outside of the United States. Moreover, eligibility for coverage and reimbursement does not imply that a drug will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution expenses. Interim reimbursement levels for new drugs, if applicable, may also not be sufficient to cover our costs and may not be made permanent. Reimbursement rates may vary according to the use of the drug and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost drugs and may be incorporated into existing payments for other services. Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. Further, no uniform policy for coverage and reimbursement exists in the United States. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies, but also have their own methods and process apart from Medicare determinations. As a result, obtaining and maintaining coverage and adequate reimbursement is often time-consuming and costly. Our inability to promptly obtain coverage and adequate reimbursement rates from both government-funded and private payors for any approved products that we develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products and our overall financial condition.

Our future growth depends, in part, on our ability to penetrate foreign markets, where we would be subject to additional regulatory burdens and other risks and uncertainties that, if they materialize, could harm our business.

Our future profitability will depend, in part, on our ability to commercialize IMR-687 in markets outside of the United States and the European Union. If we commercialize IMR-687 and any other product candidates we may develop in foreign markets, we will be subject to additional risks and uncertainties, including:

- economic weakness, including inflation, or political instability in particular economies and markets;
- the burden of complying with complex and changing foreign regulatory, tax, accounting and legal requirements, many of which vary between countries;
- different medical practices and customs in foreign countries affecting acceptance in the marketplace;
- tariffs and trade barriers, as well as other governmental controls and trade restrictions;
- other trade protection measures, import or export licensing requirements or other restrictive actions by U.S. or foreign governments;
- longer accounts receivable collection times;
- longer lead times for shipping;

- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- workforce uncertainty in countries where labor unrest is common;
- language barriers for technical training;
- reduced protection of intellectual property rights in some foreign countries, and related prevalence of generic alternatives to therapeutics;
- foreign currency exchange rate fluctuations and currency controls;
- differing foreign reimbursement landscapes;
- uncertain and potentially inadequate reimbursement of our products; and
- the interpretation of contractual provisions governed by foreign laws in the event of a contract dispute.

If risks related to any of these uncertainties materializes, it could have a material adverse effect on our business.

Clinical trial and product liability lawsuits against us could divert our resources, could cause us to incur substantial liabilities and could limit commercialization of any products that we may develop.

We face an inherent risk of clinical trial and product liability exposure related to the testing of IMR-687 and any other product candidates we may develop in clinical trials, and we will face an even greater risk if we commercially sell any products that we may develop. While we currently have no products that have been approved for commercial sale, the current and future use of product candidates by us in clinical trials, and the sale of any approved products in the future, may expose us to liability claims. These claims might be made by patients that use the product, healthcare providers, pharmaceutical companies or others selling such products. If we cannot successfully defend ourselves against claims that IMR-687 and any other product candidates or products we may develop caused injuries, we will incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for IMR-687 and any other product candidates or products that we may develop;
- injury to our reputation and significant negative media attention;
- withdrawal of clinical trial participants;
- significant costs to defend any related litigation;
- substantial monetary awards to trial participants or patients;
- loss of revenue;
- reduced resources of our management to pursue our business strategy; and
- the inability to commercialize any products that we may develop.

Although we currently hold clinical trial liability insurance coverage in amounts we believe to be adequate, we may need to increase our insurance coverage as we expand our clinical trials or if we commence commercialization of any product candidates. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise. If a successful clinical trial or product liability claim or series of claims is brought against us for uninsured liabilities or in excess of insured liabilities, our assets may not be sufficient to cover such claims and our business operations could be impaired.

Risks Related to Our Dependence on Third Parties

We rely, and expect to continue to rely, on third parties to conduct our clinical trials, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials, which may harm our business.

We currently rely on third-party clinical research organizations to conduct our ongoing Phase 2a clinical trial of IMR-687 in SCD and plan to rely on third-party clinical research organizations or third-party research collaborative groups to conduct our planned Phase 2 clinical trial in b-thalassemia. We do not plan to independently conduct clinical trials of any other product candidates. We expect to continue to rely on third parties, such as clinical research organizations, clinical data management organizations, medical institutions and clinical investigators, to conduct our clinical trials. These agreements might terminate for a variety of reasons, including a failure to perform by the third parties. If we need to enter into alternative arrangements, our product development activities might be delayed.

Our reliance on these third parties for research and development activities will reduce our control over these activities but will not relieve us of our responsibilities. For example, we will remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for the trial. Moreover, the FDA requires us to comply with standards, commonly referred to as good clinical practices, or GCPs, for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. We also are required to register ongoing clinical trials and post the results of completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within specified timeframes. Failure to do so can result in fines, adverse publicity and civil and criminal sanctions.

If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our clinical trials in accordance with regulatory requirements or our stated protocols, we will not be able to obtain, or may be delayed in obtaining, marketing approvals for any product candidates and will not be able to, or may be delayed in our efforts to, successfully develop and commercialize any product candidates. Furthermore, these third parties may also have relationships with other entities, some of which may be our competitors.

We also expect to rely on other third parties to store and distribute drug supplies for our clinical trials. Any performance failure on the part of our distributors could delay clinical development or marketing approval of any product candidates we may successfully develop and commercialization of our products, producing additional losses and depriving us of potential product revenue.

We contract with a third party for the manufacture of IMR-687, plan to contract with third parties for any other product candidates we may develop for preclinical and clinical testing and expect to continue to do so for commercialization. This reliance on third parties entails risks, including that such third parties may not be able to comply with applicable regulatory requirements. Any performance failure on the part of our existing or future manufacturers could delay clinical development or marketing approval.

We rely on a third party for the manufacture of IMR-687, and we expect to rely on third parties for the future manufacture of any other product candidates for preclinical and clinical testing. Reliance on third-party manufacturers entails additional risks, including:

- reliance on the third party for regulatory compliance and quality assurance;
- the possible breach of the manufacturing agreement by the third party;
- the possible misappropriation of our proprietary information, including our trade secrets and know-how; and

- the possible termination or nonrenewal of the agreement by the third party at a time that is costly or inconvenient for us.

Third-party manufacturers may not be able to comply with current good manufacturing practices, or cGMP, regulations or similar regulatory requirements outside of the United States. Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including clinical holds, fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of product candidates or products, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our products.

IMR-687 and any other product candidates or products that we may develop may compete with other product candidates and products for access to manufacturing facilities. There are a limited number of manufacturers that operate under cGMP regulations and that might be capable of manufacturing for us.

Any performance failure on the part of our existing or future manufacturers could delay clinical development or marketing approval. We do not currently have arrangements in place for redundant supply or a source for bulk drug substance. If any of our future contract manufacturers cannot perform as agreed, we may be required to replace such manufacturers. Although we believe that there are several potential alternative manufacturers who could manufacture IMR-687 and any other product candidates we may develop, we may incur added costs and delays in identifying and qualifying any such replacement.

Our current and anticipated future dependence upon others for the manufacture of IMR-687 and any other product candidates or products we may develop may adversely affect our future profit margins and our ability to commercialize any products that receive marketing approval on a timely and competitive basis.

We may enter into collaborations with third parties for the development or commercialization of product candidates. If our collaborations are not successful, we may not be able to capitalize on the market potential of these product candidates and our business could be adversely affected.

While we have retained all rights to and are developing IMR-687 on our own, we may in the future enter into development, distribution or marketing arrangements with third parties with respect to IMR-687 or future product candidates. Our likely collaborators for any sales, marketing, distribution, development, licensing or broader collaboration arrangements include large and mid-size pharmaceutical companies, regional and national pharmaceutical companies and biotechnology companies. We are not currently party to any such arrangement. However, if we do enter into any such arrangements with any third parties in the future, we will likely have limited control over the amount and timing of resources that our collaborators dedicate to the development or commercialization of IMR-687 and any other product candidates we may develop. Our ability to generate revenues from these arrangements will depend on our collaborators' abilities and efforts to successfully perform the functions assigned to them in these arrangements.

Collaborations that we enter into may not be successful, and any success will depend heavily on the efforts and activities of such collaborators. Collaborations pose a number of risks, including the following:

- collaborators have significant discretion in determining the amount and timing of efforts and resources that they will apply to these collaborations;
- collaborators may not perform their obligations as expected;
- collaborators may not pursue development of IMR-687 and any other product candidates we may develop or may elect not to continue or renew development programs based on results of clinical trials or other studies, changes in the collaborators' strategic focus or available funding, or external factors, such as an acquisition, that divert resources or create competing priorities;
- collaborators may not pursue commercialization of IMR-687 and any other product candidates we may develop that achieve regulatory approval or may elect not to continue or renew commercialization

programs based on results of clinical trials or other studies, changes in the collaborators' strategic focus or available funding, or external factors, such as an acquisition, that may divert resources or create competing priorities;

- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- we may not have access to, or may be restricted from disclosing, certain information regarding product candidates being developed or commercialized under a collaboration and, consequently, may have limited ability to inform our stockholders about the status of such product candidates;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with any product candidates and products if the collaborators believe that the competitive products are more likely to be successfully developed or can be commercialized under terms that are more economically attractive than ours;
- product candidates discovered in collaboration with us may be viewed by our collaborators as competitive with their own product candidates or products, which may cause collaborators to cease to devote resources to the commercialization of any product candidates;
- a collaborator may fail to comply with applicable regulatory requirements regarding the development, manufacture, distribution or marketing of a product candidate or product;
- a collaborator with marketing and distribution rights to one or more of any product candidates that achieve regulatory approval may not commit sufficient resources to the marketing and distribution of such product or products;
- disagreements with collaborators, including disagreements over intellectual property or proprietary rights, contract interpretation or the preferred course of development, might cause delays or terminations of the research, development or commercialization of product candidates, might lead to additional responsibilities for us with respect to product candidates, or might result in litigation or arbitration, any of which would be time-consuming and expensive;
- collaborators may not properly obtain, maintain, enforce, defend or protect our intellectual property or proprietary rights or may use our proprietary information in such a way as to potentially lead to disputes or legal proceedings that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential litigation;
- disputes may arise with respect to the ownership of intellectual property developed pursuant to our collaborations;
- collaborators may infringe, misappropriate or otherwise violate the intellectual property or proprietary rights of third parties, which may expose us to litigation and potential liability; and
- collaborations may be terminated for the convenience of the collaborator, and, if terminated, we could be required to raise additional capital to pursue further development or commercialization of the applicable product candidates.

Collaboration agreements may not lead to development or commercialization of product candidates in the most efficient manner, or at all. If any collaborations that we enter into do not result in the successful development and commercialization of products or if one of our collaborators terminates its agreement with us, we may not receive any future research funding or milestone or royalty payments under the collaboration. If we do not receive the funding we expect under these agreements, our development of any product candidates could be delayed and we may need additional resources to develop any product candidates. All of the risks relating to product development, regulatory approval and commercialization described in this prospectus also apply to the activities of our collaborators.

Additionally, subject to its contractual obligations to us, if a collaborator of ours is involved in a business combination, the collaborator might deemphasize or terminate the development or commercialization of any product candidate licensed to it by us. If one of our collaborators terminates its agreement with us, we may find it more difficult to attract new collaborators and our perception in the business and financial communities could be adversely affected.

If we are not able to establish or maintain collaborations, we may have to alter our development and commercialization plans and our business could be adversely affected.

For some product candidates we may develop, we may decide to collaborate with pharmaceutical or biotechnology companies for the development and potential commercialization of those product candidates. We face significant competition in seeking appropriate collaborators, and a number of more established companies may also be pursuing strategies to license or acquire third-party intellectual property rights that we consider attractive. These established companies may have a competitive advantage over us due to their size, financial resources and greater clinical development and commercialization capabilities. In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us. Whether we reach a definitive agreement for a collaboration will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of a number of factors. Those factors may include the design or results of clinical trials, the likelihood of approval by the FDA or similar regulatory authorities outside the United States, the potential market for the subject product candidate, the costs and complexities of manufacturing and delivering such product candidate to patients, the potential of competing products, the existence of uncertainty with respect to our ownership of technology, which can exist if there is a challenge to such ownership without regard to the merits of the challenge, and industry and market conditions generally. The collaborator may also consider alternative product candidates or technologies for similar indications that may be available to collaborate on and whether such a collaboration could be more attractive than the one with us for our product candidate. Collaborations are complex and time-consuming to negotiate and document. In addition, there have been a significant number of recent business combinations among large pharmaceutical and biotechnology companies that have resulted in a reduced number of potential future collaborators.

If we are unable to reach agreements with suitable collaborators on a timely basis, on acceptable terms or at all, we may have to curtail the development of a product candidate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to fund and undertake development or commercialization activities on our own, we may need to obtain additional expertise and additional capital, which may not be available to us on acceptable terms or at all. If we fail to enter into collaborations and do not have sufficient funds or expertise to undertake the necessary development and commercialization activities, we may not be able to further develop any product candidates or bring them to market.

Risks Related to our Intellectual Property

If we fail to comply with our obligations under our existing license agreement with Lundbeck, or under any future intellectual property licenses, or otherwise experience disruptions to our business relationships with our current or any future licensors, we could lose intellectual property rights that are important to our business.

We are party to a license agreement with Lundbeck pursuant to which we have been granted an exclusive worldwide license within the field of prevention, treatment or diagnosis of hemoglobinopathy disorders and/or other diseases or disorders, including those directly or indirectly related to hemoglobinopathies. The agreement grants us an exclusive license under the licensed technology to, among other things, develop and commercialize any product comprising or containing certain PDE9 inhibitors, including IMR-687. For further information regarding our exclusive license agreement with Lundbeck, see "Business – Exclusive License Agreement." We

may enter into additional license agreements in the future. Our license agreement with Lundbeck imposes, and we expect that future licenses will impose, specified diligence, milestone payment, royalty and other obligations on us. Furthermore, Lundbeck has the right to terminate the agreement if we materially breach the agreement and fail to cure such breach within a specified period or in the event we undergo certain bankruptcy events. Lundbeck may also terminate the agreement if we or any of our affiliates, sublicensees or subcontractors bring specified patent challenges against Lundbeck or assist others in bringing such a patent challenge against Lundbeck and fail to cease such challenge within a specified period of time. In spite of our best efforts, our current or any future licensors might conclude that we have materially breached our license agreements and might therefore terminate the license agreements, thereby removing our ability to develop and commercialize product candidates and technology covered by these license agreements. If these in-licenses are terminated, or if the underlying intellectual property fails to provide the intended exclusivity, competitors would have the freedom to seek regulatory approval of, and to market, products and technologies identical to ours. This could have a material adverse effect on our competitive position, business, financial condition, results of operations and prospects.

Disputes may arise regarding intellectual property subject to a licensing agreement, including:

- the scope of rights granted under the license agreement and other interpretation related issues;
- the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- the sublicensing of patent and other rights under our collaborative development relationships;
- our diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- the inventorship and ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our current or future licensors and us and our partners; and
- the priority of invention of patented technology.

In addition, license agreements are complex, and certain provisions in such agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations and prospects. Moreover, if disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on commercially acceptable terms, we may be unable to successfully develop and commercialize the affected technology and product candidates, which could have a material adverse effect on our business, financial conditions, results of operations and prospects.

If we are unable to obtain, maintain, enforce and protect patent protection for our technology and product candidates or if the scope of the patent protection obtained is not sufficiently broad, our competitors could develop and commercialize technology and products similar or identical to ours, and our ability to successfully develop and commercialize our technology and product candidates may be adversely affected.

Our success depends in large part on our ability to obtain and maintain protection of the intellectual property we may own solely and jointly with others or may license from others, particularly patents, in the United States and other countries with respect to any proprietary technology and product candidates we develop. We seek to protect our proprietary position by filing patent applications in the United States and abroad related to IMR-687 and any other product candidates we may develop that are important to our business and by in-licensing intellectual property related to our technologies and product candidates. If we are unable to obtain or maintain patent protection with respect to any proprietary technology or product candidate, our business, financial condition, results of operations and prospects could be materially harmed.

The patent prosecution process is expensive, time-consuming and complex, and we may not be able to file, prosecute, maintain, defend or license all necessary or desirable patent applications at a reasonable cost or in a timely manner. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. Moreover, in some circumstances, we may not have the right to control the preparation, filing and prosecution of patent applications, or to maintain, enforce and defend the patents, covering technology that we license from third parties. Therefore, these in-licensed patents and applications may not be prepared, filed, prosecuted, maintained, defended and enforced in a manner consistent with the best interests of our business.

The patent position of pharmaceutical and biotechnology companies generally is highly uncertain, involves complex legal and factual questions and has in recent years been the subject of much litigation. In addition, the scope of patent protection outside of the United States is uncertain and laws of non-U.S. countries may not protect our rights to the same extent as the laws of the United States or vice versa. For example, European patent law restricts the patentability of methods of treatment of the human body more than United States law does. With respect to both owned and in-licensed patent rights, we cannot predict whether the patent applications we and our licensor are currently pursuing will issue as patents in any particular jurisdiction or whether the claims of any issued patents will provide sufficient protection from competitors. Further, we may not be aware of all third-party intellectual property rights potentially relating to IMR-687 and any other product candidates we may develop. In addition, publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing of the priority application, or in some cases not published at all. Therefore, neither we nor our licensor can know with certainty whether either we or our licensor were the first to make the inventions claimed in the patents and patent applications we own or in-license now or in the future, or that either we or our licensor were the first to file for patent protection of such inventions. As a result, the issuance, scope, validity, enforceability and commercial value of our owned and in-licensed patent rights are highly uncertain. Moreover, our owned and in-licensed pending and future patent applications may not result in patents being issued that protect our technology and product candidates, in whole or in part, or that effectively prevent others from commercializing competitive technologies and products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents and our ability to obtain, protect, maintain, defend and enforce our patent rights, narrow the scope of our patent protection and, more generally, could affect the value of, or narrow the scope of, our patent rights.

Currently, we have no issued patents related to our SCD or b-thalassemia programs. In order to continue to pursue protection based on provisional patent applications, we will need to file Patent Cooperation Treaty applications, non-U.S. applications and/or U.S. non-provisional patent applications prior to applicable deadlines. Even then, as highlighted above, patents may never issue from our patent applications, or the scope of any patent may not be sufficient to provide a competitive advantage. With respect to IMR-687, the patents covering IMR-687 licensed from Lundbeck are expected to expire in 2032.

Moreover, we or our licensor may be subject to a third-party preissuance submission of prior art to the United States Patent and Trademark Office, or USPTO, or become involved in opposition, derivation, revocation, reexamination, *inter partes* review, post-grant review or interference proceedings challenging our patent rights or the patent rights of others. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or product candidates and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize drugs without infringing third-party patent rights. If the breadth or strength of protection provided by our patents and patent applications is threatened, regardless of the outcome, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

Additionally, the coverage claimed in a patent application can be significantly reduced before the patent is issued, and its scope can be reinterpreted after issuance. Even if our owned and in-licensed patent applications issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent

competitors from competing with us or otherwise provide us with any competitive advantage. The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and in-licensed patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in loss of exclusivity or freedom to operate or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and product candidates. Such proceedings also may result in substantial cost and require significant time from our management and employees, even if the eventual outcome is favorable to us. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. Furthermore, our competitors may be able to circumvent our owned or in-licensed patents by developing similar or alternative technologies or products in a non-infringing manner. As a result, our owned and in-licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing technology and products similar or identical to any of our technology and product candidates.

Patent terms may be inadequate to protect our competitive position on any product candidates for an adequate amount of time.

Patents have a limited lifespan. In the United States, if all maintenance fees are timely paid, the natural expiration of a patent is generally 20 years from its earliest U.S. non-provisional filing date. Various extensions may be available, but the life of a patent, and the protection it affords, is limited. Even if patents covering any product candidates are obtained, once the patent life has expired, we may be open to competition from competitive products, including generics or biosimilars. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours. For example, the composition of matter patents covering IMR-687, licensed from Lundbeck, are expected to expire in 2032. Given the expected expiration date of these patents, and the fact that safe harbor protections in many jurisdictions permit third parties to engage in development, including clinical trials, these patents may not provide us with a meaningful competitive advantage.

If we are unable to obtain licenses from third parties on commercially reasonable terms or fail to comply with our obligations under such agreements, our business could be harmed.

It may be necessary for us to use the patented or proprietary technology of third parties to commercialize our products, in which case we would be required to obtain a license from these third parties. If we are unable to license such technology, or if we are forced to license such technology on unfavorable terms, our business could be materially harmed. If we are unable to obtain a necessary license, we may be unable to develop or commercialize the affected product candidates, which could materially harm our business and the third parties owning such intellectual property rights could seek either an injunction prohibiting our sales or an obligation on our part to pay royalties and/or other forms of compensation. Even if we are able to obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us.

If we are unable to obtain rights to required third-party intellectual property rights or maintain the existing intellectual property rights we have, we may be required to expend significant time and resources to redesign our technology, product candidates, or the methods for manufacturing them or to develop or license replacement technology, all of which may not be feasible on a technical or commercial basis. If we are unable to do so, we may be unable to develop or commercialize the affected technology and product candidates, which could harm our business, financial condition, results of operations and prospects significantly.

Additionally, if we fail to comply with our obligations under license agreements, our counterparties may have the right to terminate these agreements, in which event we might not be able to develop, manufacture or

market, or may be forced to cease developing, manufacturing or marketing, any product that is covered by these agreements or may face other penalties under such agreements. Such an occurrence could materially adversely affect the value of the product candidate being developed under any such agreement. Termination of these agreements or reduction or elimination of our rights under these agreements, or restrictions on our ability to freely assign or sublicense our rights under such agreements when it is in the interest of our business to do so, may result in our having to negotiate new or reinstated agreements with less favorable terms, cause us to lose our rights under these agreements, including our rights to important intellectual property or technology or impede, or delay or prohibit the further development or commercialization of one or more product candidates that rely on such agreements.

If we do not obtain patent term extension in the United States under the Hatch-Waxman Act and in non-U.S. countries under similar legislation, thereby potentially extending the term of our marketing exclusivity for any product candidates we may develop, our business may be materially harmed.

In the United States, the patent term of a patent that covers an FDA-approved drug may be eligible for limited patent term extension, which permits patent term restoration as compensation for the patent term lost during the FDA regulatory review process. The Drug Price Competition and Patent Term Restoration Act of 1984, also known as the Hatch-Waxman Act, permits a patent term extension of up to five years beyond the expiration of the patent. The length of the patent term extension is related to the length of time the drug is under regulatory review. Patent extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval, and only one patent applicable to an approved drug may be extended and only those claims covering the approved drug, a method for using it, or a method for manufacturing it may be extended. Similar provisions are available in Europe and certain other non-United States jurisdictions to extend the term of a patent that covers an approved drug. While, in the future, if and when any product candidates receive FDA approval, we expect to apply for patent term extensions on patents covering those product candidates, there is no guarantee that the applicable authorities will agree with our assessment of whether such extensions should be granted, and even if granted, the length of such extensions. We may not be granted patent term extension either in the United States or in any non-U.S. country because of, for example, failing to exercise due diligence during the testing phase or regulatory review process, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. Moreover, the term of extension, as well as the scope of patent protection during any such extension, afforded by the governmental authority could be less than we request. If we are unable to obtain any patent term extension or the term of any such extension is less than we request, our competitors may obtain approval of competing products following the expiration of our patent rights, and our business, financial condition, results of operations and prospects could be materially harmed.

It is possible that we will not obtain patent term extension under the Hatch-Waxman Act for a U.S. patent covering any of any product candidates that we may identify even where that patent is eligible for patent term extension, or if we obtain such an extension, it may be for a shorter period than we had sought. Further, for our licensed patents, we may not have the right to control prosecution, including filing with the USPTO a petition for patent term extension under the Hatch-Waxman Act. Thus, if one of our licensed patents is eligible for patent term extension under the Hatch-Waxman Act, we may not be able to control whether a petition to obtain a patent term extension is filed, or obtained, from the USPTO.

Also, there are detailed rules and requirements regarding the patents that may be submitted to the FDA for listing in the Approved Drug Products with Therapeutic Equivalence Evaluations, or the Orange Book. We may be unable to obtain patents covering any product candidates that contain one or more claims that satisfy the requirements for listing in the Orange Book. Even if we submit a patent for listing in the Orange Book, the FDA may decline to list the patent, or a manufacturer of generic drugs may challenge the listing. If a product candidate is approved and a patent covering that product candidate is not listed in the Orange Book, a manufacturer of generic drugs would not have to provide advance notice to us of any abbreviated new drug application filed with the FDA to obtain permission to sell a generic version of such product candidate.

Changes to patent laws in the United States and other jurisdictions could diminish the value of patents in general, thereby impairing our ability to protect our products.

Changes in either the patent laws or interpretation of patent laws in the United States, including patent reform legislation such as the Leahy-Smith America Invents Act, or the Leahy-Smith Act, could increase the uncertainties and costs surrounding the prosecution of our owned and in-licensed patent applications and the maintenance, enforcement or defense of our owned and in-licensed issued patents. The Leahy-Smith Act includes a number of significant changes to United States patent law. These changes include provisions that affect the way patent applications are prosecuted, redefine prior art, provide more efficient and cost-effective avenues for competitors to challenge the validity of patents, and enable third-party submission of prior art to the USPTO during patent prosecution and additional procedures to attack the validity of a patent at USPTO-administered post-grant proceedings, including post-grant review, *inter partes* review, and derivation proceedings. Assuming that other requirements for patentability are met, prior to March 2013, in the United States, the first to invent the claimed invention was entitled to the patent, while outside the United States, the first to file a patent application was entitled to the patent. After March 2013, under the Leahy-Smith Act, the United States transitioned to a first-to-file system in which, assuming that the other statutory requirements for patentability are met, the first inventor to file a patent application will be entitled to the patent on an invention regardless of whether a third party was the first to invent the claimed invention. As such, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

In addition, the patent positions of companies in the development and commercialization of biologics and pharmaceuticals are particularly uncertain. Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. This combination of events has created uncertainty with respect to the validity and enforceability of patents once obtained. Depending on future actions by the U.S. Congress, the federal courts, and the USPTO, the laws and regulations governing patents could change in unpredictable ways that could have a material adverse effect on our patent rights and our ability to protect, defend and enforce our patent rights in the future.

We and our licensor, and any future licensors, may become involved in lawsuits to protect or enforce our patent or other intellectual property rights, which could be expensive, time-consuming and unsuccessful.

Competitors and other third parties may infringe, misappropriate or otherwise violate our or our current and future licensors' issued patents or other intellectual property. As a result, we or any current or future licensor may need to file infringement, misappropriation or other intellectual property related claims, which can be expensive and time-consuming. Any claims we assert against perceived infringers could provoke such parties to assert counterclaims against us alleging that we infringe, misappropriate or otherwise violate their intellectual property. In addition, in a patent infringement proceeding, such parties could counterclaim that the patents we or our licensors have asserted are invalid or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO, or made a misleading statement, during prosecution. Third parties may institute such claims before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include re-examination, post-grant review, *inter partes* review, interference proceedings, derivation proceedings, and equivalent proceedings in non-U.S. jurisdictions (e.g., opposition proceedings). The outcome following legal assertions of invalidity and unenforceability is unpredictable.

An adverse result in any such proceeding could put one or more of our owned or in-licensed patents at risk of being invalidated or interpreted narrowly and could put any of our owned or in-licensed patent applications at

risk of not yielding an issued patent. A court may also refuse to stop the third party from using the technology at issue in a proceeding on the grounds that our owned or in-licensed patents do not cover such technology. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information or trade secrets could be compromised by disclosure during this type of litigation. Any of the foregoing could allow such third parties to develop and commercialize competing technologies and products and have a material adverse impact on our business, financial condition, results of operations and prospects.

Interference or derivation proceedings provoked by third parties, or brought by us or by our licensor, or declared by the USPTO may be necessary to determine the priority of inventions with respect to our patents or patent applications. An unfavorable outcome could require us to cease using the related technology or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us a license on commercially reasonable terms or at all, or if a non-exclusive license is offered and our competitors gain access to the same technology. Our defense of litigation or interference or derivation proceedings may fail and, even if successful, may result in substantial costs and distract our management and other employees. In addition, the uncertainties associated with litigation could have a material adverse effect on our ability to raise the funds necessary to continue our clinical trials, continue our research programs, license necessary technology from third parties, or enter into development partnerships that would help us bring any product candidates to market.

Third parties may initiate legal proceedings alleging that we are infringing, misappropriating or otherwise violating their intellectual property rights, the outcome of which would be uncertain and could have a material adverse effect on the success of our business.

Our commercial success depends upon our ability and the ability of our collaborators to develop, manufacture, market and sell any product candidates we may develop and use our proprietary technologies without infringing, misappropriating or otherwise violating the intellectual property and proprietary rights of third parties. There is considerable patent and other intellectual property litigation in the pharmaceutical and biotechnology industries. We may become party to, or threatened with, adversarial proceedings or litigation regarding intellectual property rights with respect to our technology and product candidates, including interference proceedings, post grant review, *inter partes* review, and derivation proceedings before the USPTO and similar proceedings in non-U.S. jurisdictions such as oppositions before the European Patent Office. Numerous U.S. and non-U.S. issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we are pursuing development candidates. As the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that our technologies or product candidates that we may identify may be subject to claims of infringement of the patent rights of third parties.

The legal threshold for initiating litigation or contested proceedings is low, so that even lawsuits or proceedings with a low probability of success might be initiated and require significant resources to defend. Litigation and contested proceedings can also be expensive and time-consuming, and our adversaries in these proceedings may have the ability to dedicate substantially greater resources to prosecuting these legal actions than we can. The risks of being involved in such litigation and proceedings may increase if and as any product candidates near commercialization and as we gain the greater visibility associated with being a public company. Third parties may assert infringement claims against us based on existing patents or patents that may be granted in the future, regardless of merit. We may not be aware of all such intellectual property rights potentially relating to our technology and product candidates and their uses, or we may incorrectly conclude that third-party intellectual property is invalid or that our activities and product candidates do not infringe such intellectual property. Thus, we do not know with certainty that our technology and product candidates, or our development and commercialization thereof, do not and will not infringe, misappropriate or otherwise violate any third party's intellectual property.

Third parties may assert that we are employing their proprietary technology without authorization. There may be third-party patents or patent applications with claims to materials, formulations or methods, such as

methods of manufacture or methods for treatment, related to the discovery, use or manufacture of the product candidates that we may identify or related to our technologies. Because patent applications can take many years to issue, there may be currently pending patent applications which may later result in issued patents that the product candidates that we may identify may infringe. In addition, third parties may obtain patents in the future and claim that use of our technologies infringes upon these patents. Moreover, as noted above, there may be existing patents that we are not aware of or that we have incorrectly concluded are invalid or not infringed by our activities. If any third-party patents were held by a court of competent jurisdiction to cover, for example, the manufacturing process of the product candidates that we may identify, any molecules formed during the manufacturing process or any final product itself, the holders of any such patents may be able to block our ability to commercialize such product candidate unless we obtained a license under the applicable patents, or until such patents expire.

Parties making claims against us may obtain injunctive or other equitable relief, which could effectively block our ability to further develop and commercialize the product candidates that we may identify. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of employee resources from our business. In the event of a successful claim of infringement against us, we may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, pay royalties, redesign our infringing products, be forced to indemnify our customers or collaborators or obtain one or more licenses from third parties, which may be impossible or require substantial time and monetary expenditure.

We may choose to take a license or, if we are found to infringe, misappropriate or otherwise violate a third party's intellectual property rights, we could also be required to obtain a license from such third party to continue developing, manufacturing and marketing our technology and product candidates. However, we may not be able to obtain any required license on commercially reasonable terms or at all. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors and other third parties access to the same technologies licensed to us and could require us to make substantial licensing and royalty payments. We could be forced, including by court order, to cease developing, manufacturing and commercializing the infringing technology or product. A finding of infringement could prevent us from commercializing any product candidates or force us to cease some of our business operations, which could materially harm our business. In addition, we may be forced to redesign any product candidates, seek new regulatory approvals and indemnify third parties pursuant to contractual agreements. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar material adverse effect on our business, financial condition, results of operations and prospects.

Intellectual property litigation or other legal proceedings relating to intellectual property could cause us to spend substantial resources and distract our personnel from their normal responsibilities.

Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities. We may not have sufficient financial or other resources to conduct such litigation or proceedings adequately. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources and may also have an advantage in such proceedings due to their more mature and developed intellectual property portfolios. Uncertainties resulting from the initiation and continuation of intellectual property litigation or other proceedings could compromise our ability to compete in the marketplace.

Obtaining and maintaining patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance, renewal and annuity fees and various other government fees on any issued patent and pending patent application must be paid to the USPTO and non-U.S. patent agencies in several stages or annually over the lifetime of our owned and in-licensed patents and patent applications. The USPTO and various non-U.S. governmental patent agencies also require compliance with a number of procedural, documentary and other similar provisions during the patent application process. In certain circumstances, we may rely on our licensing partners to pay these fees to, or comply with the procedural and documentary rules of, the relevant patent agency. With respect to our patents, we rely on an annuity service, outside firms and outside counsel to remind us of the due dates and to make payment after we instruct them to do so. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which non-compliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Non-compliance events that could result in abandonment or lapse of a patent or patent application include failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. In such an event, potential competitors might be able to enter the market with similar or identical products or technology. If we or our current or future licensors fail to maintain the patents and patent applications covering any product candidates, it may have a material adverse effect on our business, financial condition, results of operations and prospects.

We may not be able to protect our intellectual property and proprietary rights throughout the world.

Filing, prosecuting and defending patents on product candidates in all countries throughout the world would be prohibitively expensive, and the laws of non-U.S. countries may not protect our rights to the same extent as the laws of the United States. In addition, the laws of some non-U.S. countries do not protect intellectual property rights to the same extent as federal and state laws in the United States, and even where such protection is nominally available, judicial and governmental enforcement of such intellectual property rights may be lacking. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we have patent protection or licenses but enforcement is not as strong as that in the United States. These products may compete with our products, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in non-U.S. jurisdictions. The legal systems of certain countries do not favor the enforcement of patents, trade secrets, and other intellectual property rights, particularly those relating to biotechnology products, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our intellectual property and proprietary rights generally. In addition, certain jurisdictions do not protect to the same extent or at all inventions that constitute new methods of treatment.

Proceedings to enforce our intellectual property and proprietary rights in non-U.S. jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly, could put our patent applications at risk of not issuing, and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property and proprietary rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

Many countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In addition, many countries limit the enforceability of patents against government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of such patent. If we or any of our current or future licensors is forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position may be impaired, and our business, financial condition, results of operations and prospects may be adversely affected.

We may be subject to claims challenging the inventorship or ownership of our patents and other intellectual property.

We or our licensor may be subject to claims that former employees, collaborators or other third parties have an interest in our owned or in-licensed patents, trade secrets or other intellectual property as an inventor or co-inventor. For example, we or our licensor may have inventorship disputes arise from conflicting obligations of employees, consultants or others who are involved in developing any product candidates. Litigation may be necessary to defend against these and other claims challenging inventorship or our or our licensor's ownership of our owned or in-licensed patents, trade secrets or other intellectual property. If we or our licensor fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, intellectual property that is important to any product candidates. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

We may be subject to claims by third parties asserting that our employees, consultants or contractors have wrongfully used or disclosed confidential information of third parties, or we have wrongfully used or disclosed alleged trade secrets of their current or former employers or claims asserting we have misappropriated their intellectual property, or claiming ownership of what we regard as our own intellectual property.

Certain of our employees, consultants and contractors were previously employed at universities or other pharmaceutical or biotechnology companies, including our competitors or potential competitors. Although we try to ensure that our employees, consultants and contractors do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that these individuals or we have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such individual's current or former employer. Litigation may be necessary to defend against these claims.

In addition, while it is our policy to require that our employees, consultants and contractors who may be involved in the development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who in fact develops intellectual property that we regard as our own. Our intellectual property assignment agreements with them may not be self-executing or may be breached, and we may be forced to bring claims against third parties, or defend claims they may bring against us, to determine the ownership of what we regard as our intellectual property. Such claims could have a material adverse effect on our business, financial conditions, results of operations and prospects.

If we fail in prosecuting or defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel, which could have a material adverse effect on our competitive business position and prospects. Such intellectual property rights could be awarded to a third party, and we could be required to obtain a license from such third party to commercialize our technology or products, which license may not be available on commercially reasonable terms, or at all, or such license may be non-exclusive. Even if we are successful in prosecuting or defending against such claims, litigation could result in substantial costs and be a distraction to our management and employees.

If we are unable to protect the confidentiality of our trade secrets, our business and competitive position may be harmed.

In addition to seeking patents for any product candidates, we also rely on trade secrets and confidentiality agreements to protect our unpatented know-how, technology and other proprietary information, to maintain our competitive position. We seek to protect our trade secrets and other proprietary technology, in part, by entering into non-disclosure and confidentiality agreements with parties who have access to them, such as our employees, corporate collaborators, outside scientific collaborators, contract research organizations, contract manufacturers, consultants, advisors and other third parties. We also enter into confidentiality and invention or patent assignment agreements with our employees and consultants, but we cannot guarantee that we have entered into such agreements with each party that may have or has had access to our trade secrets or proprietary technology. Despite these efforts, any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Detecting the disclosure or misappropriation of a trade secret and enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts inside and outside of the United States are less willing or unwilling to protect trade secrets. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor or other third party, we would have no right to prevent them, or those to whom they communicate it, from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor or other third party, our competitive position may be materially and adversely harmed.

Intellectual property rights do not necessarily address all potential threats.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations and may not adequately protect our business or permit us to maintain our competitive advantage. For example:

- others may be able to make product candidates that are similar to ours but that are not covered by the claims of the patents that we own;
- we, or our license partners or current or future collaborators, might not have been the first to make the inventions covered by the issued patent or pending patent applications that we license or may own in the future;
- we, or our license partners or current or future collaborators, might not have been the first to file patent applications covering certain of our or their inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our owned or in-licensed intellectual property rights;
- it is possible that our owned and in-licensed pending patent applications or those we may own or in-license in the future will not lead to issued patents;
- issued patents that we hold rights to may be held invalid or unenforceable, including as a result of legal challenges by our competitors;
- our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we cannot ensure that any of our patents, or any of our pending patent applications, if issued, or those of our licensor, will include claims having a scope sufficient to protect any product candidates;
- we cannot ensure that any patents issued to us or our current or future licensors will provide a basis for an exclusive market for our commercially viable product candidates or will provide us with any competitive advantages;

- we cannot ensure that our commercial activities or product candidates will not infringe upon the patents of others;
- we cannot ensure that we will be able to successfully commercialize any product candidates on a substantial scale, if approved, before the relevant patents that we own or license expire;
- we may not develop additional proprietary technologies that are patentable;
- the patents of others may harm our business; and
- we may choose not to file a patent in order to maintain certain technology as a trade secrets or know-how, and a third party may subsequently file a patent application covering such technology.

Should any of these events occur, they could have a material adverse effect on our business, financial condition, results of operations and prospects.

Risks Related to Regulatory Approval of Our Product Candidates and Other Legal Compliance Matters

Even if we complete the necessary preclinical studies and clinical trials, the marketing approval process is expensive, time-consuming and uncertain and may prevent us from obtaining approvals for the commercialization of any product candidates. If we are not able to obtain, or if there are delays in obtaining, required regulatory approvals, we will not be able to commercialize any product candidates, and our ability to generate revenue will be materially impaired.

IMR-687 and any future product candidates we may identify and pursue and the activities associated with their development and commercialization, including design, testing, manufacture, packaging, recordkeeping, labeling, storage, approval, advertising, promotion, sale and distribution, export, import and adverse event reporting, are subject to comprehensive regulation by the FDA and other regulatory agencies in the United States and by the EMA and similar regulatory authorities outside of the United States. In addition, regulatory agencies may not approve the labeling claims that are necessary or desirable for the successful commercialization of any such product candidates. For example, the development of IMR-687 for the treatment of SCD in pediatric patients is an important part of our current business strategy, and if we are unable to obtain regulatory approval for the desired age ranges, our business may suffer.

Marketing approval of drugs in the United States requires the submission of a new drug application, or NDA, to the FDA and we are not permitted to market any product candidate in the United States until we obtain approval from the FDA of the NDA for that product. An NDA must be supported by extensive clinical and preclinical data, as well as extensive information regarding pharmacology, toxicology, and chemistry, manufacturing and controls. We have not submitted an application for or received marketing approval for IMR-687 and any other product candidates we may develop in the United States or in any other jurisdiction.

We have only limited experience in filing and supporting the applications necessary to gain marketing approvals and expect to rely on third-party clinical research organizations or other third-party consultants or vendors to assist us in this process. Securing marketing approval requires the submission of extensive preclinical and clinical data and supporting information to regulatory authorities for each therapeutic indication to establish the product candidate’s safety and efficacy. Securing marketing approval also requires the submission of information about the product manufacturing processes to, and inspection of manufacturing facilities by, the regulatory authorities. Our product candidates may not be effective, may be only moderately effective or may prove to have undesirable or unintended side effects, toxicities or other characteristics that may preclude our obtaining marketing approval or prevent or limit commercial use. If any of any product candidates receives marketing approval, the accompanying label may limit the approved use of our drug, which could limit sales of the product.

The process of obtaining marketing approvals, both in the United States and abroad, is expensive, may take many years, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the

type, complexity and novelty of the product candidates involved. Changes in marketing approval policies during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for each submitted product application may cause delays in the approval or rejection of an application. Regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data is insufficient for approval and require additional preclinical, clinical or other studies. In addition, varying interpretations of the data obtained from preclinical and clinical testing could delay, limit or prevent marketing approval of a product candidate. Any marketing approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved product not commercially viable.

If we experience delays in obtaining approval or if we fail to obtain approval of IMR-687 and any other product candidates we may develop, the commercial prospects for any product candidates may be harmed and our ability to generate revenues will be materially impaired.

We may not be able to obtain or maintain orphan drug designation or exclusivity for any product candidates and, even if we do, that exclusivity may not prevent the FDA or the EMA from approving other competing products.

We hold orphan drug designation for IMR-687 for SCD in the United States, and we may seek orphan drug designation for other future product candidates. Regulatory authorities in some jurisdictions, including the United States and the European Union, may designate drugs for relatively small patient populations as orphan drugs. Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a patient population of fewer than 200,000 individuals in the United States.

Generally, if a product with an orphan drug designation subsequently receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the FDA or the EMA from approving another marketing application for the same drug for that time period. The applicable period is seven years in the United States and ten years in the European Union. The exclusivity period in the European Union can be reduced to six years if a drug no longer meets the criteria for orphan drug designation or if the drug is sufficiently profitable so that market exclusivity is no longer justified. Orphan drug exclusivity may be lost if the FDA or EMA determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition.

Even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because competing drugs containing a different active ingredient can be approved for the same condition. In addition, even after an orphan drug is approved, the FDA can subsequently approve the same drug for the same condition if the FDA concludes that the later drug is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care.

On August 3, 2017, the U.S. Congress passed the FDA Reauthorization Act of 2017, or FDARA. FDARA, among other things, codified the FDA's pre-existing regulatory interpretation to require that a drug sponsor demonstrate the clinical superiority of an orphan drug that is otherwise the same as a previously approved drug for the same rare disease in order to receive orphan drug exclusivity. The new legislation reverses prior precedent holding that the Orphan Drug Act unambiguously requires that the FDA recognize the orphan exclusivity period regardless of a showing of clinical superiority. The FDA may further reevaluate the Orphan Drug Act and its regulations and policies. We do not know if, when or how the FDA may change the orphan drug regulations and policies in the future, and it is uncertain how any changes might affect our business. Depending on what changes the FDA may make to its orphan drug regulations and policies, our business could be adversely impacted.

Although we have obtained Rare Pediatric Disease Designation, or RPDD, for IMR-687 for the treatment of SCD, we may not be eligible to receive a priority review voucher in the event that FDA approval does not occur prior to October 1, 2022.

The Rare Pediatric Disease Priority Review Voucher Program, or PRV Program, is intended to incentivize pharmaceutical sponsors to develop drugs for rare pediatric diseases. A sponsor who obtains approval of an NDA or BLA for a rare pediatric disease may be eligible for a Priority Review Voucher, or PRV, under this program, which may be redeemed by the owner of such PRV to obtain priority review for a marketing application. A PRV is fully transferrable and can be sold to any sponsor, who in turn can redeem the PRV for priority review of a marketing application in six months, compared to the standard timeframe of approximately 10 months. Under the 21st Century Cures Act, a drug that receives RPDD before October 1, 2020, will continue to be eligible for a PRV if the drug is approved before October 1, 2022. If we do not obtain approval of an NDA for IMR-687 for SCD, and if the PRV Program is not extended by congressional action, we may not receive a PRV.

A Fast Track designation by the FDA may not lead to a faster development or regulatory review or approval process.

We have received Fast Track designation for IMR-687 from the FDA, and we may seek Fast Track designation for other product candidates we may develop. If a drug is intended for the treatment of a serious or life-threatening condition and the drug demonstrates the potential to address unmet medical needs for this condition, the drug sponsor may apply for FDA Fast Track designation. The FDA has broad discretion whether or not to grant this designation, so even if we believe a particular product candidate is eligible for this designation, we cannot assure you that the FDA would decide to grant it. Even if we do receive Fast Track designation, we may not experience a faster development process, review or approval compared to conventional FDA procedures. The FDA may withdraw Fast Track designation if it believes that the designation is no longer supported by data from our clinical development program.

Accelerated approval by the FDA, even if granted for any product candidates, may not lead to a faster development or regulatory review or approval process and it does not increase the likelihood that any product candidates will receive marketing approval.

We may seek approval of IMR-687 and any other product candidates we may develop using the FDA's accelerated approval pathway. A product may be eligible for accelerated approval if it treats a serious or life-threatening condition and generally provides a meaningful advantage over available therapies. In addition, it must demonstrate an effect on a biomarker efficacy endpoint that is reasonably likely to predict clinical benefit or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, or IMM, that is reasonably likely to predict an effect on IMM or other clinical benefit. The FDA makes the determination regarding whether a biomarker efficacy endpoint is reasonably likely to predict long-term clinical benefit.

Prior to seeking such accelerated approval, we will seek feedback from the FDA and otherwise evaluate our ability to seek and receive such accelerated approval. As a condition of accelerated approval, the FDA may require that a sponsor of a drug or biologic product candidate receiving accelerated approval perform adequate and well-controlled post-marketing clinical trials. These confirmatory trials must be completed with due diligence and we may be required to evaluate different or additional endpoints in these post-marketing confirmatory trials. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials, which could adversely impact the timing of the commercial launch of the product.

There can be no assurance that the FDA will agree with our biomarker efficacy endpoints or intermediate clinical endpoints, including red blood cell biomarkers and adhesion/white blood cell markers, or that we will decide to pursue or submit an NDA for accelerated approval or any other form of expedited development, review or approval. Similarly, there can be no assurance that, after feedback from FDA, we will continue to pursue or apply for accelerated approval or any other form of expedited development, review or approval, even if we

initially decide to do so. Furthermore, if we decide to submit an application for accelerated approval or under another expedited regulatory designation, there can be no assurance that such submission or application will be accepted or that any expedited review or approval will be granted on a timely basis, or at all.

Moreover, as noted above, for drugs granted accelerated approval, the FDA typically requires post-marketing confirmatory trials to evaluate the anticipated effect on IMM or other clinical benefit. These confirmatory trials must be completed with due diligence. We may be required to evaluate additional or different clinical endpoints in these post-marketing confirmatory trials. These confirmatory trials may require enrollment of more patients than we currently anticipate and will result in additional costs, which may be greater than the estimated costs we currently anticipate. The FDA may withdraw approval of a product candidate approved under the accelerated approval pathway if, for example, the trial required to verify the predicted clinical benefit of our product candidate fails to verify such benefit or does not demonstrate sufficient clinical benefit to justify the risks associated with the drug. The FDA may also withdraw approval if other evidence demonstrates that our product candidate is not shown to be safe or effective under the conditions of use, we fail to conduct any required post approval trial of our product candidate with due diligence or we disseminate false or misleading promotional materials relating to our product candidate. A failure to obtain accelerated approval or any other form of expedited development, review or approval for IMR-687 and any other product candidates we may develop, or withdrawal of a product candidate, would result in a longer time period for commercialization of such product candidate, could increase the cost of development of such product candidate and could harm our competitive position in the marketplace.

Even if we do receive accelerated approval, we may not experience a faster development or regulatory review or approval process and receiving accelerated approval does not provide assurance of ultimate FDA approval.

Failure to obtain marketing approval in foreign jurisdictions would prevent any product candidates from being marketed abroad.

In order to market and sell our products in the European Union and many other foreign jurisdictions, we or our potential third-party collaborators must obtain separate marketing approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and can involve additional testing. The time required to obtain approval may differ substantially from that required to obtain FDA approval. The regulatory approval process outside of the United States generally includes all of the risks associated with obtaining FDA approval. In addition, in many countries outside of the United States, it is required that the product be approved for reimbursement before the product can be approved for sale in that country. We or our potential third-party collaborators may not obtain approvals from regulatory authorities outside of the United States on a timely basis, if at all. Approval by the FDA does not ensure approval by regulatory authorities in other countries or jurisdictions, and approval by one regulatory authority outside of the United States does not ensure approval by regulatory authorities in other countries or jurisdictions or by the FDA. However, a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory process in other countries. We may not be able to file for marketing approvals and may not receive necessary approvals to commercialize our products in any market.

Additionally, on June 23, 2016, the electorate in the United Kingdom voted in favor of leaving the European Union, commonly referred to as Brexit. On March 29, 2017, the United Kingdom formally notified the European Union of its intention to withdraw pursuant to Article 50 of the Lisbon Treaty. The United Kingdom had a period of a maximum of two years from the date of its formal notification to negotiate the terms of its withdrawal from, and future relationship with, the European Union. If no formal withdrawal agreement can be reached between the United Kingdom and the European Union, then it is expected that the United Kingdom’s membership of the European Union would automatically terminate on the deadline, which was initially March 29, 2019. That deadline has been extended to October 31, 2019 to allow the parties to negotiate a withdrawal agreement, which has proven to be extremely difficult to date. Discussions between the United Kingdom and the European Union

will continue to focus on withdrawal issues and transition agreements. However, limited progress to date in these negotiations and ongoing uncertainty within the government of the United Kingdom sustains the possibility of the United Kingdom leaving the European Union without a withdrawal agreement and associated transition period in place, which is likely to cause significant market and economic disruption.

Since a significant proportion of the regulatory framework in the United Kingdom is derived from European Union directives and regulations, Brexit could materially impact the regulatory regime with respect to the approval of any product candidates in the United Kingdom or the European Union. Any delay in obtaining, or an inability to obtain, any marketing approvals, as a result of Brexit or otherwise, would prevent us from commercializing any product candidates in the United Kingdom and/or the European Union and restrict our ability to generate revenue and achieve and sustain profitability. If any of these outcomes occur, we may be forced to restrict or delay efforts to seek regulatory approval in the United Kingdom and/or European Union for any product candidates, which could significantly and materially harm our business.

In light of the large population of patients with SCD who reside in foreign countries, our ability to generate meaningful revenues in those jurisdictions may be limited due to the strict price controls and reimbursement limitations imposed by governments outside of the United States.

In some countries, particularly in the European Union, the pricing of prescription pharmaceuticals is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after the receipt of marketing approval for a drug. To obtain coverage and reimbursement or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost-effectiveness of our product candidate to other available therapies. If reimbursement of our product candidates is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our business could be harmed, possibly materially, based on the large population of patients with SCD who reside in foreign countries.

Any product candidate for which we obtain marketing approval could be subject to post-marketing restrictions or withdrawal from the market and we may be subject to substantial penalties if we fail to comply with regulatory requirements or if we experience unanticipated problems with our products, when and if any of them are approved.

Any product candidate for which we obtain marketing approval, along with the manufacturing processes, post-approval clinical data, labeling, advertising and promotional activities for such product, will be subject to continual requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, registration and listing requirements, cGMP requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping. Even if marketing approval of a product candidate is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or to the conditions of approval, including the requirement to implement a REMS. If any product candidate receives marketing approval, the accompanying label may limit the approved use of our drug, which could limit sales of the product.

The FDA may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of the product, including the adoption and implementation of REMS. The FDA and other agencies, including the Department of Justice, or the DOJ, closely regulate and monitor the post-approval marketing and promotion of drugs to ensure, among other things, that they are marketed and distributed only for the approved indications and in accordance with the provisions of the approved labeling. The FDA and other agencies impose and enforce stringent restrictions on manufacturers' communications regarding off-label use, and if we promote our products beyond their approved indications, we may be subject to enforcement action or prosecution arising from off-label promotion. Violations of the Federal Food, Drug and Cosmetic Act, or FDCA, and other statutes relating to the promotion and advertising of prescription drugs may lead to investigations and enforcement actions alleging violations of federal and state healthcare fraud and abuse laws, including the False Claims Act, as well as state consumer protection laws.

In addition, later discovery of previously unknown adverse events or other problems with our products, manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may have various consequences, including:

- suspension of or restrictions on such products, manufacturers or manufacturing processes;
- restrictions and warnings on the labeling or marketing of a product;
- restrictions on product distribution or use;
- requirements to conduct post-marketing studies or clinical trials;
- warning letters or untitled letters;
- withdrawal of the products from the market;
- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of products;
- fines, restitution or disgorgement of profits or revenues;
- suspension of any ongoing clinical trials;
- suspension or withdrawal of marketing approvals;
- damage to relationships with any potential collaborators;
- unfavorable press coverage and damage to our reputation;
- refusal to permit the import or export of our products;
- product seizure or detention;
- injunctions or the imposition of civil or criminal penalties; or
- litigation involving patients using our products.

Non-compliance with European Union requirements regarding safety monitoring or pharmacovigilance, and with requirements related to the development of products for the pediatric population, can also result in significant financial penalties. Similarly, failure to comply with the European Union's requirements regarding the protection of personal information can also lead to significant penalties and sanctions.

In addition, manufacturers of approved products and those manufacturers' facilities are required to comply with extensive FDA requirements, including ensuring that quality control and manufacturing procedures conform to cGMPs applicable to drug manufacturers or quality assurance standards applicable to medical device manufacturers, which include requirements relating to quality control and quality assurance as well as the corresponding maintenance of records and documentation and reporting requirements. We, any contract manufacturers we may engage in the future, our future collaborators and their contract manufacturers will also be subject to other regulatory requirements, including submissions of safety and other post-marketing information and reports, registration and listing requirements, requirements regarding the distribution of samples to clinicians, recordkeeping, and costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of the product such as the requirement to implement a REMS.

The efforts of the federal administration to pursue regulatory reform may limit the FDA's ability to engage in oversight and implementation activities in the normal course, and that could negatively impact our business.

The federal administration has taken several executive actions, including the issuance of a number of executive orders, that could impose significant burdens on, or otherwise materially delay, the FDA's ability to engage in routine regulatory and oversight activities such as implementing statutes through rulemaking, issuance

of guidance, and review and approval of marketing applications. On January 30, 2017, President Trump issued an executive order, applicable to all executive agencies, including the FDA, requiring that for each notice of proposed rulemaking or final regulation to be issued in fiscal year 2017, the agency shall identify at least two existing regulations to be repealed, unless prohibited by law. These requirements are referred to as the "two-for-one" provisions. This executive order includes a budget neutrality provision that requires the total incremental cost of all new regulations in the 2017 fiscal year, including repealed regulations, to be no greater than zero, except in limited circumstances. For fiscal years 2018 and beyond, the executive order requires agencies to identify regulations to offset any incremental cost of a new regulation. In interim guidance issued by the Office of Information and Regulatory Affairs within the Office of Management and on February 2, 2017, the administration indicates that the "two-for-one" provisions may apply not only to agency regulations, but also to significant agency guidance documents. It is difficult to predict how these requirements will be implemented, and the extent to which they will impact the FDA's ability to exercise its regulatory authority. If these executive actions impose constraints on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted.

Our current and future operations are subject to applicable anti-kickback, fraud and abuse, false claims, transparency, health information privacy and security, and other healthcare laws and regulations. If we are unable to comply, or do not fully comply, with such laws and regulations, we could face substantial penalties.

If we obtain regulatory approval and commercialize any products, healthcare providers, physicians and third-party payors will play a primary role in the recommendation and prescription of any product candidates for which we obtain marketing approval. Our operations, including arrangements with healthcare providers, physicians and third-party payors may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute any products for which we obtain marketing approval. In addition, we may be subject to transparency laws and patient privacy regulations by U.S. federal and state governments and by governments in foreign jurisdictions in which we conduct our business. Restrictions under applicable federal and state healthcare laws and regulations include, but are not limited to, the following:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, order or recommendation or arranging of, any good or service, for which payment may be made under a federal healthcare program such as Medicare and Medicaid;
- Federal civil and criminal false claims laws, such as the federal False Claims Act, which can be enforced through civil whistleblower actions, and civil monetary penalty laws, which prohibit, among other things, knowingly presenting, or causing to be presented, false or fraudulent claims for payment by a federal healthcare program or making a false statement or record material to payment of a false claim or avoiding, decreasing or concealing an obligation to pay money to the federal government;
- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which prohibits, among other things, executing a scheme to defraud any healthcare benefit program, making any materially false, fictitious, or fraudulent statements in connection with the delivery of, or payment for, healthcare benefits, items or services relating to healthcare matters, or obtain, by means of false or fraudulent pretenses, representations, or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of the payor (e.g., public or private), willfully obstructing a criminal investigation of a healthcare offense, and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and their respective implementing regulations, which impose obligations, including mandatory contractual terms, on "covered entities," including certain healthcare providers, health plans, and healthcare clearinghouses, as well as their respective "business associates" that create, receive,

maintain or transmit individually identifiable health information for or on behalf of a covered entity, with respect to safeguarding the privacy, security and transmission of individually identifiable health information

- the FDCA, which prohibits, among other things, the adulteration or misbranding of drugs, biologics and medical devices;
- the federal Physician Payments Sunshine Act requires applicable manufacturers of covered drugs, devices, biologics, and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report annually to the Centers for Medicare & Medicaid Services, or CMS, payments and other transfers of value to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members; and
- analogous state and foreign laws and regulations, such as state anti- kickback and false claims laws and transparency laws, may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers.

Some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government and may require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures. Additionally, some state and local laws require the registration of pharmaceutical sales representatives in the jurisdiction. State and foreign laws also govern the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations, including anticipated activities that would be conducted by our sales team, are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, disgorgement, fines, imprisonment, exclusion of products from government funded healthcare programs, such as Medicare and Medicaid, additional reporting requirements and/or oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws and the curtailment or restructuring of our operations. In addition, we may also experience reputational harm, diminished profits and future earnings. If any of the physicians or other healthcare providers or entities with whom we expect to do business is found to be not in compliance with applicable laws, they may be subject to significant criminal, civil or administrative sanctions, including exclusions from participation in government funded healthcare programs.

Compliance with global privacy and data security requirements could result in additional costs and liabilities to us or inhibit our ability to collect and process data globally, and the failure to comply with such requirements could subject us to significant fines and penalties, which may have a material adverse effect on our business, financial condition or results of operations.

The regulatory framework for the collection, use, safeguarding, sharing, transfer and other processing of information worldwide is rapidly evolving and is likely to remain uncertain for the foreseeable future. Globally, virtually every jurisdiction in which we operate has established its own data security and privacy frameworks with which we must comply. For example, the collection, use, disclosure, transfer, or other processing of personal data regarding individuals in the European Union, including personal health data, is subject to the European Union General Data Protection Regulation, or the GDPR, which took effect across all member states of the European Economic Area, or EEA, in May 2018. The GDPR is wide-ranging in scope and imposes numerous

requirements on companies that process personal data, including requirements relating to processing health and other sensitive data, obtaining consent of the individuals to whom the personal data relates, providing information to individuals regarding data processing activities, implementing safeguards to protect the security and confidentiality of personal data, providing notification of data breaches, and taking certain measures when engaging third-party processors. The GDPR increases our obligations with respect to clinical trials conducted in the EEA by expanding the definition of personal data to include coded data and requiring changes to informed consent practices and more detailed notices for clinical trial subjects and investigators. In addition, the GDPR also imposes strict rules on the transfer of personal data to countries outside the European Union, including the United States and, as a result, increases the scrutiny that such rules should apply to transfers of personal data from clinical trial sites located in the EEA to the United States. The GDPR also permits data protection authorities to require destruction of improperly gathered or used personal information and/or impose substantial fines for violations of the GDPR, which can be up to four percent of global revenues or 20 million Euros, whichever is greater, and confers a private right of action on data subjects and consumer associations to lodge complaints with supervisory authorities, seek judicial remedies, and obtain compensation for damages resulting from violations of the GDPR. In addition, the GDPR provides that European Union member states may make their own further laws and regulations limiting the processing of personal data, including genetic, biometric or health data.

Given the breadth and depth of changes in data protection obligations, preparing for and complying with the GDPR's requirements is rigorous and time intensive and requires significant resources and a review of our technologies, systems and practices, as well as those of any third-party collaborators, service providers, contractors or consultants that process or transfer personal data collected in the European Union. The GDPR and other changes in laws or regulations associated with the enhanced protection of certain types of sensitive data, such as healthcare data or other personal information from our clinical trials, could require us to change our business practices and put in place additional compliance mechanisms, may interrupt or delay our development, regulatory and commercialization activities and increase our cost of doing business, and could lead to government enforcement actions, private litigation and significant fines and penalties against us and could have a material adverse effect on our business, financial condition or results of operations.

Similar privacy and data security requirements are either in place or underway in the United States. There are a broad variety of data protection laws that may be applicable to our activities, and a range of enforcement agencies at both the state and federal levels that can review companies for privacy and data security concerns based on general consumer protection laws. The Federal Trade Commission and state Attorneys General all are aggressive in reviewing privacy and data security protections for consumers. New laws also are being considered at both the state and federal levels. For example, the California Consumer Privacy Act, which goes into effect in 2020, is creating similar risks and obligations as those created by GDPR. Many other states are considering similar legislation. A broad range of legislative measures also have been introduced at the federal level. Accordingly, failure to comply with current and any future federal and state laws regarding privacy and security of personal information could expose us to fines and penalties. We also face a threat of consumer class actions related to these laws and the overall protection of personal data. Even if we are not determined to have violated these laws, investigations into these issues typically require the expenditure of significant resources and generate negative publicity, which could harm our reputation and our business.

Recently enacted and future legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize any product candidates and affect the prices we may obtain for any products that are approved in the United States or foreign jurisdictions.

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of any product candidates, restrict or regulate post-approval activities and affect our ability to profitably sell any product candidates for which we obtain marketing approval. The pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by legislative initiatives. Current laws, as well as other

healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and in additional downward pressure on the price that we receive for any FDA-approved product.

In March 2010, President Obama signed into law the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively the ACA. Among the provisions of the ACA of potential importance to our business, including, without limitation, our ability to commercialize our product candidates and the prices we may obtain for any product candidates that are approved for sale, are the following:

- an annual, non-deductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents, apportioned among these entities according to their market share in certain government healthcare programs, although this fee would not apply to sales of certain products approved exclusively for orphan indications;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program;
- expansion of healthcare fraud and abuse laws, including the civil False Claims Act and the federal Anti-Kickback Statute, new government investigative powers and enhanced penalties for non-compliance;
- a Medicare Part D coverage gap discount program, in which manufacturers must now agree to offer 70% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D;
- extension of manufacturers' Medicaid rebate liability;
- expansion of eligibility criteria for Medicaid programs;
- expansion of the entities eligible for discounts under the Public Health Service pharmaceutical pricing program; and
- a Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

Some of the provisions of the ACA have yet to be implemented, and there have been judicial and Congressional challenges to certain aspects of the ACA, as well as recent efforts by the Trump administration to repeal or replace certain aspects of the ACA. For example, with the enactment of the TCJA, Congress repealed the ACA's "individual mandate" to carry health insurance, effective January 1, 2019. Additionally, on January 22, 2018, President Trump signed a continuing resolution on appropriations for fiscal year 2018 that delayed the implementation of certain ACA-mandated fees, including the so-called "Cadillac" tax on certain high cost employer-sponsored insurance plans, the annual fee imposed on certain health insurance providers based on market share, and the medical device excise tax on non-exempt medical devices. Further, the Bipartisan Budget Act of 2018, among other things, amends the ACA, effective January 1, 2019, to increase from 50% to 70% the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D and to close the coverage gap in most Medicare drug plans, commonly referred to as the "donut hole". In addition, the Trump administration has also taken executive actions to undermine or delay implementation of the ACA. Since January 2017, President Trump has signed two Executive Orders designed to delay the implementation of certain provisions of the ACA or otherwise circumvent some of the requirements for health insurance mandated by the ACA. One Executive Order directs federal agencies with authorities and responsibilities under the ACA to waive, defer, grant exemptions from, or delay the implementation of any provision of the ACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. The second Executive Order terminates the cost-sharing subsidies that reimburse insurers under the ACA. Several state Attorneys General filed suit to stop the administration from terminating the subsidies, but their request for a restraining order was denied by a federal judge in California on October 25, 2017.

Further, on December 14, 2018, a U.S. District Court judge in the Northern District of Texas ruled that the individual mandate portion of the ACA is an essential and inseverable feature of the ACA, and therefore because the mandate was repealed as part of the TCJA, the remaining provisions of the ACA are invalid as well. While the Trump administration, CMS, and the Texas U.S. District Court Judge have stated that the ruling will have no immediate effect, it is unclear how this decision and any subsequent appeals and other efforts to repeal and replace the ACA will impact the ACA and our business. Litigation and legislation over the ACA are likely to continue, with unpredictable and uncertain results.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. These changes include the Budget Control Act of 2011, which, among other things, led to aggregate reductions to Medicare payments to providers of up to 2% per fiscal year that started in 2013 and, due to subsequent legislative amendments to the statute, will stay in effect through 2027 unless additional congressional action is taken, and the American Taxpayer Relief Act of 2012, which, among other things, reduced Medicare payments to several types of providers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

The costs of prescription pharmaceuticals have also been the subject of considerable discussion in the United States, and members of Congress and the Trump administration have stated that they will address such costs through new legislative, administrative and executive measures. To date, there have been several recent U.S. congressional inquiries and proposed and enacted state and federal legislation designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, reduce the costs of drugs under Medicare and reform government program reimbursement methodologies for drug products. At the federal level, the Trump administration's budget proposals for fiscal years 2019 and 2020 contain further drug price control measures that could be enacted during the budget process or in other future legislation, including, for example, measures to permit Medicare Part D plans to negotiate the price of certain drugs under Medicare Part B, to allow some states to negotiate drug prices under Medicaid, and to eliminate cost sharing for generic drugs for low-income patients. Further, the Trump administration released a "Blueprint" to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase drug manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products, and reduce the out of pocket costs of drug products paid by consumers. The United States Department of Health and Human Services has started soliciting feedback on some of these measures while concurrently implementing others under its existing authority. While some measures may require additional authorization to become effective, Congress and the Trump administration have each indicated that they will continue to seek new legislative and/or administrative measures to control drug costs.

At the state level, individual states are increasingly aggressive in passing legislation and implementing regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs. These measures could reduce the ultimate demand for our products, once approved, or put pressure on our product pricing. We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for any product candidates or additional pricing pressures.

Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for pharmaceutical products. We cannot be sure whether additional legislative changes will be enacted, or whether the FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the marketing approvals of any product candidates, if any, may be. Increased

scrutiny by the U.S. Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us to more stringent product labeling and post-marketing testing and other requirements.

We expect that these healthcare reforms, as well as other healthcare reform measures that may be adopted in the future, may result in additional reductions in Medicare and other healthcare funding, more rigorous coverage criteria, new payment methodologies and additional downward pressure on the price that we receive for any approved product and/or the level of reimbursement physicians receive for administering any approved product we might bring to market. Reductions in reimbursement levels may negatively impact the prices we receive or the frequency with which our products are prescribed or administered. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors.

If we or any third-party manufacturers we engage now or in the future fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs or liabilities that could harm our business.

We and third-party manufacturers we engage now are, and any third-party manufacturers we may engage in the future will be, subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations also produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. Liability under certain environmental laws governing the release and cleanup of hazardous materials is joint and several and could be imposed without regard to fault. We also could incur significant costs associated with civil or criminal fines and penalties or become subject to injunctions limiting or prohibiting our activities for failure to comply with such laws and regulations.

Although we maintain general liability insurance as well as workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological, hazardous or radioactive materials.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or production efforts. Our failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

Further, with respect to the operations of our current and any future third-party contract manufacturers, it is possible that if they fail to operate in compliance with applicable environmental, health and safety laws and regulations or properly dispose of wastes associated with our products, we could be held liable for any resulting damages, suffer reputational harm or experience a disruption in the manufacture and supply of any product candidates or products. In addition, our supply chain may be adversely impacted if any of our third-party contract manufacturers become subject to injunctions or other sanctions as a result of their non-compliance with environmental, health and safety laws and regulations.

We are subject to anti-corruption laws, as well as export control laws, customs laws, sanctions laws and other laws governing our operations. If we fail to comply with these laws, we could be subject to civil or criminal penalties, other remedial measures and legal expenses, be precluded from developing manufacturing and selling certain products outside the United States or be required to develop and implement costly compliance programs, which could adversely affect our business, results of operations and financial condition.

Our operations are subject to anti-corruption laws, including the U.K. Bribery Act 2010, or Bribery Act, the U.S. Foreign Corrupt Practices Act, or FCPA, and other anti-corruption laws that apply in countries where we do business and may do business in the future. The Bribery Act, FCPA and these other laws generally prohibit us, our officers, and our employees and intermediaries from bribing, being bribed or making other prohibited payments to government officials or other persons to obtain or retain business or gain some other business advantage. Compliance with the FCPA, in particular, is expensive and difficult, particularly in countries in which corruption is a recognized problem. In addition, the FCPA presents particular challenges in the pharmaceutical industry, because, in many countries, hospitals are operated by the government, and doctors and other hospital employees are considered foreign officials. Certain payments to hospitals in connection with clinical trials and other work have been deemed to be improper payments to government officials and have led to FCPA enforcement actions.

We may in the future operate in jurisdictions that pose a high risk of potential Bribery Act or FCPA violations, and we may participate in collaborations and relationships with third parties whose actions could potentially subject us to liability under the Bribery Act, FCPA or local anti-corruption laws. In addition, we cannot predict the nature, scope or effect of future regulatory requirements to which our international operations might be subject or the manner in which existing laws might be administered or interpreted. If we expand our operations outside of the United States, we will need to dedicate additional resources to comply with numerous laws and regulations in each jurisdiction in which we plan to operate.

We are also subject to other laws and regulations governing our international operations, including regulations administered by the governments of the United Kingdom and the United States, and authorities in the European Union, including applicable export control regulations, economic sanctions on countries and persons, customs requirements and currency exchange regulations, collectively referred to as the Trade Control laws. In addition, various laws, regulations and executive orders also restrict the use and dissemination outside of the United States, or the sharing with certain non-U.S. nationals, of information classified for national security purposes, as well as certain products and technical data relating to those products. If we expand our presence outside of the United States, it will require us to dedicate additional resources to comply with these laws, and these laws may preclude us from developing, manufacturing, or selling certain products and product candidates outside of the United States, which could limit our growth potential and increase our development costs.

There is no assurance that we will be completely effective in ensuring our compliance with all applicable anti-corruption laws, including the Bribery Act, the FCPA or other legal requirements, including Trade Control laws. If we are not in compliance with the Bribery Act, the FCPA and other anti-corruption laws or Trade Control laws, we may be subject to criminal and civil penalties, disgorgement and other sanctions and remedial measures, and legal expenses, which could have an adverse impact on our business, financial condition, results of operations and liquidity. The Securities and Exchange Commission, or SEC, also may suspend or bar issuers from trading securities on U.S. exchanges for violations of the FCPA's accounting provisions. Any investigation of any potential violations of the Bribery Act, the FCPA, other anti-corruption laws or Trade Control laws by United Kingdom, U.S. or other authorities could also have an adverse impact on our reputation, our business, results of operations and financial condition.

Our employees, independent contractors, consultants and vendors may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements and insider trading, which could cause significant liability for us and harm our reputation.

We are exposed to the risk of fraud or other misconduct by our employees, independent contractors, consultants and vendors. Misconduct by these partners could include intentional failures to comply with FDA regulations or similar regulations of comparable foreign regulatory authorities, provide accurate information to the FDA or comparable foreign regulatory authorities, comply with manufacturing standards, comply with federal and state healthcare fraud and abuse laws and regulations and similar laws and regulations established and enforced by comparable foreign regulatory authorities, report financial information or data accurately or disclose unauthorized activities to us. Employee misconduct could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. This could include violations of HIPAA, other U.S. federal and state law, and requirements of non-U.S. jurisdictions, including the European Union Data Protection Directive. We are also exposed to risks in connection with any insider trading violations by employees or others affiliated with us. It is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws, standards, regulations, guidance or codes of conduct. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business and results of operations, including the imposition of significant fines or other sanctions.

Our internal computer systems, or those of our collaborators or other contractors or consultants, may fail or suffer security breaches, which could result in a material disruption of our product development programs.

Our internal computer systems and those of any collaborators, contractors or consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. Such systems are also vulnerable to service interruptions or to security breaches from inadvertent or intentional actions by our employees, third-party vendors and/or business partners, or from cyberattacks by malicious third parties. Cyber incidents are increasing in their frequency, sophistication and intensity, and have become increasingly difficult to detect. Cyber incidents could include the deployment of harmful malware, ransomware, denial-of-service attacks, unauthorized access to or deletion of files, social engineering and other means to affect service reliability and threaten the confidentiality, integrity and availability of information. Cyber incidents also could include phishing attempts or e-mail fraud to cause payments or information to be transmitted to an unintended recipient.

While we have not experienced any material system failure, accident, cyber incidents or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs and our business operations, whether due to a loss of our trade secrets or other proprietary information or other similar disruptions. For example, the loss of clinical trial data from completed or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability, our competitive position and reputation could be harmed and the further development and commercialization of IMR-687 and any other product candidates we may develop could be delayed.

Risks Related to Employee Matters and Managing Growth

Our future success depends on our ability to retain key executives and to attract, retain and motivate qualified personnel.

We are highly dependent on the research and development, clinical, financial, operational and other business expertise of our executive officers, as well as the other principal members of our management, scientific and

clinical teams. Although we have entered into employment offer letters with our executive officers, each of them may terminate their employment with us at any time. We do not maintain “key person” insurance for any of our executives or other employees. Recruiting and retaining qualified scientific, clinical, manufacturing, accounting, legal and sales and marketing personnel will also be critical to our success.

The loss of the services of our executive officers or other key employees could impede the achievement of our research, development and commercialization objectives and seriously harm our ability to successfully implement our business strategy. Furthermore, replacing executive officers and key employees may be difficult and may take an extended period of time because of the limited number of individuals in our industry with the breadth of skills and experience required to successfully develop, gain regulatory approval of and commercialize products. Competition to hire from this limited pool is intense, and we may be unable to hire, train, retain or motivate these key personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us. Our success as a public company also depends on implementing and maintaining internal controls and the accuracy and timeliness of our financial reporting. If we are unable to continue to attract and retain high quality personnel, our ability to pursue our growth strategy will be limited.

We expect to expand our development and regulatory capabilities and potentially implement sales, marketing and distribution capabilities, and as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.

We expect to experience significant growth in the number of our employees and the scope of our operations, particularly in the areas of drug development, clinical, regulatory affairs and, if any product candidate receives marketing approval, sales, marketing and distribution. To manage our anticipated future growth, we must continue to implement and improve our managerial, operational and financial systems, expand our facilities and continue to recruit and train additional qualified personnel. Due to our limited financial resources and the limited experience of our management team in managing a company with such anticipated growth, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. The expansion of our operations may lead to significant costs and may divert our management and business development resources. Any inability to manage growth could delay the execution of our business plans or disrupt our operations.

Risks Related to this Offering, Ownership of Our Common Stock and Our Status as a Public Company

An active trading market for our common stock may not develop.

Prior to this offering, there has been no public market for our common stock. The initial public offering price for our common stock will be determined through negotiations with the underwriter. Although we intend to apply to have our common stock approved for listing on the Nasdaq Global Market, an active trading market for our shares may never develop or be sustained following this offering. If an active market for our common stock does not develop, it may be difficult for you to sell shares you purchase in this offering without depressing the market price for the shares or at all.

If you purchase shares of common stock in this offering, you will suffer immediate dilution of your investment.

The initial public offering price of our common stock will be substantially higher than the pro forma as adjusted net tangible book value per share of our common stock after this offering. Therefore, if you purchase

shares of our common stock in this offering, you will pay a price per share that substantially exceeds our pro forma as adjusted net tangible book value per share after this offering. Based on an assumed initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, you will experience immediate dilution of $ per share. To the extent outstanding options are exercised, you will incur further dilution.

If securities analysts do not publish or cease publishing research or reports or publish misleading, inaccurate or unfavorable research about our business or if they publish negative evaluations of our stock, the price and trading volume of our stock could decline.

The trading market for our common stock will rely, in part, on the research and reports that industry or financial analysts publish about us or our business. We do not currently have, and may never obtain, research coverage by industry or financial analysts. If no, or few, analysts commence coverage of us, the trading price of our stock would likely decrease. Even if we do obtain analyst coverage, if one or more of the analysts covering our business downgrade their evaluations of our stock or publish inaccurate or unfavorable research about our business, or provides more favorable relative recommendations about our competitors, the price of our stock could decline. If one or more of these analysts cease to cover our stock, we could lose visibility in the market for our stock, which in turn could cause our stock price and trading volume to decline.

The price of our common stock may be volatile and fluctuate substantially, which could result in substantial losses for purchasers of our common stock in this offering.

Our stock price is likely to be volatile. The stock market in general and the market for smaller biopharmaceutical companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. As a result of this volatility, you may not be able to sell your common stock at or above the initial public offering price. The market price for our common stock may be influenced by many factors, including:

- results of or developments in preclinical studies and clinical trials of IMR-687 and any other product candidates we may develop or those of our competitors or potential collaborators;
- timing of the results of our preclinical studies and clinical trials or those of our competitors;
- our success in commercializing any product candidates, if and when approved;
- the success of competitive products or technologies;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning patent applications, issued patents or other intellectual property or proprietary rights;
- the recruitment or departure of key personnel;
- the level of expenses related to IMR-687 and any other product candidates we may develop;
- the results of our efforts to discover, develop, acquire or in-license products, product candidates, technologies or data referencing rights, the costs of commercializing any such products and the costs of development of any such product candidates or technologies;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- variations in our financial results or the financial results of companies that are perceived to be similar to us;
- sales of common stock by us, our executive officers, directors or principal stockholders, or others;
- changes in the structure of healthcare payment systems;

- market conditions in the pharmaceutical and biotechnology sectors;
- general economic, industry and market conditions; and
- the other factors described in this “Risk Factors” section.

In the past, following periods of volatility in the market price of a company’s securities, securities class-action litigation has often been instituted against that company. Any lawsuit to which we are a party, with or without merit, may result in an unfavorable judgment. We also may decide to settle lawsuits on unfavorable terms. Any such negative outcome could result in payments of substantial damages or fines, damage to our reputation or adverse changes to our offerings or business practices. Such litigation may also cause us to incur other substantial costs to defend such claims and divert management’s attention and resources.

After this offering, our executive officers, directors and principal stockholders, if they choose to act together, will continue to have the ability to control all matters submitted to stockholders for approval.

Upon the closing of this offering, our executive officers and directors and our stockholders who owned more than 5% of our outstanding common stock before this offering will, in the aggregate, beneficially own shares representing approximately % of our capital stock. As a result, if these stockholders were to choose to act together, they would be able to control all matters submitted to our stockholders for approval, as well as our management and affairs. For example, these persons, if they choose to act together, would control the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets.

This concentration of ownership control may:

- delay, defer or prevent a change in control;
- entrench our management and board of directors; or
- delay or prevent a merger, consolidation, takeover or other business combination involving us that other stockholders may desire.

We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

Our management will have broad discretion in the application of the net proceeds from this offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our common stock. The failure by our management to apply these funds effectively could result in financial losses that could cause the price of our common stock to decline and delay the development of IMR-687 and any other product candidates we may develop. Pending their use, we may invest the net proceeds from this offering in a manner that does not produce income or that loses value.

Because we do not anticipate paying any cash dividends on our capital stock in the foreseeable future, capital appreciation, if any, will be your sole source of gain.

We have never declared or paid cash dividends on our capital stock. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business. As a result, capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future.

A significant portion of our total outstanding shares are eligible to be sold into the market in the near future, which could cause the market price of our common stock to drop significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of our

common stock. After this offering, we will have shares of common stock outstanding based on the number of shares outstanding as of , 2019. This includes the shares that we are selling in this offering, which may be resold in the public market immediately without restriction, unless purchased by our affiliates. The remaining shares are currently restricted as a result of securities laws or lock-up agreements, but will become eligible to be sold at various times after the offering as described in the section of this prospectus titled "Shares Eligible for Future Sale". The representatives of the underwriters may release some or all of the shares of common stock subject to lock-up agreements at any time and without notice, which would allow for earlier sales of shares in the public market.

Moreover, beginning 180 days after the completion of this offering, holders of an aggregate of shares of our common stock will have rights, along with holders of an additional shares of our common stock issuable upon exercise of outstanding options, subject to specified conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. We also intend to register all shares of common stock that we may issue under our equity compensation plans. Once we register these shares, they can be freely sold in the public market upon issuance, subject to volume limitations applicable to affiliates and the lock-up agreements described in the "Underwriters" section of this prospectus.

We are an "emerging growth company," and the reduced disclosure requirements applicable to emerging growth companies may make our common stock less attractive to investors.

We are an "emerging growth company," or EGC, as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. We may remain an EGC until the end of the fiscal year in which the fifth anniversary of this offering occurs, although if the market value of our common stock that is held by non-affiliates exceeds $700.0 million as of any June 30 before that time or if we have annual gross revenues of $1.07 billion or more in any fiscal year, we would cease to be an EGC as of December 31 of the applicable year. We also would cease to be an EGC if we issue more than $1.0 billion of non-convertible debt over a three-year period. For so long as we remain an EGC, we are permitted and intend to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not EGCs. These exemptions include:

- being permitted to provide only two years of audited financial statements in this prospectus, in addition to any required unaudited interim financial statements, with correspondingly reduced "Management's Discussion and Analysis of Financial Condition and Results of Operations" disclosure;
- not being required to comply with the auditor attestation requirements in the assessment of our internal control over financial reporting;
- not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements;
- reduced disclosure obligations regarding executive compensation; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

We have taken advantage of reduced reporting obligations in this prospectus. In particular, in this prospectus, we have provided only two years of audited financial statements and have not included all of the executive compensation related information that would be required if we were not an EGC.

We cannot predict whether investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

In addition, the JOBS Act permits an EGC to take advantage of an extended transition period to comply with new or revised accounting standards applicable to public companies until those standards would otherwise

apply to private companies. We have elected to take advantage of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, we will adopt the new or revised standard at the time private companies adopt the new or revised standard and will do so until such time that we either (1) irrevocably elect to "opt out" of such extended transition period or (2) no longer qualify as an EGC.

We will incur increased costs as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives and corporate governance practices.

As a public company, and particularly after we are no longer an EGC, we will incur significant legal, accounting and other expenses that we did not incur as a private company. The Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of the Nasdaq Global Market and other applicable securities rules and regulations impose various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations will increase our legal and financial compliance costs, particularly as we hire additional financial and accounting employees to meet public company internal control and financial reporting requirements, and will make some activities more time-consuming and costly. For example, we expect that these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance, which in turn could make it more difficult for us to attract and retain qualified members of our board of directors.

We are evaluating these rules and regulations, and cannot predict or estimate the amount of additional costs we may incur or the timing of such costs. These rules and regulations are often subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, or Section 404, we will be required to furnish a report by our management on our internal control over financial reporting. However, while we remain an EGC, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. To achieve compliance with Section 404 within the prescribed period, we will be engaged in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. In this regard, we will need to continue to dedicate internal resources, including through hiring additional financial and accounting personnel, potentially engage outside consultants and adopt a detailed work plan to assess and document the adequacy of internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are functioning as documented and implement a continuous reporting and improvement process for internal control over financial reporting. Despite our efforts, there is a risk that we will not be able to conclude, within the prescribed timeframe or at all, that our internal control over financial reporting is effective as required by Section 404. If we identify one or more material weaknesses in our internal control over financial reporting, it could result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of our financial statements.

If we fail to maintain an effective system of internal control over financial reporting, we may not be able to accurately report our financial results or prevent fraud. As a result, stockholders could lose confidence in our financial and other public reporting, which would harm our business and the trading price of our common stock.

Effective internal controls over financial reporting are necessary for us to provide reliable financial reports and, together with adequate disclosure controls and procedures, are designed to prevent fraud. Any failure to implement required new or improved controls, or difficulties encountered in their implementation could cause us

to fail to meet our reporting obligations. In addition, any testing by us conducted in connection with Section 404 of the Sarbanes-Oxley Act of 2002, or any subsequent testing by our independent registered public accounting firm, may reveal deficiencies in our internal controls over financial reporting that are deemed to be material weaknesses or that may require prospective or retroactive changes to our financial statements or identify other areas for further attention or improvement. Inferior internal controls could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our stock.

We will be required to disclose changes made in our internal controls and procedures on a quarterly basis and our management will be required to assess the effectiveness of these controls annually. However, for as long as we are an "emerging growth company" under the JOBS Act, our independent registered public accounting firm will not be required to attest to the effectiveness of our internal controls over financial reporting pursuant to Section 404. We could be an "emerging growth company" for up to five years. An independent assessment of the effectiveness of our internal controls over financial reporting could detect problems that our management's assessment might not. Undetected material weaknesses in our internal controls over financial reporting could lead to financial statement restatements and require us to incur the expense of remediation.

Our disclosure controls and procedures may not prevent or detect all errors or acts of fraud.

Upon completion of this offering, we will become subject to certain reporting requirements of the Exchange Act. Our disclosure controls and procedures are designed to reasonably assure that information required to be disclosed by us in reports we file or submit under the Exchange Act is accumulated and communicated to management, recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC. We believe that any disclosure controls and procedures or internal controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by an unauthorized override of the controls. Accordingly, because of the inherent limitations in our control system, misstatements or insufficient disclosures due to error or fraud may occur and not be detected.

Comprehensive tax reform legislation passed in 2017 could adversely affect our business and financial condition.

On December 22, 2017, the U.S. government enacted the TCJA, which significantly reformed the Internal Revenue Code of 1986, as amended, or the Code. The TCJA, among other things, contains significant changes to corporate taxation, including reducing the corporate tax rate from a top marginal rate of 34% to a flat rate of 21%, limiting the tax deduction for net interest expense to 30% of adjusted taxable income (except for certain small businesses), limiting the deduction for NOLs arising in taxable years beginning after December 31, 2017 to 80% of current year taxable income and elimination of NOL carrybacks for losses arising in taxable years ending after December 31, 2017 (though any such NOLs may be carried forward indefinitely), a one-time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, eliminating U.S. tax on foreign earnings (subject to certain important exceptions), immediate deductions for certain new investments instead of deductions for depreciation expense over time, and modifying or repealing many business deductions and credits. Notwithstanding the reduction in the corporate income tax rate, the overall impact of the TCJA remains uncertain and our business and financial condition could be adversely affected. In addition, how various states will respond to the TCJA continues to be uncertain. The impact of this tax reform on holders of our common stock is also uncertain and could be adverse. This prospectus does not discuss any such tax legislation or the manner in which it might affect us or investors in or holders of our common stock. We urge prospective investors in our common stock to consult with their legal and tax advisors with respect to TCJA and the potential tax consequences of investing in or holding our common stock.

Provisions in our corporate charter documents and under Delaware law could make an acquisition of our company, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current directors and members of management.

Provisions in our certificate of incorporation and our bylaws that will become effective upon the closing of this offering may discourage, delay or prevent a merger, acquisition or other change in control of our company that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, because our board of directors is responsible for appointing the members of our management team, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Among other things, these provisions:

- establish a classified board of directors such that only one of three classes of directors is elected each year;
- allow the authorized number of our directors to be changed only by resolution of our board of directors;
- limit the manner in which stockholders can remove directors from our board of directors;
- establish advance notice requirements for stockholder proposals that can be acted on at stockholder meetings and nominations to our board of directors;
- require that stockholder actions must be effected at a duly called stockholder meeting and prohibit actions by our stockholders by written consent;
- limit who may call stockholder meetings;
- authorize our board of directors to issue preferred stock without stockholder approval, which could be used to institute a “poison pill” that would work to dilute the stock ownership of a potential hostile acquirer, effectively preventing acquisitions that have not been approved by our board of directors; and
- require the approval of the holders of at least 75% of the votes that all our stockholders would be entitled to cast to amend or repeal specified provisions of our certificate of incorporation or bylaws that will become effective upon the closing of this offering.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, or the DGCL, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner.

Our certificate of incorporation that will become effective upon the closing of this offering designates the state courts in the State of Delaware as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could discourage lawsuits against the company and our directors, officers and employees.

Our certificate of incorporation that will become effective upon the closing of this offering provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery of the State of Delaware does not have jurisdiction, the federal district court for the District of Delaware) will be the sole and exclusive forum for the following types of proceedings under Delaware statutory or common law: (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers, employees or stockholders to our company or our stockholders, (3) any action asserting a claim arising pursuant to any provision of the DGCL or as to which the DGCL confers jurisdiction on the Court of Chancery of the State of Delaware or (4) any action asserting a claim arising pursuant to any provision of our certificate of incorporation or bylaws (in each case, as they may be amended from time to time) or governed by the internal affairs doctrine. For the avoidance of doubt, these choice of forum provisions will not apply to suits brought to enforce a duty or liability created by the Securities Act, the Exchange Act or any other claim for which federal courts have exclusive jurisdiction.

This exclusive forum provision may limit the ability of our stockholders to bring a claim in a judicial forum that such stockholders find favorable for disputes with us or our directors, officers or employees, which may discourage such lawsuits against us and our directors, officers and employees. Alternatively, if a court were to find the choice of forum provision contained in our certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could materially adversely affect our business, financial condition and operating results.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS AND INDUSTRY DATA

This prospectus contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical fact, contained in this prospectus, including statements regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans and objectives of management, are forward-looking statements. The words “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “might,” “plan,” “potential,” “predict,” “project,” “should,” “target,” “would,” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

The forward-looking statements in this prospectus include, among other things, statements about:

- the initiation, timing, progress and results of our current and future preclinical studies and clinical trials, including our ongoing Phase 2a clinical trial of IMR-687 in SCD and our planned Phase 2 clinical trial of IMR-687 in b-thalassemia;
- our estimates regarding expenses, future revenue, timing of any future revenue, capital requirements and need for additional financing;
- our plans to develop and, if approved, subsequently commercialize IMR-687 and any other product candidates, including in combination with other drugs and therapies;
- the timing of and our ability to submit applications for, obtain and maintain regulatory approvals for IMR-687 and any other product candidates we may identify and pursue;
- our expectations regarding our ability to fund our operating expenses and capital expenditure requirements with our cash and cash equivalents and proceeds from this offering;
- the potential advantages or differentiating features of IMR-687 and any other product candidates we may identify and pursue;
- the rate and degree of market acceptance and clinical utility of IMR-687 and any other product candidates we may identify and pursue;
- our estimates regarding the potential market opportunity for IMR-687 and any other product candidates we may identify and pursue;
- our commercialization, marketing and manufacturing capabilities and strategy;
- our expectations regarding our ability to obtain and maintain intellectual property protection for IMR-687 and any other product candidates we may identify and pursue;
- our ability to identify additional products, product candidates or technologies with significant commercial potential that are consistent with our commercial objectives;
- our expectations related to the use of proceeds from this offering;
- the impact of government laws and regulations;
- our competitive position and expectations regarding developments and projections relating to our competitors and any competing therapies that are or become available;
- our ability to maintain and establish collaborations or obtain additional funding; and
- our expectations regarding the time during which we will be an emerging growth company under the JOBS Act.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements

we make. In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

We have included important factors in the cautionary statements included in this prospectus, particularly in the “Risk Factors” section, that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, collaborations, joint ventures or investments we may make or enter into.

You should read this prospectus and the documents that we reference in this prospectus and have filed as exhibits to the registration statement of which this prospectus is a part completely and with the understanding that our actual future results may be materially different from what we expect. The forward-looking statements contained in this prospectus are made as of the date of this prospectus, and we do not assume any obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by applicable law.

This prospectus includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties as well as our own estimates of potential market opportunities. The market data used in this prospectus involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such data. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. Our estimates of the potential market opportunities for IMR-687 include several key assumptions based on our industry knowledge, industry publications, third-party research and other surveys, which may be based on a small sample size and may fail to accurately reflect market opportunities. While we believe that our internal assumptions are reasonable, no independent source has verified such assumptions.

USE OF PROCEEDS

We estimate that the net proceeds from our issuance and sale of shares of our common stock in this offering will be approximately $ million, or approximately $ million if the underwriters exercise in full their option to purchase additional shares of our common stock, assuming an initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, would increase or decrease the net proceeds to us from this offering by approximately $ million, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. A 1,000,000 share increase or decrease in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase or decrease the net proceeds to us from this offering by approximately $ million, assuming that the assumed initial public offering price per share remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. We do not expect that a change in the initial price to the public or the number of shares by these amounts would have a material effect on the uses of the proceeds from this offering, although it may accelerate the time at which we will need to seek additional capital.

As of June 30, 2019, we had cash and cash equivalents of $45.2 million. We currently estimate that we will use the net proceeds from this offering, together with our existing cash and cash equivalents, as follows:

- approximately $ to $ to advance development of IMR-687 for the treatment of patients with SCD;
- approximately $ to $ to advance development of IMR-687 for the treatment of patients with b-thalassemia; and
- the remainder for working capital and other general corporate purposes, including potential pipeline expansion.

We may use a portion of the net proceeds from this offering for the acquisition of businesses, technologies or other assets that we believe are complementary to our own, although we currently have no agreements, commitments or understandings with respect to any such transaction.

We believe that the anticipated net proceeds from this offering, together with our existing cash and cash equivalents, will enable us to fund our operating expenses and capital expenditure requirements through . We expect that we will require additional funding to complete the clinical development of IMR-687 and commercialize IMR-687, if we receive regulatory approval. If we receive regulatory approval for IMR-687 or other product candidates, we expect to incur significant commercialization expenses related to product manufacturing, sales, marketing and distribution, depending on where we choose to commercialize IMR-687 ourselves. The expected use of net proceeds from this offering and our existing cash and cash equivalents represent our intentions based upon our current plans and business conditions, which could change in the future as our plans and business conditions evolve. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the progress of our development, the status of and results from clinical trials, the timing of regulatory submissions and the outcome of regulatory review, as well as any collaborations that we may enter into with third parties for our product candidates and any unforeseen cash needs.

Our management will retain broad discretion over the allocation of the net proceeds from this offering. Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation investments, including short-term, investment-grade, interest-bearing instruments and U.S. government securities.

DIVIDEND POLICY

We have never declared or paid cash dividends on our common stock. We currently intend to retain all available funds and any future earnings to fund the development and expansion of our business, and we do not anticipate paying any cash dividends in the foreseeable future. Any future determination to declare and pay dividends will be made at the discretion of our board of directors and will depend on then-existing conditions, including our results of operations, financial condition, contractual restrictions, capital requirements, business prospects and other factors our board of directors may deem relevant.

CAPITALIZATION

The following table sets forth our cash and cash equivalents and our capitalization as of June 30, 2019:

- on an actual basis;
- on a pro forma basis to give effect to (i) the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 60,533,313 shares of common stock and (ii) the filing and effectiveness of our restated certificate of incorporation, each of which will occur upon the closing of this offering; and
- on a pro forma as adjusted basis to give further effect to our issuance and sale of shares of common stock in this offering at an assumed initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The pro forma and pro forma as adjusted information below is illustrative only, and our capitalization following the closing of this offering will be adjusted based on the actual initial public offering price and other terms of this offering determined at pricing. You should read this information together with our consolidated financial statements and related notes appearing at the end of this prospectus and the information set forth under the sections titled "Selected Consolidated Financial Data" and "Management's Discussion and Analysis of Financial Condition and Results of Operations."

	As of June 30, 2019		
	Actual	Pro Forma	Pro Forma As Adjusted
	(in thousands, except share and per share data)		
Cash and cash equivalents	$ 45,233	$ 45,233	$
Convertible preferred stock (Series Seed, A and B), $0.001 par value; 70,378,661 shares authorized, 60,533,313 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted	$ 77,764	$ —	
Stockholders' (deficit) equity:			
Preferred stock, $0.001 par value; no shares authorized, issued or outstanding, actual; 10,000,000 shares authorized, no shares issued or outstanding, pro forma and pro forma as adjusted	—	—	
Common stock, $0.001 par value; 100,000,000 shares authorized, 4,424,919 shares issued and outstanding, actual; 200,000,000 shares authorized, 64,958,232 shares issued and outstanding, pro forma; 200,000,000 shares authorized, shares issued and outstanding, pro forma as adjusted	4	65	
Additional paid-in capital	5,262	82,965	
Accumulated deficit	(40,881)	(40,881)	
Total stockholders' (deficit) equity	(35,615)	42,149	
Total capitalization	$ 42,149	$ 42,149	$

Our capitalization following the closing of this offering will depend on the actual initial public offering price and other terms of this offering determined at pricing. Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, would increase or decrease the pro forma as adjusted cash and cash equivalents, total stockholders' equity and total capitalization by $ million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting estimated

underwriting discounts and commissions and estimated offering expenses payable by us. A 1,000,000 share increase or decrease in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase or decrease the pro forma as adjusted cash and cash equivalents, total stockholders' equity and total capitalization by $ million, assuming the assumed initial public offering price per share remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The table above is based on 64,958,232 shares of our common stock outstanding as of June 30, 2019, and excludes:

- 11,838,614 shares of common stock issuable upon exercise of stock options outstanding as of June 30, 2019 at a weighted-average exercise price of $0.71 per share;
- 338,713 shares of common stock available for future issuance as of June 30, 2019 under our 2016 Stock Incentive Plan, as amended; and
- and additional shares of our common stock that will become available for future issuance under our 2019 Equity Incentive Plan and our 2019 Employee Stock Purchase Plan, respectively, each of which will become effective immediately prior to the effectiveness of the registration statement of which this prospectus is a part, as well as any automatic increases in the number of shares of common stock reserved for future issuance under these plans.

DILUTION

If you invest in our common stock in this offering, your ownership interest will be diluted immediately to the extent of the difference between the initial public offering price per share of our common stock and the pro forma as adjusted net tangible book value per share of our common stock immediately after this offering.

Our historical net tangible book value (deficit) as of June 30, 2019 was $(35.7) million, or $(8.06) per share of our common stock. Our historical net tangible book value (deficit) is the amount of our total tangible assets less our total liabilities and the carrying value of our preferred stock, which is not included within stockholders' (deficit) equity. Historical net tangible book value (deficit) per share represents historical net tangible book value (deficit) divided by the 4,424,919 shares of our common stock outstanding as of June 30, 2019.

Our pro forma net tangible book value (deficit) as of June 30, 2019 was $42.1 million, or $0.65 per share of our common stock, after giving effect to the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 60,533,313 shares of common stock, which will occur upon the closing of this offering. Pro forma net tangible book value (deficit) per share represents pro forma net tangible book value (deficit) divided by the total number of shares outstanding as of June 30, 2019, after giving effect to the pro forma adjustments described above.

After giving further effect to our issuance and sale of shares of our common stock in this offering at an assumed initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of June 30, 2019 would have been $ million, or $ per share. This represents an immediate increase in pro forma as adjusted net tangible book value per share of $ to existing stockholders and an immediate dilution in pro forma as adjusted net tangible book value per share of $ to new investors purchasing shares of common stock in this offering. Dilution per share to new investors is determined by subtracting pro forma as adjusted net tangible book value per share after this offering from the assumed initial public offering price per share paid by new investors. The following table illustrates this dilution on a per share basis:

Assumed initial public offering price per share		$
Historical net tangible book value (deficit) per share as of June 30, 2019	$(8.06)	
Increase per share attributable to the pro forma adjustments described above	8.71	
Pro forma net tangible book value (deficit) per share as of June 30, 2019	0.65	
Increase in pro forma as adjusted net tangible book value per share attributable to new investors purchasing shares of common stock in this offering		
Pro forma as adjusted net tangible book value per share after this offering		
Dilution per share to new investors purchasing shares of common stock in this offering		$

The dilution information discussed above is illustrative only and will change based on the actual initial public offering price and other terms of this offering determined at pricing. Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, would increase or decrease our pro forma as adjusted net tangible book value per share after this offering by $ and dilution per share to new investors purchasing shares of common stock in this offering by $, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. A 1,000,000 share increase in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase our pro forma as adjusted net tangible book value per share after this offering by $ and decrease the dilution per share to new investors purchasing shares of common stock in this offering by $, assuming the assumed initial public

offering price per share remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. A 1,000,000 share decrease in the number of shares offered by us, as set forth on the cover page of this prospectus, would decrease our pro forma as adjusted net tangible book value per share after this offering by $ and increase the dilution per share to new investors purchasing shares of common stock in this offering by $, assuming the assumed initial public offering price per share remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters exercise in full their option to purchase additional shares of our common stock, our pro forma as adjusted net tangible book value per share after this offering would be $, representing an immediate increase in pro forma as adjusted net tangible book value per share of $ to existing stockholders and immediate dilution in pro forma as adjusted net tangible book value per share of $ to new investors purchasing shares of common stock in this offering, assuming an initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus.

The following table summarizes, as of June 30, 2019, on the pro forma as adjusted basis described above, the total number of shares of common stock purchased from us on an as converted to common stock basis, the total consideration paid or to be paid and the average price per share paid or to be paid by existing stockholders and by new investors in this offering at an assumed initial public offering price of $ per share, the midpoint of the price range set forth on the cover page of this prospectus, before deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. As the table shows, new investors purchasing shares of common stock in this offering will pay an average price per share substantially higher than our existing stockholders paid.

	Shares Purchased		Total Consideration		Weighted-Average Price Per Share
	Number	Percent	Amount	Percent	
	(in thousands, except share and per share amounts)				
Existing stockholders		%	$	%	$
New investors					$
Total		100.0%	$	100.0%	

The table above assumes no exercise of the underwriters' option to purchase additional shares in this offering. If the underwriters exercise in full their option to purchase additional shares of our common stock, the number of shares of our common stock held by existing stockholders would be reduced to % of the total number of shares of our common stock outstanding after this offering, and the number of shares of common stock held by new investors purchasing shares of common stock in this offering would be increased to % of the total number of shares of our common stock outstanding after this offering.

The discussion and tables above are based on 64,958,232 shares of common stock outstanding as of June 30, 2019, and exclude:

- 11,838,614 shares of common stock issuable upon exercise of stock options outstanding as of June 30, 2019 at a weighted-average exercise price of $0.71 per share;
- 338,713 shares of common stock available for future issuance as of June 30, 2019 under our 2016 Stock Incentive Plan, as amended; and
- and additional shares of our common stock that will become available for future issuance under our 2019 Equity Incentive Plan and our 2019 Employee Stock Purchase Plan, respectively, each of which will become effective immediately prior to the effectiveness of the registration statement of which this prospectus is a part, as well as any automatic increases in the number of shares of common stock reserved for future issuance under these plans.

To the extent that stock options are exercised, new stock options are issued under our equity incentive plans, or we issue additional shares of common stock in the future, there will be further dilution to investors purchasing shares of common stock in this offering. In addition, we may choose to raise additional capital because of market conditions or strategic considerations, even if we believe that we have sufficient funds for our current or future operating plans. If we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

SELECTED CONSOLIDATED FINANCIAL DATA

We have derived the consolidated statement of operations data for the years ended December 31, 2017 and 2018 and the consolidated balance sheet data as of December 31, 2017 and 2018 from our audited consolidated financial statements appearing at the end of this prospectus. The consolidated statement of operations data for the six months ended June 30, 2018 and 2019 and the consolidated balance sheet data as of June 30, 2019 have been derived from our unaudited consolidated financial statements appearing at the end of this prospectus and have been prepared on the same basis as the audited consolidated financial statements. In the opinion of management, the unaudited data reflects all adjustments, consisting only of normal, recurring adjustments, necessary for a fair statement of the financial information in those statements.

Our historical results are not necessarily indicative of the results that may be expected in the future, and our interim results are not necessarily indicative of results to be expected for a full fiscal year or any other interim period. You should read the following selected consolidated financial data together with our consolidated financial statements and the related notes appearing at the end of this prospectus and the "Management's Discussion and Analysis of Financial Condition and Results of Operations" section of this prospectus.

	Year Ended December 31,		Six Months Ended June 30,	
	2017	2018	2018	2019
	(in thousands, except share and per share data)			
Consolidated Statement of Operations Data:				
Operating expenses:				
Research and development	$ 7,918	$ 8,239	$ 4,137	$ 7,926
General and administrative	987	2,438	942	1,825
Total operating expenses	8,905	10,677	5,079	9,751
Loss from operations	(8,905)	(10,677)	(5,079)	(9,751)
Total other income (expense), net	9,126	(660)	(300)	160
Net income (loss)	$ 221	$ (11,337)	$ (5,379)	$ (9,591)
Net income attributable to series A preferred stock—basic	221	—	—	—
Net loss attributable to common stockholders—basic and diluted	$ —	$ (11,337)	$ (5,379)	$ (9,591)
Net loss per share attributable to common stockholders—basic and diluted(1)	$ —	$ (2.56)	$ (1.22)	$ (2.17)
Weighted-average common shares outstanding—basic and diluted(1)	3,779,695	4,424,919	4,424,919	4,424,919
Pro forma net loss per share attributable to common stockholders—basic and diluted(1)		$ (0.35)		$ (0.18)
Pro forma weighted-average common shares outstanding—basic and diluted(1)		32,707,631		53,926,162

(1) See Note 11 of the notes to our financial statements appearing at the end of this prospectus for further details on the calculation of basic and diluted net loss per share attributable to common stockholders and on the calculation of pro forma basic and diluted net loss per share attributable to common stockholders.

	As of December 31,		As of June 30,
	2017	2018	2019
		(in thousands)	
Consolidated Balance Sheet Data:			
Cash and cash equivalents	$ 9,671	$ 7,382	$ 45,233
Working capital(1)	9,397	5,873	41,957
Total assets	10,223	7,705	45,894
Total liabilities	1,486	1,832	3,745
Convertible preferred stock	24,271	32,189	77,764
Accumulated deficit	(19,953)	(31,290)	(40,881)
Total stockholders' deficit	(15,534)	(26,316)	(35,615)

(1) Working capital is defined as current assets less current liabilities.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis of our financial condition and results of operations together with the "Selected Consolidated Financial Data" section of this prospectus and our consolidated financial statements and related notes appearing elsewhere in this prospectus. Some of the information contained in this discussion and analysis or set forth elsewhere in this prospectus, including information with respect to our plans and strategy for our business and related financing, includes forward-looking statements that involve risks and uncertainties. As a result of many factors, including those factors set forth in the "Risk Factors" section of this prospectus, our actual results could differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis. Please also see the section entitled "Cautionary Note Regarding Forward-Looking Statements and Industry Data."

Overview

We are a clinical-stage biopharmaceutical company dedicated to developing and commercializing novel therapeutics to treat patients suffering from rare inherited genetic disorders of hemoglobin, known as hemoglobinopathies. Our pipeline is built on the differentiated therapeutic potential of our initial product candidate, IMR-687, which is an oral, once-a-day, potentially disease-modifying treatment for sickle cell disease, or SCD, and b-thalassemia. IMR-687 is a highly selective, potent small molecule inhibitor of phosphodiesterase-9, or PDE9, that has a multimodal mechanism of action that acts primarily on red blood cells, and has the potential to act on white blood cells, adhesion mediators and other cell types that are implicated in SCD. We are conducting a randomized, double-blinded, placebo-controlled Phase 2a clinical trial of IMR-687 in adult patients with SCD. We expect to report top-line data from this trial in mid-2020. We have also initiated an open label extension trial, which allows patients from the Phase 2a clinical trial to continue into a long-term four-year trial to test safety and measure tolerability of IMR-687. Finally, we plan to commence a Phase 2 clinical trial for the treatment of patients with b-thalassemia in the first half of 2020.

Since our inception in 2016, our operations have focused on organizing and staffing our company, business planning, raising capital, establishing our intellectual property portfolio and performing research and development of IMR-687. To date, we have financed our operations primarily with proceeds from sales of our series seed convertible preferred stock, series A convertible preferred stock and series B convertible preferred stock, which we refer to collectively as our preferred stock.

We have funded our operations through June 30, 2019 primarily with gross proceeds of $77.3 million from sales of our preferred stock, including $31.5 million from all four tranches of our series A preferred stock financing, $44.1 million from the first tranche of our series B preferred stock financing, and $1.8 million from the early participation of one of our investors in the second tranche of the series B preferred stock financing. The remaining shares to be issued under the second tranche of the series B preferred stock financing will be issuable, if at all, upon the achievement or waiver of certain research and development milestone criteria, which would result in proceeds of $17.1 million.

We have incurred significant operating losses since inception. Our losses from operations were $8.9 million, $10.7 million, $5.1 million, and $9.8 million for the years ended December 31, 2017 and 2018 and the six months ended June 30, 2018 and 2019, respectively. As of June 30, 2019, we had an accumulated deficit of $40.9 million. We expect to continue to incur significant operating losses for the foreseeable future, as we advance IMR-687 and any product candidates we may develop in the future from discovery through preclinical development and clinical trials and seek regulatory approval of our product candidates. We expect to incur significant expenses related to maintaining and expanding our intellectual property portfolio, hiring additional research and development and business personnel and operating as a public company. In addition, our losses from operations may fluctuate significantly from quarter-to-quarter and year-to-year, depending on the timing of our clinical trials and our expenditures on other research and development activities.

We do not have any products approved for sale. We will not generate revenue from product sales unless and until we successfully complete clinical development and obtain regulatory approval for IMR-687 or any future product candidate. In addition, if we obtain regulatory approval for IMR-687 or any future product candidate and to the extent that we engage in commercialization activities on our own, we expect to incur significant expenses related to developing our commercialization capability to support product sales, marketing, manufacturing, and distribution activities.

As a result, we will need substantial additional funding to support our continuing operations and pursue our growth strategy. Until such time as we can generate significant revenue from product sales, if ever, we expect to finance our operations through a combination of equity offerings, debt financings, collaborations, strategic alliances and licensing arrangements. We may be unable to raise additional funds or enter into other arrangements when needed on acceptable terms, or at all. Our failure to raise capital or enter into such agreements as, and when, needed, could have a material adverse effect on our business, results of operations, and financial condition. We will need to generate significant revenue to achieve profitability, and we may never do so.

Because of the numerous risks and uncertainties associated with product development, we are unable to predict the timing or amount of increased expenses or when or if we will be able to achieve or maintain profitability. Even if we are able to generate product sales, we may not become profitable. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and be forced to reduce or terminate our operations.

As of June 30, 2019, we had $45.2 million in cash and cash equivalents. We believe that the anticipated net proceeds from this offering, together with our existing cash and cash equivalents, will enable us to fund our operating expenses and capital expenditure requirements into . We have based this estimate on assumptions that may prove to be wrong, and we could exhaust our available capital resources sooner than we expect. See "— Liquidity and Capital Resources."

Without giving effect to the anticipated net proceeds from this offering, based on our current operating plan, we believe we do not have sufficient cash and cash equivalents on hand to support current operations for at least one year from the date of issuance of the financial statements appearing at the end of this prospectus. To finance our operations beyond that point, we will need to raise additional capital, which cannot be assured. We have concluded that this circumstance raises substantial doubt about our ability to continue as a going concern for at least one year from the date that our consolidated financial statements for the year ended December 31, 2018 and our consolidated financial statements for the six months ended June 30, 2019 were issued. See Note 1 of the notes to our consolidated financial statements appearing at the end of this prospectus for additional information on our assessment.

Lundbeck License Agreement

In April 2016, we entered into an agreement with H. Lundbeck A/S, or Lundbeck, for a worldwide license under certain patent rights and certain know-how owned or otherwise controlled by Lundbeck within the field of prevention, treatment or diagnosis of hemoglobinopathy disorders and/or other diseases or disorders, including those directly or indirectly related to hemoglobinopathies, which we refer to as the field. The agreement grants us an exclusive license under the licensed technology, including the right to grant sublicenses with certain restrictions, to research, develop, make, have made, use, sell, have sold, offer to sell, import, export and commercialize any product comprising or containing certain PDE9 inhibitors, in the field. The agreement also grants us a non-exclusive license under the licensed technology to research and develop, and make, have made, use, import and export for purposes of enabling such research and development, enhancements, improvements, modifications or derivatives to licensed products, until but not beyond a specified pre-commercialization developmental stage with respect to each such enhancement, improvement, modification or derivative. Under the agreement, we have made cash payments totaling $1.8 million to date, consisting of an upfront payment and

ongoing milestone payments, and also issued shares of our common stock as described in "Transactions with Related Persons." We are obligated to make milestone payments to Lundbeck aggregating up to $23.5 million upon the achievement of specified clinical, regulatory and first commercial sale milestones by any licensed product and $11.8 million upon the achievement of specified clinical, regulatory and first commercial sale milestones by any IMARA product that is or comprises a PDE9 inhibitor but is not a licensed product, or a PDE9 product, if any. We are obligated to pay tiered royalties of low-to-mid single-digit percentages to Lundbeck based on our, and any of our affiliates' and sublicensees', net sales of licensed products, and tiered royalties of low single-digit percentages to Lundbeck based on our, and any of our affiliates' and sublicensees', net sales of PDE9 products, if any. See "Business – Exclusive License Agreement" for a further description of the license agreement with Lundbeck.

Financial Operations Overview

Revenue

We have not generated any revenue since our inception and do not expect to generate any revenue from the sale of products in the near future, if at all. If our development efforts for IMR-687 or additional product candidates that we may develop in the future are successful and result in marketing approval or if we enter into collaboration or license agreements with third parties, we may generate revenue in the future from a combination of product sales or payments from such collaboration or license agreements.

Operating Expenses

Research and Development. Research and development expenses consist primarily of costs incurred in connection with the preclinical and clinical development and manufacture of IMR-687, and include:

- personnel-related expenses, including salaries, benefits and stock-based compensation expenses, for individuals involved in research and development activities;
- external research and development expenses incurred under agreements with contract research organizations, or CROs, investigative sites, and consultants that conduct our preclinical studies and clinical trials and other scientific development services;
- costs incurred under agreements with contract manufacturing organizations, or CMOs, for developing and manufacturing material for our preclinical studies and clinical trials;
- costs related to compliance with regulatory requirements;
- milestone fees incurred in connection with our current license agreement with Lundbeck; and
- facilities and other allocated expenses, which include direct and allocated expenses for rent, insurance and other operating costs.

We expense research and development costs as incurred. We recognize external development costs based on an evaluation of the progress to completion of specific tasks using information provided to us by our vendors and our clinical investigative sites. Payments for these activities are based on the terms of the individual agreements, which may differ from the pattern of costs incurred, and are reflected in our consolidated financial statements as prepaid expenses or accrued research and development expenses. Nonrefundable advance payments for goods or services to be received in the future for use in research and development activities are deferred and capitalized, even when there is no alternative future use for the research and development. The capitalized amounts are expensed as the related goods are delivered or the services are performed.

A significant portion of our research and development costs have been external costs, which we track after a clinical product candidate has been identified. Our internal research and development costs are primarily personnel-related costs and other indirect costs. Our research and development expenses to-date have been

incurred in connection with our development of IMR-687 in SCD. We expect to incur expenses with IMR-687 in b-thalassemia in the future, but we do not intend to track our internal research and development expenses on a program-by-program basis as our personnel would be deployed across multiple projects under development.

Research and development activities are central to our business model. Product candidates in later stages of clinical development generally have higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of later-stage clinical trials. We expect research and development costs to increase significantly for the foreseeable future as we continue the development of IMR-687 and any product candidates we may develop in the future. However, we do not believe that it is possible at this time to accurately project total program-specific expenses through commercialization. There are numerous factors associated with the successful commercialization of IMR-687 and any product candidates we may develop in the future, including future trial design and various regulatory requirements, many of which cannot be determined with accuracy at this time based on our stage of development. Additionally, future commercial and regulatory factors beyond our control will impact our clinical development program and plans.

The following table summarizes our research and development expenses for the years ended December 31, 2017 and 2018, and for the six months ended June 30, 2018 and 2019:

	Year Ended December 31,		Six Months Ended June 30,	
	2017	2018	2018	2019
	(in thousands)			
IMR-687	$7,717	$7,713	$4,011	$6,273
Personnel expenses (including stock-based compensation)	10	157	11	1,221
Other expenses	191	369	115	432
Total research and development expenses	$7,918	$8,239	$4,137	$7,926

The successful development of IMR-687 and any product candidates we may develop in the future is highly uncertain. Therefore, we cannot reasonably estimate or know the nature, timing and estimated costs of the efforts that will be necessary to complete the development and commercialization of IMR-687 or any future product candidates. We are also unable to predict when, if ever, material net cash inflows will commence from the sale of IMR-687 or potential future product candidates, if approved. This is due to the numerous risks and uncertainties associated with developing product candidates, including the uncertainty of:

- the timing and progress of preclinical and clinical development activities;
- the number and scope of preclinical and clinical programs we decide to pursue;
- our ability to maintain our current research and development programs and to establish new ones;
- establishing an appropriate safety profile with investigational new drug application, or IND, enabling studies;
- successful patient enrollment in, and the initiation of, clinical trials;
- the successful completion of clinical trials with safety, tolerability and efficacy profiles that are satisfactory to the U.S. Food and Drug Administration, or FDA, or any comparable foreign regulatory authority;
- the timing, receipt and terms of any regulatory approvals from applicable regulatory authorities;
- our ability to establish new licensing or collaboration arrangements;
- the performance of our future collaborators, if any;
- establishing commercial manufacturing capabilities or making arrangements with third-party manufacturers;

- obtaining, maintaining, defending and enforcing patent claims and other intellectual property rights;
- launching commercial sales of our product candidates, if approved, whether alone or in collaboration with others; and
- maintaining a continued acceptable safety profile of the product candidates following approval.

Any changes in the outcome of any of these variables with respect to the development of IMR-687 or any future product candidates could mean a significant change in the costs and timing associated with the development of these product candidates. For example, if the FDA or another regulatory authority were to delay our planned start of clinical trials or require us to conduct clinical trials or other testing beyond those that we currently expect, or if we experience significant delays in enrollment in any of our planned clinical trials, we could be required to expend significant additional financial resources and time to complete clinical development of that product candidate. We may never obtain regulatory approval for any of our product candidates. Drug commercialization will take several years and millions of dollars in development costs.

General and Administrative. General and administrative expenses consist primarily of personnel-related expenses, including salaries, benefits, and stock-based compensation expenses for personnel in executive, finance, accounting, human resources and other administrative functions. Other significant general and administrative expenses include legal fees relating to patent, intellectual property and corporate matters, and fees paid for accounting, consulting and other professional services.

We anticipate that our general and administrative expenses will increase in the future as our business expands to support our continued research and development activities, including our future clinical programs. These increases will likely include increased costs related to the hiring of additional personnel and fees to outside consultants, among other expenses. We also anticipate increased expenses associated with being a public company, including costs for audit, legal, regulatory, and tax-related services related to compliance with the rules and regulations of the Securities and Exchange Commission, or SEC, listing standards applicable to companies listed on a national securities exchange, director and officer insurance premiums and investor relations costs. In addition, if we obtain regulatory approval for IMR-687 or any future product candidate and to the extent that we engage in commercialization activities on our own, we expect to incur significant expenses related to building a sales and marketing team to support product sales, marketing and distribution activities.

Total Other Income (Expense), Net

Other Income (Expense), Net. Other income (expense), net consists of fluctuations in the fair value of our preferred stock tranche obligation and the antidilution obligation. The preferred stock tranche obligation relates to our obligation to issue, and investors' obligation to purchase, additional shares of our series A preferred stock following the initial closing of our series A preferred stock financing. This obligation was fully satisfied in November 2018 when the fourth and final tranche of the series A preferred stock issuance closed.

Pursuant to our license agreement with Lundbeck, we issued Lundbeck 1,055,231 shares of our common stock. See "Business—Exclusive License Agreement" for a further description of the license agreement with Lundbeck. As part of this license agreement, we were required to permit Lundbeck to maintain an ownership percentage of 8% of our outstanding capital stock on a fully-diluted basis, which we refer to as the antidilution obligation, until we received proceeds from financings of at least $25.0 million. Changes to the fair value of the antidilution obligation are recorded in other income (expense), net. This antidilution obligation was fully satisfied as of the closing of the third tranche of the series A preferred stock issuance in August 2017.

Interest Income. Interest income primarily consists of interest earned on cash equivalents that generate interest on a monthly basis.

Results of Operations

Comparison of the Six Months Ended June 30, 2018 and 2019

The following table summarizes our results of operations for the six months ended June 30, 2018 and 2019:

	Six Months Ended June 30,		
	2018	2019	Change
	(in thousands)		
Operating expenses:			
Research and development	$ 4,137	$ 7,926	$ 3,789
General and administrative	942	1,825	883
Total operating expenses	5,079	9,751	4,672
Loss from operations	(5,079)	(9,751)	(4,672)
Total other income (expense), net	(300)	160	460
Net loss	$ (5,379)	$ (9,591)	$ (4,212)

Research and Development Expenses

Research and development expenses increased by approximately $3.8 million from $4.1 million for the six months ended June 30, 2018 to $7.9 million for the six months ended June 30, 2019. The increase in research and development expenses was primarily attributable to the following:

- a $3.3 million increase in costs related to the development and manufacturing of clinical materials, clinical research and oversight of our clinical trials and investigative fees of IMR-687;
- a $1.2 million increase in personnel-related costs, including stock-based compensation expense, primarily due to an increase in headcount to support the growth of our research and development efforts; and
- a $0.3 million increase in other research and development operational costs, including facilities, rent, travel and insurance driven by an increase in headcount.

These increases were partially offset by a decrease in licensing fees related to a milestone payment payable under our license agreement with Lundbeck.

General and Administrative Expenses

General and administrative expenses increased by $0.9 million, from $0.9 million for the six months ended June 30, 2018 to $1.8 million for the six months ended June 30, 2019. The increase in general and administrative expenses was primarily attributable to the following:

- a $0.3 million increase in personnel costs, including stock-based compensation expense, primarily due to an increase headcount;
- a $0.5 million increase in consulting and professional fees, including legal, business development, accounting and audit fees; and
- a $0.1 million increase in other general and administrative operational costs, including facilities, rent and insurance.

Total Other Income (Expense), Net

Total other income (expense), net was expense of $0.3 million for the six months ended June 30, 2018, compared to income of $0.2 million for the six months ended June 30, 2019. During the first six months of 2018,

we remeasured our preferred stock tranche obligation to fair value, which accounts for the entirety of total other income (expense), net. In June 2019, we invested our cash in marketable securities, which earned interest income of $0.2 million during the six months ended June 30, 2019.

Comparison of the Years Ended December 31, 2017 and 2018

The following table summarizes our results of operations for the years ended December 31, 2017 and 2018:

	Year Ended December 31,		
	2017	2018	Change
	(in thousands)		
Operating expenses:			
Research and development	$ 7,918	$ 8,239	$ 321
General and administrative	987	2,438	1,451
Total operating expenses	8,905	10,677	1,772
Loss from operations	(8,905)	(10,677)	(1,772)
Total other income (expense), net	9,126	(660)	(9,786)
Net income (loss)	$ 221	$ (11,337)	$ (11,558)

Research and Development Expenses

Research and development expenses increased by approximately $0.3 million from $7.9 million for the year ended December 31, 2017 to $8.2 million for the year ended December 31, 2018. The increase in research and development expenses was primarily attributable to the following:

- a $0.4 million increase in costs related to the development and manufacturing of clinical materials, clinical research and oversight of our clinical trials and investigative fees of IMR-687;
- a $0.2 million increase in other research and development operational costs, including facilities, rent, travel and insurance driven by an increase in headcount;
- a $0.1 million increase in personnel-related costs, including stock-based compensation expense, primarily due to an increase in headcount; and
- an increase in licensing fees related to a milestone payment payable under our license agreement with Lundbeck.

These increases were partially offset by a $1.4 million decrease in costs related to the preclinical development of IMR-687.

General and Administrative Expenses

General and administrative expenses increased by $1.5 million, from $1.0 million for the year ended December 31, 2017 to $2.4 million for the year ended December 31, 2018. The increase in general and administrative expenses was primarily attributable to the following:

- a $0.7 million increase in personnel costs, including stock-based compensation expense, primarily due to an increased headcount as we began to hire employees in 2018;
- a $0.6 million increase in consulting and professional fees, including legal, business development, accounting and audit fees; and
- a $0.2 million increase in other general and administrative operational costs, including facilities, rent and insurance.

Total Other Income (Expense), Net

Total other income (expense), net was income of $9.1 million for the year ended December 31, 2017, compared to expense of $0.7 million for the year ended December 31, 2018. During 2017, changes in the fair value of the preferred stock tranche obligation resulted in a $9.1 million gain in other income (expense), net. Additionally, in the first half of 2017, we recorded $0.1 million of other income for the change in fair value of the antidilution obligation, and in August 2017, the antidilution obligation was fully satisfied. During 2018, the value of the preferred stock tranche obligation increased based on our progress in clinical trials and our progression towards liquidity events such as equity financings and a potential initial public offering, or IPO. The preferred stock tranche obligation was fully satisfied in November 2018 with the closing of the fourth tranche of the series A preferred stock financing.

Liquidity and Capital Resources

Sources of Liquidity

Since our inception, we have incurred significant losses in each period and on an aggregate basis. We have not yet commercialized IMR-687, which is in clinical development, and we do not expect to generate revenue from sales of IMR-687 or any product candidates we may develop in the future for several years, if at all.

In January and April 2016, we issued an aggregate of 2,712,960 shares of series seed preferred stock to Cydan Development, Inc. as consideration for the contribution of certain intellectual property assets and for services provided pursuant to a business service agreement. In April 2016, we issued and sold 6,000,000 shares of series A preferred stock at a price of $1.00 per share, for proceeds of $5.9 million, net of issuance costs of $0.1 million. The terms of the series A preferred stock purchase agreement included the obligation of the investors to purchase, and of us to sell, up to 25,000,000 additional shares of series A preferred stock at $1.00 per share contingent upon the achievement of specified milestones. In November 2016, we issued and sold 7,999,971 shares of series A preferred stock at a price of $1.00 per share, for gross proceeds of $8.0 million, which represents the second tranche of the series A preferred stock financing. In August 2017, we issued and sold 11,000,000 shares of series A preferred stock at a price of $1.00 per share, for gross proceeds of $11.0 million, which represents the third tranche of the series A preferred stock financing. In November 2018, we issued and sold 6,499,069 shares of series A preferred stock at a price of $1.00 per share, for proceeds of $6.5 million, net of issuance costs of less than $0.1 million, which represents the fourth and final tranche of the series A preferred stock financing.

In March 2019, we issued and sold 25,316,663 shares of series B preferred stock, at a price of $1.7419 per share, for proceeds of $43.8 million, net of issuance costs of $0.3 million. The terms of the series B preferred stock purchase agreement included the obligation of the investors to purchase, and us to sell, 10,849,998 additional shares of series B preferred stock at a purchase price of $1.7419 per share, contingent upon the achievement of a certain pre-designated milestone event. The milestone tranche closing may take place within 18 months of the initial closing if the milestone conditions are met or waived by the holders of a majority of the shares purchased at the initial closing. In addition, any series B preferred stock investor has an option to purchase all or some of its milestone shares prior to the satisfaction or waiver of the milestone conditions. In May 2019, one of the investors exercised this option to purchase 1,004,650 of its milestone shares prior to the milestone closing, at a purchase price of $1.7419 per share, for proceeds of $1.8 million.

As of June 30, 2019, we had $45.2 million in cash and cash equivalents.

Cash Flows

The following table provides information regarding our cash flows for the years ended December 31, 2017 and 2018 and six months ended June 30, 2018 and 2019:

	Year Ended December 31,		Six Months Ended June 30,	
	2017	2018	2018	2019
	(in thousands)			
Net cash used in operating activities	$ (8,785)	$(8,777)	$(4,177)	$ (7,555)
Net cash used in investing activities	—	—	—	(81)
Net cash provided by financing activities	11,000	6,488	—	45,575
Net increase (decrease) in cash, cash equivalents, and restricted cash	$ 2,215	$(2,289)	$(4,177)	$37,939

Net Cash Used in Operating Activities

Net cash used in operating activities for the year ended December 31, 2017 was $8.8 million primarily due to our net income of $0.2 million, partially offset by the decrease in the fair values of the preferred stock tranche obligation and antidilution obligation of $9.1 million and the increase in stock-based compensation expense of $0.3 million. In addition, changes in working capital resulted in net cash outflows of $0.2 million.

Net cash used in operating activities for the year ended December 31, 2018 was $8.8 million primarily due to our net loss of $11.3 million, partially offset by non-cash charges, including the increase in the preferred stock tranche obligation of $0.7 million, stock-based compensation expense of $0.6 million and cash inflows from the change in working capital of $1.2 million.

Net cash used in operating activities for the six months ended June 30, 2018 was $4.2 million primarily due to our net loss of $5.4 million, partially offset by non-cash charges relating to $0.4 million of stock-based compensation expense and the change in the fair value of the preferred stock tranche obligation of $0.3 million, as well as a net cash inflow of $0.5 million related to changes in working capital. Net cash used in operating activities for the six months ended June 30, 2019 was $7.6 million primarily due to our net loss of $9.6 million, partially offset by the increase in stock-based compensation expense of $0.3 million, as well as a net cash inflow of $1.7 million related to changes in working capital.

Net Cash Used in Investing Activities

There were no investing activities during the years ended December 31, 2017 and 2018, or for the six months ended June 30, 2018. The $0.1 million of investing activity for the six months ended June 30, 2019 was for purchases of property and equipment related to our new operating lease, which we expect to occupy in August 2019.

Net Cash Provided by Financing Activities

Net cash provided by financing activities for the years ended December 31, 2017 and 2018 was $11.0 million and $6.5 million, respectively, resulting primarily from the issuance of our series A preferred stock.

There were no financing activities during the six months ended June 30, 2018. Net cash provided by financing activities for the six months ended June 30, 2019 was $45.6 million resulting primarily from the issuance of our series B preferred stock in March and May of 2019.

Funding Requirements

We expect our expenses to increase substantially in connection with our ongoing research and development activities, particularly as we continue research and development, initiate clinical trials, and seek marketing approval for IMR-687 and any of our future product candidates. In addition, upon the closing of this offering, we expect to incur additional costs associated with operating as a public company. Our expenses will also increase if, and as, we:

- continue to advance clinical development of IMR-687, including our ongoing Phase 2a clinical trial in patients with SCD;
- expand our planned development efforts for IMR-687 and pursue a Phase 2 clinical trial of IMR-687 in patients with b-thalassemia;
- continue to incur third party manufacturing costs to support our clinical trials of IMR-687 and, if approved, commercialization;
- seek regulatory and marketing approvals for IMR-687;
- establish a sales, marketing and distribution infrastructure to commercialize IMR-687, if approved;
- commence development activities for any additional product candidates we may identify;
- acquire or in-license products, product candidates, technologies and/or data referencing rights;
- maintain, expand, enforce, defend and protect our intellectual property;
- hire additional clinical, quality control, manufacturing and other scientific personnel;
- add operational, financial and management information systems and personnel, including personnel to support our product development and planned future commercialization efforts and our operations as a public company; and
- make any milestone payments to Lundbeck under our exclusive license agreement with Lundbeck, upon the achievement of specified clinical or regulatory milestones.

Based on our current operating plan, we expect that the anticipated net proceeds from this offering, together with our existing cash and cash equivalents, will enable us to fund our operating expenses and capital expenditure requirements into . However, we have based this estimate on assumptions that may prove to be wrong and we could exhaust our capital resources sooner than we expect.

As of June 30, 2019, we had $45.2 million in cash and cash equivalents. Based on our available cash resources, we do not expect to have sufficient cash and cash equivalents on hand to support current operations for at least one year from the date of issuance of the consolidated financial statements appearing at the end of this prospectus. This condition raises substantial doubt about our ability to continue as a going concern for at least one year from the date of issuance of the financial statements appearing at the end of this prospectus. We will need to raise additional capital in this offering and/or otherwise to fund our future operations and remain as a going concern. However, we cannot guarantee that we will be able to obtain sufficient additional funding in this offering or otherwise or that such funding, if available, will be obtainable on terms satisfactory to us. In the event that we are unable to obtain sufficient additional funding, there can be no assurance that we will be able to continue as a going concern.

Because of the numerous risks and uncertainties associated with research, development and commercialization of product candidates, we are unable to estimate the exact amount of our working capital requirements. Our future funding requirements will depend on, and could increase significantly as a result of, many factors, including:

- the time and cost necessary to complete our ongoing Phase 2a clinical trial of IMR-687 in patents with SCD, to initiate and complete one or more pivotal clinical trials of IMR-687 and to pursue regulatory

approvals for IMR-687 in SCD, and the costs of post-marketing studies that could be required by regulatory authorities;

- the progress and results of our Phase 2a clinical trial of IMR-687 in patients with SCD;
- our ability to advance IMR-687 in b-thalassemia patients through clinical development, and the timing and scope of these development activities;
- the costs of obtaining clinical and commercial supplies of IMR-687 and any other product candidates we may identify and develop;
- our ability to successfully commercialize IMR-687 and any other product candidates we may identify and develop;
- the manufacturing, selling and marketing costs associated with IMR-687 and any other product candidates we may identify and develop, including the cost and timing of establishing our sales and marketing capabilities;
- the amount and timing of sales and other revenues from IMR-687 and any other product candidates we may identify and develop, including the sales price and the availability of adequate third-party reimbursement;
- the time and cost necessary to respond to technological and market developments;
- the extent to which we may acquire or in-license other product candidates and technologies;
- our ability to attract, hire and retain qualified personnel; and
- the costs of maintaining, expanding and protecting our intellectual property portfolio.

A change in the outcome of any of these or other variables with respect to the development of IMR-687 or any product candidate we may develop in the future could significantly change the costs and timing associated with the development of that product candidate. Further, our operating plans may change in the future, and we may need additional funds to meet operational needs and capital requirements associated with such operating plans. Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations, strategic alliances and licensing arrangements. We currently have no credit facility or committed sources of capital. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interests of our existing stockholders may be diluted, and the terms of these securities may include liquidation or other preferences that could adversely affect the rights of such stockholders. Additional debt financing, if available, may involve agreements that include restrictive covenants that limit our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends, that could adversely impact our ability to conduct our business.

If we raise additional funds through collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research program or product candidates, or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Contractual Obligations

The following table summarizes our contractual obligations by period presented according to the payment due date at June 30, 2019:

	Payments Due by Period				
	Total	Less than 1 Year	1-3 Years	3-5 Years	More Than 5 Years
	(in thousands)				
Operating lease commitments	$ 1,362	$ 176	$ 546	$ 568	$ 72
Total	$ 1,362	$ 176	$ 546	$ 568	$ 72

In May 2019, we entered into a lease agreement for office space in Boston, MA with a term of 62 months. The lease includes a rent escalation clause which results in cash rental payments of approximately $0.3 million annually. Accordingly, rent expense is being recognized on a straight-line basis over the lease term.

Under the license agreement entered into with Lundbeck, or the Lundbeck Agreement, we are obligated to make milestone payments to Lundbeck aggregating up to $23.5 million upon the achievement of specified clinical, regulatory and first commercial sale milestones by any licensed product and $11.8 million upon the achievement of specified clinical, regulatory and first commercial sale milestones by any IMARA product that is or comprises a PDE9 inhibitor but is not a licensed product, or a PDE9 product, if any. We are obligated to pay tiered royalties of low-to-mid single-digit percentages to Lundbeck based on our, and any of our affiliates' and sublicensees', net sales of licensed products, and tiered royalties of low single-digit percentages to Lundbeck based on our, and any of our affiliates' and sublicensees', net sales of PDE9 products, if any. The royalties are payable on a product-by-product and country-by-country basis. Our obligation to make royalty payments extends with respect to a licensed product in a country until the later of ten years after the first commercial sale of that licensed product in that country and the expiration of the last-to-expire valid claim of a patent or patent application licensed from Lundbeck covering the licensed product or any constituent licensed compound in that country. Our obligation to make royalty payments extends with respect to a PDE9 product in a country until the ten years after the first commercial sale of such PDE9 product in that country. See "Business—Exclusive License Agreement" for a further description of the license agreement with Lundbeck.

We enter into contracts in the normal course of business with CROs and other third parties for preclinical studies, clinical trials and testing and manufacturing services. Most contracts do not contain minimum purchase commitments and are cancelable by us upon prior written notice. Payments due upon cancellation consist of payments for services provided or expenses incurred, including non-cancelable obligations of our service providers up to one year after the date of cancellation. These payments are not included in the table above as the amount and timing and such payments are not known.

Critical Accounting Policies and Estimates

This management's discussion and analysis is based on our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles. The preparation of these consolidated financial statements requires us to make judgments and estimates that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of expenses during the reported periods. We base our estimates on historical experience, known trends and events, and various other factors that we believe to be reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or conditions. On an ongoing basis, we evaluate our judgments and estimates in light of changes in circumstances, facts, and experience. The effects of material revisions in estimates, if any, will be reflected in the consolidated financial statements prospectively from the date of change in estimates.

While our accounting policies are described in more detail in the notes to our consolidated financial statements appearing elsewhere in this prospectus, we believe the following accounting policies used in the preparation of our consolidated financial statements require the most significant judgments and estimates. See Note 2 of the notes to our annual consolidated financial statements included elsewhere in this prospectus for a description of our other significant accounting policies.

Accrued Research and Development Expenses

As part of the process of preparing our consolidated financial statements, we are required to estimate our accrued third-party research and development expenses as of each balance sheet date. This process involves reviewing open contracts and purchase orders, communicating with our personnel to identify services that have been performed on our behalf, and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of the actual cost. The majority of our service providers invoice us monthly in arrears for services performed or when contractual milestones are met. We make estimates of our accrued expenses as of each balance sheet date based on facts and circumstances known to us at that time. We periodically confirm the accuracy of our estimates with the service providers and make adjustments if necessary. The significant estimates in our accrued research and development expenses include the costs incurred for services performed by our vendors in connection with research and development activities for which we have not yet been invoiced.

We base our expenses related to research and development activities on our estimates of the services received and efforts expended pursuant to quotes and contracts with vendors that conduct research and development on our behalf. The financial terms of these agreements are subject to negotiation, vary from contract to contract and may result in uneven payment flows. There may be instances in which payments made to our vendors will exceed the level of services provided and result in a prepayment of the research and development expense. In accruing service fees, we estimate the time period over which services will be performed and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from our estimate, we adjust the accrual or prepaid balance accordingly. Non-refundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity has been performed or when the goods have been received rather than when the payment is made.

Although we do not expect our estimates to be materially different from amounts incurred, if our estimates of the status and timing of services performed differ from the actual status and timing of services performed, it could result in us reporting amounts that are too high or too low in any particular period. To date, there have been no material differences between our estimates of such expenses and the amounts incurred.

Preferred Stock Tranche Obligation

The preferred stock tranche obligation relates to our obligation to issue, and investors' obligation to purchase, additional shares of our series A preferred stock following the initial closing of our series A preferred stock financing. The preferred stock tranche obligation is a freestanding financial instrument for accounting purposes. The initial fair value of the preferred stock tranche obligation recognized in connection with our issuance of series A preferred stock in April 2016 was determined based on significant inputs not observable in the market, which represents a Level 3 measurement within the fair value hierarchy. The initial fair value of the obligation was estimated based on results of a third-party valuation performed in connection with the initial issuance of series A preferred stock in April 2016. This obligation is remeasured prior to the issuance of subsequent tranches, and at each subsequent reporting period. See Note 7 of the notes to our annual consolidated financial statements included elsewhere in this prospectus for additional information regarding our issuances of preferred stock. This obligation was fully satisfied in November 2018 when the fourth and final tranche of the series A preferred stock issuance closed.

Each tranche obligation is valued as a forward contract. The values are determined using a probability-weighted present value calculation. In determining the fair values of the tranche obligations, estimates and assumptions impacting fair value included the future value of our series A preferred stock, risk free interest rates, estimated years to liquidity, and probability of each tranche closing. We determined the per share future value of the series A preferred shares by back-solving to the initial proceeds of the series A financing. We remeasured each tranche obligation at each reporting period and prior to settlement. The purchase price of the series A preferred stock at initial issuance, and all subsequent issuances, was higher than the fair value of our common stock.

Stock-Based Compensation

We measure stock-based compensation based on the grant date fair value of the stock-based awards and recognize stock-based compensation expense on a straight-line basis over the requisite service period of the awards, which is generally the vesting period of the respective award. For non-employee awards, compensation expense is recognized as the services are provided, which is generally ratably over the vesting period. We account for forfeitures as they occur. On January 1, 2017, we adopted, using the modified retroactive approach, the guidance of *Accounting Standard Update, or ASU, 2018-07, Compensation—Stock Compensation (Topic 718)—Improvements to Nonemployee Share-Based Payment Accounting*, and account for awards to non-employees using the grant date fair value without subsequent periodic remeasurement. The adoption of ASU 2018-07 did not have a material effect on our consolidated financial statements.

We classify stock-based compensation expense in our consolidated statements of operations in the same manner in which the award recipient's salary and related costs are classified or in which the award recipient's service payments are classified. In future periods, we expect stock-based compensation expense to increase, due in part to our existing unrecognized stock-based compensation expense and as we grant additional stock-based awards to continue to attract and retain our employees.

We determine the fair value of restricted stock awards granted based on the fair value of our common stock. We determine the fair value of the underlying common stock based on input from management and the board of directors, utilizing the valuation of our company's enterprise value determined utilizing various methods including the back-solve method, OPM, or a hybrid of the probability-weighted expected return method, or PWERM, and the OPM. The total enterprise value was then allocated to the various outstanding equity instruments, including the underlying common stock, utilizing the option-pricing model.

The fair value of each stock option grant is estimated on the date of grant using the Black-Scholes option-pricing model, which requires inputs based on certain subjective assumptions, including the expected stock price volatility, the expected term of the option, the risk-free interest rate for a period that approximates the expected term of the option, and our expected dividend yield. The fair value of each restricted stock award is estimated on the date of grant based on the fair value of our common stock on that same date. As there is currently no public market for our common stock, we determined the volatility for awards granted based on an analysis of reported data for a group of guideline companies that issued options with substantially similar terms. The expected volatility has been determined using a weighted-average of the historical volatility measures of this group of guideline companies. We expect to continue to do so until we have adequate historical data regarding the volatility of our own traded stock price. The expected term of our stock options granted to employees has been determined utilizing the "simplified" method for awards that qualify as "plain-vanilla" options. With the adoption of ASU 2018-07, we applied the nonpublic entity practical expedient for calculating the expected term of non-employee awards, using the midpoint between the vesting date and the contractual term, which is consistent with the method used for employee awards. The risk-free interest rate is determined by reference to the U.S. Treasury yield curve in effect at the time of grant of the award for time periods approximately equal to the expected term of the award. We have not paid, and do not anticipate paying, dividends on our common stock; therefore, the expected dividend yield is assumed to be zero.

As there has been no public market for our common stock to date, the estimated fair value of our common stock has been approved by our board of directors, with input from management, as of the date of each award grant, considering our most recently available independent third-party valuations of common stock and any additional objective and subjective factors that we believed were relevant and which may have changed from the date of the most recent valuation through the date of each award grant. The independent third-party valuations were performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants' Accounting and Valuation Guide, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*. We estimated the value of our equity using the market approach, including the guideline public company method and a precedent transaction method which "back-solves" to a common price. We allocated equity value to our common stock and shares of our preferred stock, using either an option-pricing method, or OPM, or a hybrid method, which is a hybrid between the OPM and the probability-weighted expected return method. The hybrid method estimates the probability-weighted value across multiple scenarios, but uses the OPM to estimate the allocation of value within at least one of the scenarios. In addition to the OPM, the hybrid method considers an IPO scenario in which the shares of convertible preferred stock are assumed to convert to common stock. The future value of the common stock in the IPO scenario is discounted back to the valuation date at an appropriate risk adjusted discount rate. In the hybrid method, the present value indicated for each scenario is probability weighted to arrive at an indication of value for the common stock.

In addition to considering the results of the third-party valuations, management considered various objective and subjective factors to determine the fair value of our common stock as of each grant date, which may be a date later than the most recent third-party valuation date, including:

- the prices of our preferred securities sold to or exchanged between outside investors in arm's length transactions, if any, and the rights, preferences and privileges of our preferred securities as compared to those of our common stock, including the liquidation preferences of our preferred securities;
- the progress of our research and development efforts, including the status of preclinical studies and ongoing and planned clinical trials for IMR-687;
- the lack of liquidity of our equity as a private company;
- our stage of development and business strategy and the material risks related to our business and industry;
- the achievement of enterprise milestones, including entering into collaboration and license agreements;
- the valuation of publicly traded companies in the life sciences and biotechnology sectors, as well as recently completed mergers and acquisitions of peer companies;
- any external market conditions affecting the biotechnology industry, and trends within the biotechnology industry;
- the likelihood of achieving a liquidity event for the holders of our preferred shares, and common stock, such as an IPO, or a sale of our company, given prevailing market conditions; and
- the analysis of IPOs and the market performance of similar companies in the biopharmaceutical industry.

There are significant judgments and estimates inherent in these valuations. These judgments and estimates include assumptions regarding our future operating performance, the stage of development of our product candidates, the timing of a potential IPO or other liquidity event and the determination of the appropriate valuation methodology at each valuation date. The assumptions underlying these valuations represent management's best estimates, which involve inherent uncertainties and the application of management judgment. As a result, if factors or expected outcomes change and we use significantly different assumptions or estimates, our stock-based compensation expense could be materially different. Following the completion of this offering, the fair value of our common stock will be determined based on the quoted market price of our common stock.

The following table sets forth by grant date, the number of shares underlying stock options granted and the per share exercise price of stock options granted between January 1, 2018 and June 30, 2019. We did not grant any shares of restricted stock during this period.

Grant Date	Number of Shares Subject to Options Granted	Per Share Exercise Price of Options(1)	Per Share Estimated Fair Value of Options(2)	Fair Value per Common Share on Grant Date(3)
April 16, 2018	105,000	$ 0.61	$ 0.40	$ 0.61
October 19, 2018	2,042,133	$ 0.50	$ 0.33	$ 0.50
May 16, 2019	6,707,469	$ 0.78	$ 0.54	$ 0.83
June 5, 2019	973,714	$ 0.78	$ 0.53	$ 0.83
June 21, 2019	90,980	$ 0.78	$ 0.54	$ 0.83

(1) The per share exercise price of options represents the fair value of our common stock on the date of grant, as determined by our board of directors, after taking into account our most recently available contemporaneous valuation of our common stock as well as additional factors that may have changed since the date of such contemporaneous valuation through the date of grant.
(2) The per share estimated fair value of options reflects the weighted-average fair value of options granted on each grant date, determined using the Black-Scholes option-pricing model.
(3) At the time of the options granted on May 16, 2019, our board of directors determined that the fair value of our common stock of $0.78 per share calculated in the contemporaneous valuation as of March 15, 2019 reasonably reflected the per share fair value of our common stock as of the grant dates. However, the fair value of the common stock at the date of the 2019 grants was adjusted to $0.83 per share, in connection with a retrospective fair value assessment for financial reporting purposes.

Quantitative and Qualitative Disclosures About Market Risks

Our primary exposure to market risk is interest rate sensitivity, which is affected by changes in the general level of U.S. interest rates, particularly because our cash equivalents are in the form of money market funds that are invested in U.S. Treasury securities. As of June 30, 2019, we had cash and cash equivalents of $45.2 million. Interest income is sensitive to changes in the general level of interest rates; however, due to the nature of these investments, an immediate 10% change in interest rates would not have a material effect on the fair market value of our investment portfolio.

We are not currently exposed to significant market risk related to changes in foreign currency exchange rates; however, we have contracted with and may continue to contract with foreign vendors that are located in Europe and Asia, who we may pay in local currency. Our operations may be subject to fluctuations in foreign currency exchange rates in the future.

Emerging Growth Company Status

We are an “emerging growth company,” or EGC, under the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. Section 107 of the JOBS Act provides that an EGC can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act of 1933, as amended, for complying with new or revised accounting standards. Thus, an EGC can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected to avail ourselves of delayed adoption of new or revised accounting standards and, therefore, we will be subject to the same requirements to adopt new or revised accounting standards as private entities.

As an EGC, we may take advantage of certain exemptions and reduced reporting requirements under the JOBS Act. Subject to certain conditions, as an EGC:

- we may present only two years of audited financial statements and only two years of related Management’s Discussion and Analysis of Financial Condition and Results of Operations;
- we may avail ourselves of the exemption from providing an auditor’s attestation report on our system of internal controls over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act;

- we may avail ourselves of the exemption from complying with any requirement that may be adopted by the Public Company Accounting Oversight Board, or PCAOB, regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements, known as the auditor discussion and analysis;
- we may provide reduced disclosure about our executive compensation arrangements; and
- we may not require nonbinding advisory votes on executive compensation or stockholder approval of any golden parachute payments.

We will remain an EGC until the earliest of (i) the last day of the fiscal year following the fifth anniversary of the completion of this offering, (ii) the last day of the fiscal year in which we have total annual gross revenues of $1.07 billion or more, (iii) the date on which we have issued more than $1.0 billion in non-convertible debt during the previous rolling three-year period, or (iv) the date on which we are deemed to be a large accelerated filer under the Securities Exchange Act of 1934, as amended, or the Exchange Act.

Recent Accounting Pronouncements

We have reviewed all recently issued standards and have determined that, other than as disclosed in Note 2 of the notes to our consolidated financial statements appearing elsewhere in this prospectus, such standards will not have a material impact on our financial statements or do not otherwise apply to our operations.

BUSINESS

Overview

We are a clinical-stage biopharmaceutical company dedicated to developing and commercializing novel therapeutics to treat patients suffering from rare inherited genetic disorders of hemoglobin, known as hemoglobinopathies. Our pipeline is built on the differentiated therapeutic potential of our initial product candidate, IMR-687, which is an oral, once-a-day, potentially disease-modifying treatment for sickle cell disease, or SCD, and b-thalassemia. IMR-687 is a highly selective, potent small molecule inhibitor of phosphodiesterase-9, or PDE9, that has a multimodal mechanism of action that acts primarily on red blood cells, or RBCs, and has the potential to act on white blood cells, or WBCs, adhesion mediators and other cell types that are implicated in SCD. We are conducting a Phase 2a clinical trial of IMR-687 in adult patients with SCD, and we expect to report interim data from this trial in the second half of 2019 and top-line data in mid-2020. We also intend to initiate a Phase 2 clinical trial of IMR-687 for the treatment of patients with b-thalassemia in the first half of 2020. Our goal is to leverage IMR-687's differentiated mechanism of action, its ease of administration and stable drug properties to potentially serve a broad range of patients suffering from hemoglobinopathies around the world, including those in underserved regions.

Hemoglobinopathies are a diverse range of rare inherited genetic disorders in which there is abnormal production or absence of hemoglobin, the iron-containing protein in RBCs responsible for transporting oxygen in the blood. Hemoglobinopathies can be broadly categorized into two groups. The first group of hemoglobinopathies, which includes SCD, results from structural abnormalities in hemoglobin that cause RBCs to become inflexible and elongated, ultimately blocking blood flow to organs, which can lead to vaso-occlusive crises, or VOCs. SCD is characterized by debilitating pain, progressive multi-organ damage and early death. The second group of hemoglobinopathies, which includes b-thalassemia, results from decreased or absent production of hemoglobin, thereby producing smaller, paler RBCs that do not deliver adequate oxygen to vital tissues. b-thalassemia is often grouped into two subsets: patients who are non-transfusion dependent, or NTDT, or patients who are transfusion dependent, or TDT. If left untreated, b-thalassemia causes severe anemia, splenomegaly, skeletal abnormalities, organ failure and early death. Both groups of hemoglobinopathies share similar pathophysiology and have limited treatment options, which results in a significant unmet medical need for patients. The global prevalence of SCD and b-thalassemia are estimated to be approximately 4.4 million and 288,000 patients, respectively. SCD and ß-thalassemia are both designated as rare diseases in the United States and the European Union. For SCD, prevalence is estimated to be approximately 100,000 patients in the United States and 134,000 patients in the European Union. For b-thalassemia, total combined prevalence in the United States and the European Union is estimated to be approximately 19,000 patients.

Managing hemoglobinopathies and their various clinical manifestations is complex, and patients have few accessible treatment options. Currently approved therapies for SCD have significant limitations, including safety concerns, complex dosing regimens, variable response rates and potential adverse effects from long term use. There are no currently approved oral therapies for b-thalassemia. Blood transfusions are used to treat both SCD and b-thalassemia, but are suboptimal due to limited patient access and serious potential complications that include iron overload, adverse immune response and transmission of transfusion-associated infections. Allogeneic hematopoietic stem cell transplant, or HSCT, is also available as a potentially curative treatment for both disorders, but it is rarely used due to the difficulty in finding a matched donor and an approximately 5% mortality rate. More recent approaches to treating both disorders are emerging, such as gene therapy and gene editing, however, these are complex, costly, difficult to administer and potentially only suitable for a limited subset of patients.

Our product candidate, IMR-687, is a highly selective and potent small molecule inhibitor of PDE9. PDE9 selectively degrades cyclic guanosine monophosphate, or cyclic GMP, an active signaling molecule that plays an important role in vascular biology. Lower levels of cyclic GMP are found in patients with SCD and b-thalassemia and are associated with reduced blood flow, increased inflammation, greater cell adhesion and reduced nitric oxide mediated vasodilation. Blocking PDE9 acts to increase cyclic GMP levels, which is

associated with reactivation of fetal hemoglobin, or HbF, a natural hemoglobin produced during fetal development. Increased levels of HbF in RBCs have been demonstrated to improve symptomology and substantially lower disease burden in both patients with SCD and patients with b-thalassemia. In addition, increasing cyclic GMP is associated with lower WBC activation and reduced adhesion across various cell types, both of which also contribute to SCD. We believe IMR-687 has several differentiating features that make it an optimal therapeutic for SCD and b-thalassemia, as supported by our preclinical data:

- **Highly Potent PDE9 Inhibitor**: IMR-687 is a highly potent PDE9 inhibitor, as measured by induction of cyclic GMP across escalating doses. IMR-687 has been designed to rapidly increase cyclic GMP, which translates to HbF induction and potentially reduced WBC adhesion.
- **Differentiated Selectivity and Tolerability Profile**: IMR-687 is highly specific to PDE9 and not selective for other phosphodiesterase family members. Toxicology studies of IMR-687, including fertility and juvenile studies, support its potential benefit as a long-term therapy in adults and children. We believe this selectivity will allow us to optimize dose while minimizing off-target effects.
- **Minimal Brain Penetration**: IMR-687 was observed to have low brain penetration in preclinical *in vivo* models relative to other PDE9 inhibitors that have been studied. We believe this will reduce the potential impact of PDE9 inhibition on central nervous system development and function.
- **Drug Product Stability**: IMR-687 has been shown to be stable at high temperatures and in humid conditions, potentially enabling worldwide access, including in underserved regions where SCD and b-thalassemia are endemic.

In an SCD *in vitro* model, we measured the ability of IMR-687 to increase cyclic GMP levels in an RBC cell line as compared to hydroxyurea, or HU, a U.S. Food and Drug Administration, or FDA, approved therapy for SCD. In this study, we observed that IMR-687 induced cyclic GMP production in a dose-dependent manner at an approximately 30-fold lower drug concentration than HU. In addition, at an equivalent drug concentration of 10 µM of IMR-687, we observed an approximately ten-fold increase in cyclic GMP levels as compared to HU. We also evaluated IMR-687 in a mouse model of SCD that expresses human sickle hemoglobin. We observed that IMR-687 demonstrated statistically significant increases in HbF-positive RBCs, statistically significant decreases in the percentage of sickled RBCs and decreases in markers of hemolysis, or destruction of RBCs, and WBC adhesion. In our Phase 1 randomized, double-blind, placebo-controlled clinical trial in healthy volunteers, single and multiple ascending doses of IMR-687 were reported to be well tolerated to a maximum dose of 4.5 mg/kg per day and no serious adverse events were reported. In a b-thalassemia *in vivo* preclinical model, we observed that IMR-687 demonstrated statistically significant increases in hemoglobin, statistically significant increases in total RBC counts and the promotion of RBC maturation, a key mechanistic component in reducing b-thalassemia pathology.

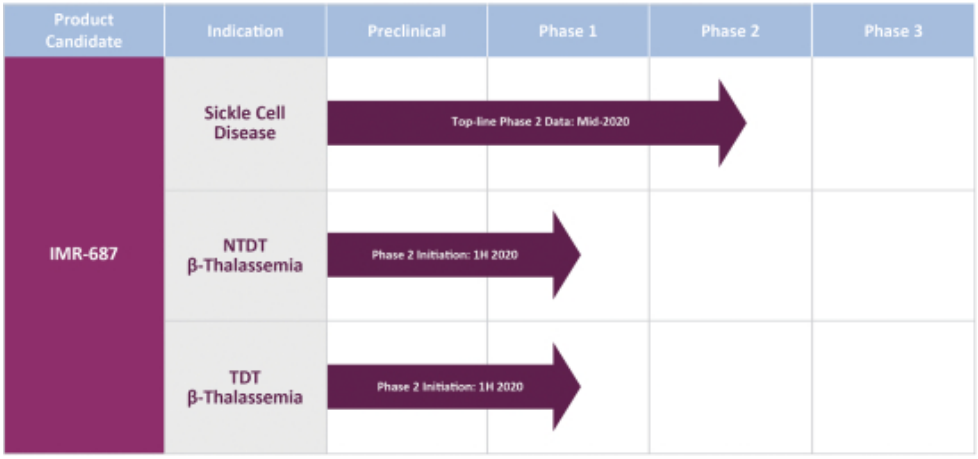
Based on these promising data, we initiated our Phase 2a randomized, double-blinded, placebo-controlled clinical trial of IMR-687 in adult patients with SCD. The goals of this trial are to evaluate the safety, tolerability, pharmacokinetics, or PK, exploratory pharmacodynamics, or PD, and clinical outcomes of IMR-687 administered once daily for 16 or 24 weeks in two populations of patients with SCD: one on monotherapy IMR-687 and one on background HU in combination with IMR-687. We expect to report top-line data from this trial in mid-2020. We have also initiated an open label extension trial, which allows patients from the Phase 2a clinical trial to continue into a long-term, four-year trial to evaluate safety and tolerability of IMR-687. Finally, we plan to commence a Phase 2 clinical trial of IMR-687 in adult patients with b-thalassemia in the first half of 2020.

Our management team has extensive experience in the successful clinical development and commercialization of therapeutic products at a number of pharmaceutical and biotechnology companies. We believe this breadth of experience and track record combined with our broad network of established relationships with leaders in the industry and medical community provide us with the skills necessary to build a leading biopharmaceutical company. We have been backed by a group of leading life-sciences investors, including New

Enterprise Associates, OrbiMed Advisors, Arix Bioscience, RA Capital, Rock Springs Capital, Pfizer Venture Investments, Lundbeckfonden Ventures, Bay City Capital and Alexandria Venture Investments.

Our Pipeline

We are advancing a pipeline of therapeutic programs to address hemoglobinopathies with significant unmet medical need. The following chart summarizes key information about our programs:



Our Strategy

Our goal is to become a leading biopharmaceutical company focused on the development and commercialization of novel therapies for the treatment of hemoglobinopathies. To achieve this, we are focused on the following key strategies:

- ***Rapidly advance IMR-687 through clinical development for the treatment of SCD.*** There remains a significant unmet medical need to develop differentiated disease-modifying, oral therapies to treat SCD. We are currently conducting a Phase 2a clinical trial of IMR-687 in adult patients with SCD and expect to report top-line data from this trial in mid-2020. In addition, we intend to expand clinical development of IMR-687 into developing world regions and other patient populations, including adolescent and pediatric patients and those with milder forms of the disease.
- ***Expand clinical development of IMR-687 for the treatment of ß-thalassemia.*** Based on the similar pathophysiology and symptomology shared between SCD and b-thalassemia, we believe there is a compelling rationale to expand clinical development of IMR-687 into b-thalassemia. Various preclinical studies, as well as favorable safety data from our Phase 1 trial, further support the development of IMR-687 in this indication. We plan to initiate a Phase 2 clinical trial in adult patients with b-thalassemia in the first half of 2020.
- ***Continue efforts to expand our pipeline.*** We believe that our extensive expertise and experience with IMR-687 will allow us to expand development of IMR-687 into adjacent rare blood cell disorders where there remains a significant unmet medical need. We intend to conduct internal discovery to expand development of IMR-687 into additional hemoglobinopathies, while simultaneously pursuing external business development to identify novel product candidates.
- ***Maximize the commercial opportunity of our product portfolio.*** We have retained worldwide development and commercial rights to IMR-687 and are pursuing a clinical and regulatory

development strategy for IMR-687 in the United States, Europe and certain other international regions. As we advance IMR-687 through clinical development, we intend to establish a focused marketing and sales infrastructure in order to maximize the commercial opportunity in the United States and Europe, and potentially other international regions.

- ***Strategically evaluate licensing and collaboration opportunities to maximize value.*** We may selectively evaluate the merits of entering into licensing and collaboration agreements for regions in which we are unlikely to pursue independent development and commercialization, or where a collaborator could provide specialized expertise and capabilities to create additional value.

Sickle Cell Disease Overview

Sickle cell disease is the most common type of inherited hemoglobinopathy. SCD is characterized by debilitating pain, progressive multi-organ damage and early death. Beginning early in life, patients suffer from blocked blood flow to tissues, known as vaso-occlusion, destruction of RBCs, known as hemolysis, and inadequate oxygen delivery, or hypoxia. The most common complication of SCD is pain, often a consequence of VOCs. A VOC occurs when circulation is obstructed by sickled RBCs, causing tissue damage to the organ and resultant pain. The outcomes of these events begin presenting early in childhood and quickly lead to heart and lung complications, renal disfunction, prolonged refractory penile erection (known as priapism), spleen enlargement and failure, stroke, retinopathy and mental and physical disabilities. Patients with SCD experience pain on an average of 55% of days and priapism occurs in 35% of male patients. Acute chest syndrome occurs in approximately half of all patients with SCD and is a leading cause of hospitalization and death among patients with SCD. Stroke occurs in 11% of patients with SCD by the age of 20 and in 24% of patients by the age of 45. Adult patients with SCD are hospitalized three times per year on average, and one-third of patients with SCD are readmitted to the hospital within 30 days of initial hospitalization. Given the constellation of these comorbidities, patients with SCD have a diminished quality of life and on average have a significantly shorter lifespan than normal healthy adults.

SCD is caused by a single mutation in the gene that expresses the beta globin subunit of hemoglobin. Hemoglobin in RBCs consists of two beta globin and two alpha globin subunits. Hemoglobin's primary function is to transport oxygen from the lungs to tissues throughout the body and return carbon dioxide back to the lungs. In oxygen rich environments, like the lungs, hemoglobin has a high affinity for oxygen and binds to it rapidly. In lower oxygen surroundings, like peripheral tissues, hemoglobin has a low affinity for oxygen and releases it quickly. The beta globin subunit mutation in SCD leads to the production of abnormal hemoglobin known as sickle hemoglobin, or HbS. HbS is comprised of two mutant beta globin and two normal alpha globin subunits. In reduced oxygen settings, HbS permits hydrophobic associations between the mutated beta globin subunits and the normal alpha subunits. This causes the oxygen deficient hemoglobin units to assemble into long chains in an event known as polymerization. These long, fixed chains of hemoglobin distort the flexible disc-like RBC into an inflexible crescent or "sickled" shape. Although the sickled RBC may convert back into a regular RBC in oxygen rich environments, it will return to its sickled form in lower oxygen environments and ultimately may be permanently sickled and/or be destroyed.

There are several genetic variations of SCD, including:

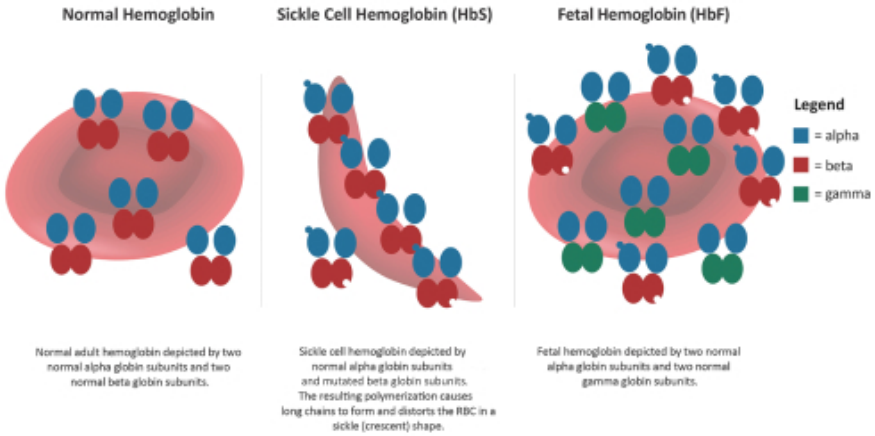
- **HbSS,** also known as sickle cell anemia, is the most common and severe form of SCD where patients inherit one mutated beta-globin gene from each parent. Approximately 60% of patients with SCD have HbSS.
- **HbS/b-0 thalassemia** is a form of SCD where patients inherit one mutated beta-globin gene and one mutated b-thalassemia gene, and is often clinically indistinguishable from patients with HbSS. Approximately 10% of patients with SCD have HbS/b-0 thalassemia.
- **HbSC** is a form of SCD where patients inherit one mutated beta-globin gene and one mutated hemoglobin C gene. Approximately 30% of patients with SCD have HbSC, which is a milder form of disease.

Although patients with SCD often present a spectrum of symptoms that can vary over time, patients are often grouped by their predominant symptomology: those that present with hemolytic anemia, which is largely driven by sickled RBCs, and those that present with painful VOCs, where RBCs, WBCs and other cell types play a role.

The Role of Fetal Hemoglobin on RBC Pathophysiology and SCD

One way to prevent the polymerization of HbS that results in sickled RBCs is to enhance the overall affinity of hemoglobin for oxygen, which reduces sickling in low oxygen environments and ameliorates pathophysiology of the disease. A promising approach to enhance hemoglobin-oxygen affinity is to reactivate production of inactive HbF, which we refer to as HbF induction. HbF is a natural hemoglobin that is activated during fetal development and is designed to give the growing fetus better access to oxygen from the maternal bloodstream. HbF has higher affinity for oxygen and ceases production approximately six months after birth, at which time it is replaced by adult hemoglobin that has lower oxygen affinity. Accordingly, newborns with SCD do not experience RBC sickling and resulting symptomology in the first four to five months of life. As HbF production declines and mutated HbS is produced in its place, SCD clinical manifestations begin to rapidly emerge. Some children with SCD mature into adulthood with persistence of HbF, otherwise known as hereditary persistence of HbF, and this reduces the long-term clinical manifestations of SCD. In some cases, these patients are essentially asymptomatic. We believe that the protective aspects of naturally occurring HbF supports the development of therapies that induce HbF as a means to treat SCD.

The image below depicts how RBCs can change shape in low oxygen environments. In healthy individuals, there is no change to the hemoglobin organization or RBC structure. In SCD, hydrophobic interactions with the hemoglobin subunits lead to polymerization and cause RBC distortion. In cells with reactivated HbF, polymerization is avoided because HbF reduces the ability of mutated hemoglobin to polymerize.

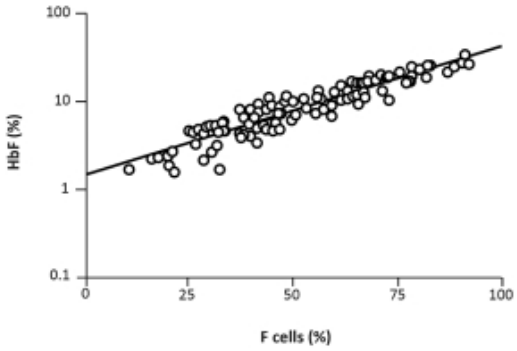


Reactivation of HbF occurs in immature RBCs, known as erythroblasts and reticulocytes. These cells are found in the bone marrow and have the cellular machinery to produce HbF. Once HbF is induced in nascent RBCs, they eventually grow into mature RBCs that contain HbF. Mature RBCs that are already in circulation are not viable targets for HbF induction because they do not contain DNA. Over time, these mature RBCs without HbF die out and are replaced by newly mature RBCs that contain HbF, further increasing the population of HbF containing RBCs. This time course can be up to 120 days, which is the lifespan of a normal RBC, or substantially shorter, as sickled RBCs live for only eight to 40 days. Therapies that increase HbF must focus on immature RBCs to ensure HbF is increasingly part of the mature and circulating RBC population.

Measuring the reactivation of HbF is accomplished in two interrelated ways. The first assay confirms if an RBC contains HbF, in which case it is known as an F-cell. We believe that measurements of the percentage of

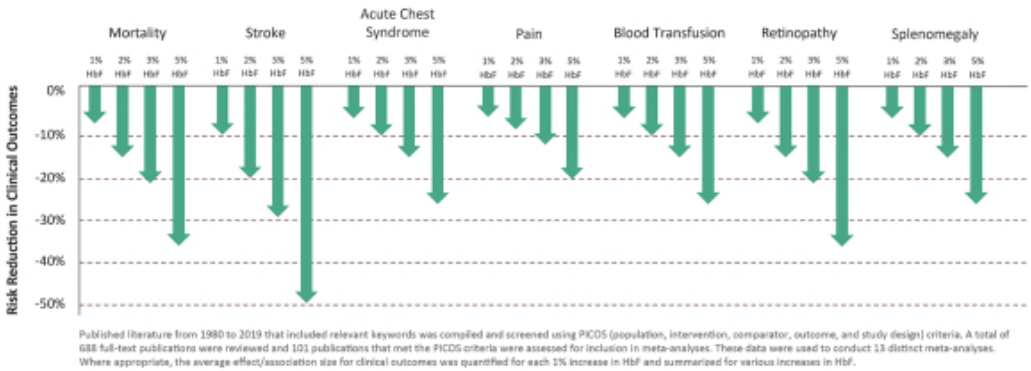
F-cells relative to total RBCs, which we refer to as %F-cells, establish whether a therapy is reactivating HbF production. The second assay quantifies the amount of HbF across RBCs, expressed as a percentage of total hemoglobin, or HbF%. Increasing HbF% is key to addressing SCD disease pathology and ultimately drives the improved hemoglobin-oxygen affinity. As illustrated in the graphic below, which is based on data from 242 pediatric patients with SCD across various genotypes, the relationship between %F-cells and HbF% is exponentially correlated in that linear increases in %F-cells yield multi-fold increases in HbF%.

Relationship Between %F-cells and HbF%



While %F-cells increases are important measurements, absolute increases in HbF% ultimately drive reduction in disease risk. We recently commissioned a third-party to perform a systematic literature review and series of quantitative meta-analyses to identify evidence for clinical outcomes associated with HbF% in patients with SCD. Statistically significant associations between HbF% and clinical outcomes in SCD were found for the following: mortality, stroke, acute chest syndrome, pain, blood transfusion, retinopathy and splenomegaly. The figure below shows how absolute increases in HbF% are associated with reduced disease risk across several of these parameters.

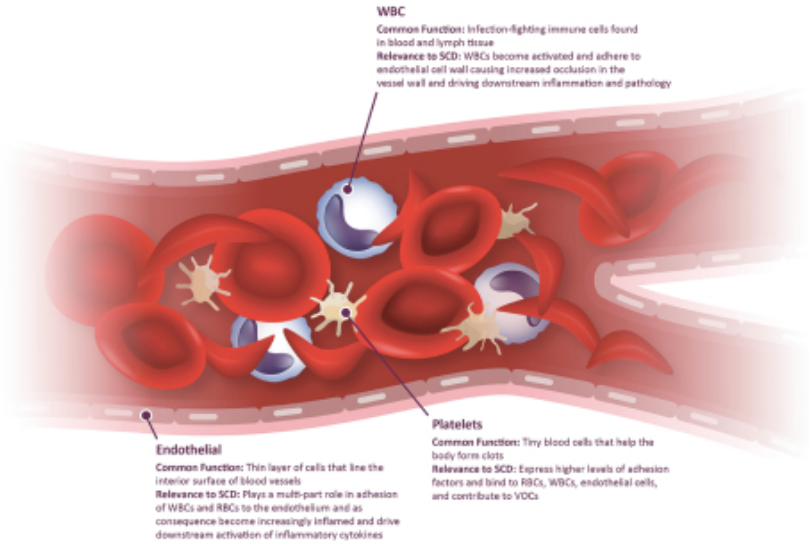
Association Between Increases in HbF% and Disease Risk



The Role of Other Cell Types in SCD

While HbF induction focuses primarily on the RBC aspect of SCD pathophysiology, non-RBC factors also play an important role in SCD. Several other cell types contribute to SCD, including WBCs, endothelial cells and platelets. Dysfunction of these cells, their inter-relationship and resulting downstream inflammatory processes

contribute to numerous acute symptoms in SCD patients, such as painful VOCs and multi-organ damage. Third-party clinical data suggest that elevated WBCs are a predictor of increased risk of early death in patients with SCD. Furthermore, in patients with SCD, WBCs are activated and express higher levels of cell surface markers associated with adhesion, such as CD11a, CD11b and CD18. WBCs also interact with sickled RBCs and endothelial cells causing both cell aggregation and adhesion within the blood vessel. As a result, endothelial cells are damaged and secrete inflammatory signals that can ultimately lead to organ damage. Platelets exacerbate this inflammatory cascade by releasing cell signaling molecules known as cytokines and further contribute to the cellular blockage in blood vessels that causes VOCs and clinical pathology. The following image describes the role of each of these cells and how they may be implicated in SCD:



The Role of Adhesion Mediators in SCD

In addition to specific cell types playing a role in SCD, adhesion mediators cause RBCs, WBCs, endothelial cells and platelets to stick to one another. These adhesion mediators, known as cell adhesion molecules, or CAMs, include selectins and vascular factors that form a multi-cellular lattice that contributes to blood vessel blockage. Inhibition of different types of adhesion mediators has recently become an approach to ameliorate SCD pathophysiology, which is distinct from approaches that solely target the underlying sickled RBC. Adhesion mediators can also be easily measured and therefore serve as reproducible biomarkers across RBCs, WBCs, endothelial cells and platelets. These include P-selectin, E-selectin, vascular cell adhesion molecule 1, or VCAM-1, and intercellular adhesion molecule 1, or ICAM-1.

Addressable Patient Population

The global incidence of SCD is estimated to be approximately 300,000 births annually, and by 2050, incidence is expected to rise to approximately 400,000 births annually. In the United States, where newborn screening for SCD is mandatory, the estimated prevalence is approximately 100,000 individuals. In the European Union, the estimated prevalence is approximately 134,000 individuals. The global prevalence of SCD is estimated to be approximately 4.4 million patients. SCD is most common among people of African, Middle Eastern and South Asian descent.

In the United States, it is estimated that the annual healthcare costs per adult patient with HbSS SCD is in excess of $230,000. Additional longitudinal estimates suggest that on a per patient basis, cumulative lifetime

healthcare costs for this population in the United States could exceed $8 million, assuming the patient lives until approximately age 50, which does not include additional estimates for productivity loss, reduced quality of life and early death.

We believe that a differentiated oral once-a-day therapeutic could reduce healthcare utilization and be a convenient way for patients, physicians, and payors to address this devastating and costly disease.

Approved and Emerging Modalities and Their Limitations

Approved Treatments

Managing SCD and its various clinical manifestations is complex, and patients have had limited options for treatment. There are only two FDA-approved drugs in the United States to treat SCD: HU and L-glutamine (marketed as Endari). These therapies have significant limitations in their safety, dosing regimen, efficacy and long term effects.

HU, an oral chemotherapy that induces HbF and decreases sickling of the RBC, was first approved by the FDA for the treatment of SCD in 1998. In the seminal trial for HU that led to its approval, patients on average saw increased HbF induction of 3.2% over a two-year treatment period, which resulted in improved clinical outcomes, such as reduction of acute chest syndrome. Despite these benefits, HU remains a suboptimal therapy for several reasons:

- **Safety Concerns:** HU has a black box warning because of its cancer-causing potential.
- **Complex Dosing Regimen:** Due to HU's myelosuppressive effects, which can lead to reduced WBC and platelet counts, patients need to be frequently monitored and HU must be titrated over many months, which prevents many patients from achieving an optimal dose of therapy.
- **Variable Responses:** Patients treated with HU have significant nonresponse rates, and HU may have a delayed onset of activity.
- **Potential Long-Term Effects of Use:** Long-term effects include the potential for infertility in both males and females.

Due to HU's various limitations, only approximately 30% and 22% of patients with SCD in the United States and certain countries in Europe, respectively, are treated with HU.

Endari, an oral powder form of L-glutamine, was approved by the FDA in 2017, becoming the first new FDA-approved treatment for SCD in nearly 20 years. L-glutamine is an amino acid precursor to nicotinamide adenine dinucleotide, or NAD, and is thought to reduce the oxidative stress that is present in patients with SCD. In May 2019, the Committee for Medicinal Products for Human Use, or CHMP, of the European Medicines Agency, or EMA, adopted a negative opinion in relation to use of L-glutamine in the treatment of SCD.

Blood transfusions are another suboptimal treatment option for patients with SCD. Transfusions can transiently bolster hemoglobin levels by adding functional RBCs, but can lead to several complications that include iron overload, adverse immune response and transmission of transfusion-associated infections. Due to the lack of uniform accessibility to blood transfusions, they are not widely employed for the treatment of SCD. HSCT is available as a potentially curative treatment for SCD and acts by halting sickled RBC production from the affected marrow and replacing it with healthy hematopoietic stem cells from a matched donor. HSCT is rarely used due to the difficulty in finding a matched donor, the potential for infection and an approximately 5% mortality rate. The possibility of increased mortality risk relegates this to a last option, often utilized only in the most severe cases.

There remains a critical unmet medical need to develop new preventative therapies that are easy to access, safe for long-term use and address the multiple aspects of SCD pathology.

Emerging Modalities

There has recently been an increased focus on the development of new treatments for SCD with a spectrum of different approaches, but none address the multifactorial pathology of SCD with an oral once-a-day tablet. These approaches can be broadly categorized as follows:

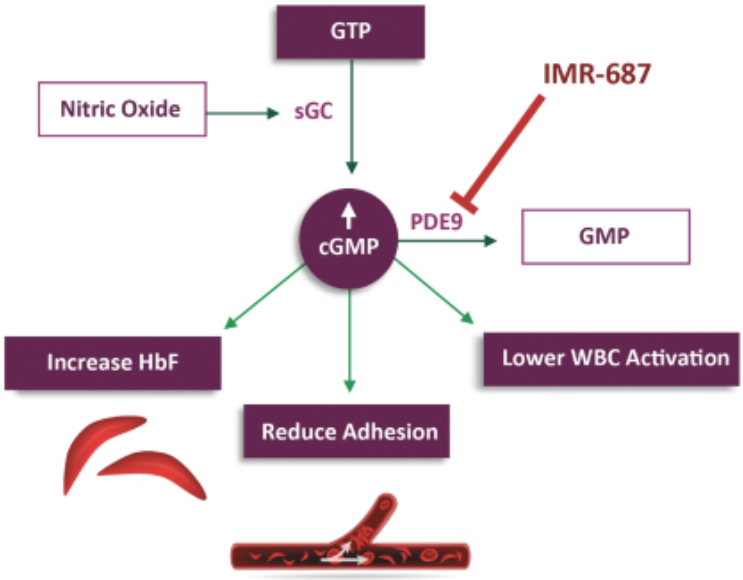
Anti-Sickling Agents: Approaches to prevent sickling by changing hemoglobin affinity to oxygen include HbF inducers and anti-polymerization agents. However, approaches that are solely focused on reducing polymerization may not address the complex symptomology of SCD.

Selectin Inhibitors: Pan selectin and specific P-selectin inhibitors are designed to reduce adhesion of WBCs to the endothelial cell wall. However, selectin approaches do not ultimately prevent the sickling of RBCs in SCD. Furthermore, current selectin approaches are limited to delivery via lengthy infusion treatments every three to four weeks.

Gene Therapy/Editing: Gene-based therapy is a potential innovative approach to SCD treatment. Like HSCT, gene therapy for SCD involves several pre-treatment steps that can include chemotherapy, which carry significant standalone risks. Recent data from a gene therapy trial indicated that chemotherapeutic pre-treatment resulted in a patient with SCD developing myelodysplastic syndrome, where the blood-forming cells in the bone marrow become abnormal. *In situ* gene mutagenesis with CRISPR-Cas9 is an alternative approach to gene modification that remains in early clinical development. Numerous questions remain with respect to the gene editing approach, including off-target mutagenesis and the ultimate potential reach of such therapeutics. More studies are needed to establish durability and safety of these potential treatments.

The Role of Phosphodiesterase-9 in SCD

IMR-687 is being developed to inhibit PDE9. PDE9 decreases cyclic GMP, an active signaling molecule that plays an important role in vascular biology. Lower levels of cyclic GMP, as found in patients with SCD, are associated with reduced blood flow, increased inflammation, greater cell adhesion and reduced nitric oxide mediated vasodilation. The figure below illustrates the role of PDE9 inhibition and its potential benefits on SCD pathophysiology. Nitric oxide, a chemical that supports blood vessel health, drives increases in a broadly expressed enzyme, soluble guanyl cyclase, or sGC, which drives the conversion of Guanosine-5'-triphosphate, or GTP, into cyclic GMP. Cyclic GMP levels are decreased by the PDE9 enzyme, which actively converts cyclic GMP to GMP. Increasing cyclic GMP by inhibiting PDE9 has several potential advantageous downstream impacts, including to increase HbF, reduce cell adhesion, decrease WBC activation and ultimately increase nitric oxide levels.



Novel cyclic GMP Degrader: PDE9 belongs to a family of 11 cyclic nucleotide phosphodiesterases, or PDEs. In general, PDEs degrade both cyclic GMP and cyclic adenosine monophosphate, or cAMP. However, PDE9 solely degrades cyclic GMP, has the highest affinity for cyclic GMP of all PDEs, and does not degrade cAMP. Inhibiting PDE9 offers a novel way to increase cyclic GMP levels by limiting cyclic GMP degradation. We believe that other approaches that increase cyclic GMP levels without addressing its degradation, such as HU, are unlikely to confer persistent and robust increases in cyclic GMP. Conversely, preventing degradation of cyclic GMP by targeting PDE9 may enable long-term benefits that include sustained HbF induction, reduced activation of WBCs, positive effects on other cell types and reduced cell adhesion.

High Expression in SCD Cells of Interest: PDE9 is highly expressed in cells of interest in SCD, specifically reticulocytes, which are an important cell type for HbF induction. Furthermore, PDE9 has high expression in WBCs and in areas where RBCs are formed. A potential drawback of inhibiting PDE9 for the treatment of SCD is that PDE9 is also highly expressed in the brain, which in part explains why PDE9 inhibitors have been extensively studied in neurodegenerative diseases. While several PDE9 inhibitors have been shown to be well-tolerated in adults, preclinical data suggests that brain penetrant PDE9 inhibition causes mice to have changes in fear response, which may reflect memory impairment. This could be concerning in pediatric patients with SCD who continue to have ongoing brain development. Thus, any PDE9 inhibitor broadly targeting SCD should minimally cross the blood-brain barrier.

A proof-of-concept trial of the drug candidate sildenafil targeting a related PDE family member, PDE5, was conducted in patients with SCD that presented with pulmonary hypertension. The trial terminated early due to observed safety issues and lack of clinical benefit. PDE5 is highly expressed in vascular smooth muscle, but has low expression in SCD cells of interest, including reticulocytes, RBCs, WBCs, and other cell types. In addition, unlike PDE9, PDE5 also degrades cAMP, which makes it a less selective target for treating SCD. We believe these differences between PDE5 and PDE9 may partially explain why sildenafil was unsuccessful in this SCD trial.

Multimodal Method of Action: In preclinical studies, PDE9 inhibitors have been shown to increase cyclic GMP concentrations, induce HbF and F-cells, reduce WBC activation and adhesion across other cell types and modulate adhesion mediators. A brain penetrant PDE9 inhibitor developed by Bayer known as BAY73-6691, which was originally developed for the treatment of neurodegenerative diseases, was observed to increase cyclic GMP and HbF transcription in a representative human cell line for SCD. Furthermore, BAY73-6691 was observed to reduce WBC activation and adhesion to endothelial cells in patient-derived WBCs. Another brain penetrant PDE9 inhibitor developed by Pfizer known as PF-04447943 was originally developed for Alzheimer's disease and tested in patients with SCD. In Pfizer's Phase 1b clinical trial in patients with SCD, there were some reductions in adhesion markers but no significant HbF induction was observed.

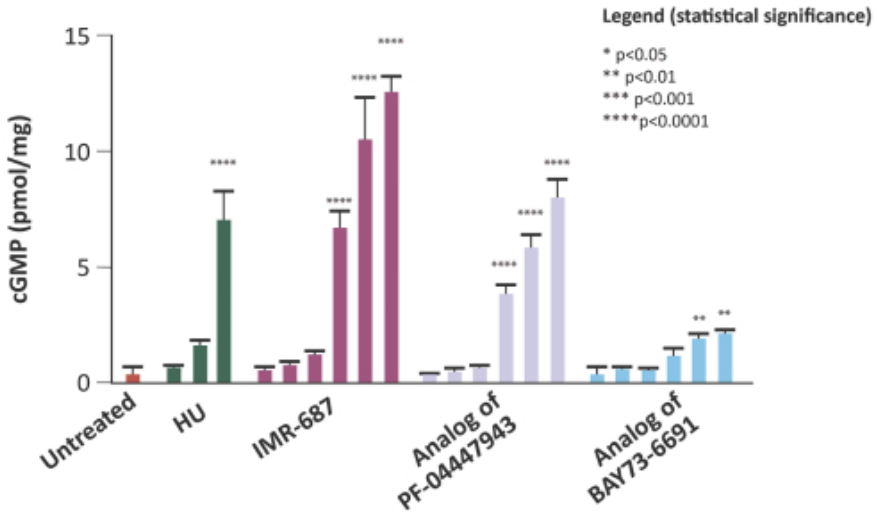
Our Solution for Sickle Cell Disease: IMR-687 as a Differentiated PDE9 Inhibitor

Our approach to address SCD is fundamentally distinct from other therapies. IMR-687 is being developed to directly and potently inhibit PDE9, which represents a differentiated approach to increase cyclic GMP levels, with a selectivity for PDE9 that we believe will make it amenable for long-term use. We are currently conducting a Phase 2a randomized, double blinded, placebo-controlled clinical trial of IMR-687 in adult patients with SCD. We believe IMR-687 may have advantages over other therapies, including speed of onset of HbF induction, a multimodal approach and a once daily dosing regimen. In addition, IMR-687 has been shown to be stable at high temperatures and in humid conditions, potentially enabling worldwide access, including in areas where SCD and b-thalassemia are endemic.

Based on our preclinical studies, we believe IMR-687 has several differentiating features relative to other PDE9 inhibitors:

Highly Potent PDE9 Inhibitor: IMR-687 is a highly potent PDE9 inhibitor, as measured by induction of cyclic GMP across various doses. We have specifically studied the potency of PDE9 inhibition of IMR-687 as compared to HU and analogues of BAY73-6691 and PF-04447943 by analyzing cyclic GMP levels across various doses in an *in vitro* assay. As depicted below, when compared to those agents, IMR-687 was observed to be more potent across all dose groups.

Changes in cyclic GMP as a Result of PDE9 Inhibition



Effect of varying concentrations of hydroxyurea (10, 30, 100 µM left to right, respectively) or other tested drugs (0.03, 0.1, 0.3, 1, 3, 10 µM left to right, respectively) on the concentration of cGMP in K562 cells.

P or p-values are commonly interpreted as the probability that random chance caused the result (e.g., a p-value = 0.05 suggests there is 5% probability that the difference between placebo and treatment groups is due to random chance). A p-value of 0.05 or less is a commonly-used threshold for statistical significance and may be supportive of a finding of efficacy by regulatory authorities. However, regulatory authorities, including the FDA and EMA, do not set strict statistical significance thresholds as a criteria for marketing approval, instead maintaining flexibility to evaluate the overall risks and benefits of a treatment.

Differentiated Selectivity and Tolerability Profile: IMR-687 is a highly selective PDE9 inhibitor. As shown in the graphic below, we compared the selectivity of IMR-687 and an analog of PF-04447943 against a panel of related PDEs. We chose not to test BAY73-6691 or an analog thereof because BAY73-6691's lack of potency led us to conclude there was little merit to further testing. For the isoform PDE9A1, IMR-687 was observed to be more than eight times more selective than the PF-04447943 analog and for the isoform PDE9A2, IMR-687 was observed to be more than four times more selective than the same compound. Isoforms are functionally similar proteins within each PDE family that have slightly different genetic coding. We believe the selectivity of IMR-687 will allow us to optimize dose while minimizing off-target effects. IMR-687 has exhibited lower interaction with other PDE family members compared to the PF-04447943 analog, or did not have measurable inhibition.

Selectivity of IMR-687 Inhibition of PDE9

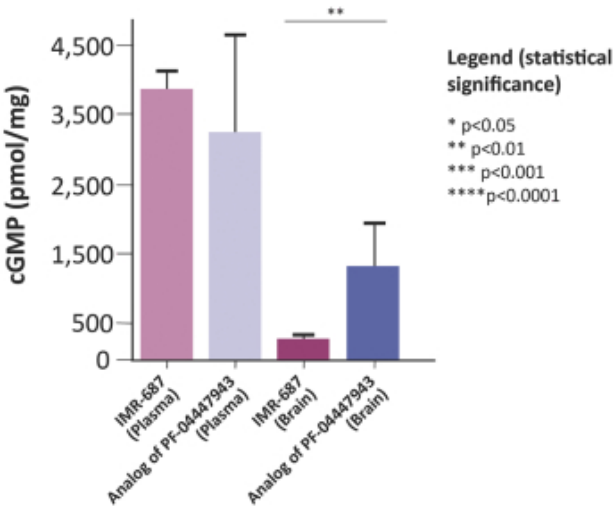
	Target	IMR-687 IC_{50} [μM]	Analog of PFE IC50 [μM]
PDE9 Isoforms (IC50)	PDE9A1	0.008	0.072
	PDE9A2	0.010	0.048
Family Members (Relative Selectivity)	PDE1A3	8,800	980
	PDE1B	850	250
	PDE1C	1,200	80
	PDE4D1	>10,000	960
	PDE5A2	8,200	640
	PDE10A2	>10,000	840

Lower values indicate higher selectivity since a smaller concentration results in greater inhibition.

We also conducted toxicology studies of IMR-687. In a 26-week female rat infertility study and in early embryonic development studies, once-daily dosing of IMR-687 was observed to be well tolerated with no effects on fertility or embryonic development at any dose level studied. In addition to standard adult animal toxicology studies, a juvenile rat study was completed where once daily administration of IMR-687 was observed to be well tolerated with no indication of toxicity.

Minimal Brain Penetration: We are developing IMR-687 specifically because it was observed to have low brain penetration in animal models. We believe this will reduce the potential impact of PDE9 inhibition on central nervous system, or CNS, development and function. Historically, most early PDE9 inhibitors were developed for potential CNS indications and thus were specifically designed to cross the blood-brain barrier. As shown in the graphic below, we observed in a mouse model that while plasma concentrations were similar, brain exposure to levels of IMR-687 were observed to be five times lower than those seen with the PF-04447943 analog at 10mg/kg.

IMR-687 Brain Exposure Compared to Analog of PF-04447943



Additionally, IMR-687 showed no effect on locomotor activity or in a classical fear conditioning mouse model of learning and memory. In contrast, the brain penetrant PF-04447943 analog was observed to significantly increase conditioned fear responses in mice at an equivalent dose.

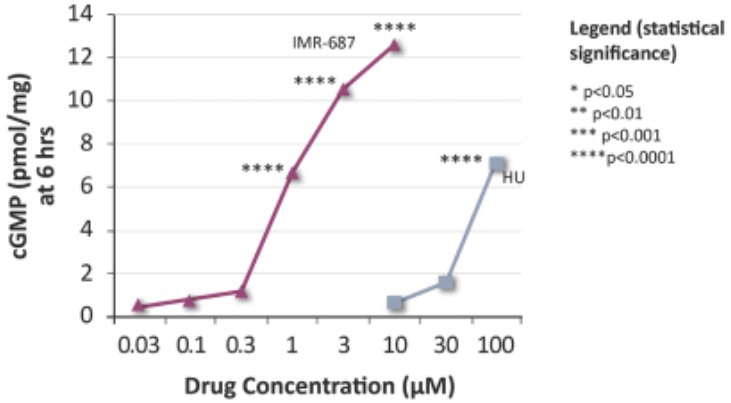
Drug Product Stability: IMR-687 has been observed to exhibit a durable shelf life at both standard and elevated room temperature and humidity conditions. For example, at standard room temperature and humidity conditions, we have observed consistent stability results at a dose of 50 mg at the 21-month time point and at doses of 100 mg and 200 mg at the 24-month time point. In addition, we have recently initiated stability studies in accelerated stress conditions that mimic the high heat and humidity found in tropical conditions, with an objective of ensuring that if IMR-687 is dispensed in those regions, it maintains acceptable purity and stability for an adequate time period. This would provide us with a potential opportunity to treat patients in areas where other treatments may not be accessible, including in areas where SCD and b-thalassemia are endemic.

Preclinical Efficacy Data

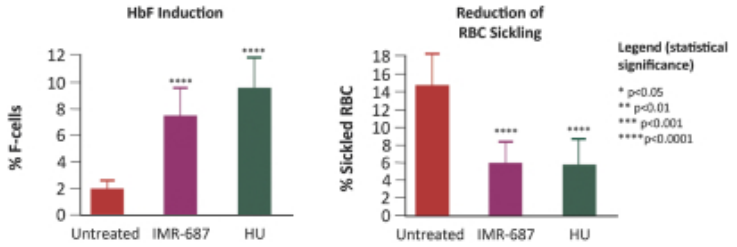
In preclinical SCD models, we observed that IMR-687 is a potent cyclic GMP inducer and had a multimodal mechanism of action, acting to increase RBC HbF expression, reduce RBC sickling and decrease expression of WBC adhesion molecules.

Cyclic GMP Induction: We measured the ability of IMR-687 to increase cyclic GMP levels in an RBC cell line as compared to HU. In this study, we observed that IMR-687 induced cyclic GMP production in a dose-dependent manner at an approximately 30-fold lower drug concentration than HU, as shown in the graphic below. In addition, at an equivalent drug concentration of 10 µM of IMR-687, we observed an approximately ten-fold increase in cyclic GMP levels as compared to HU.

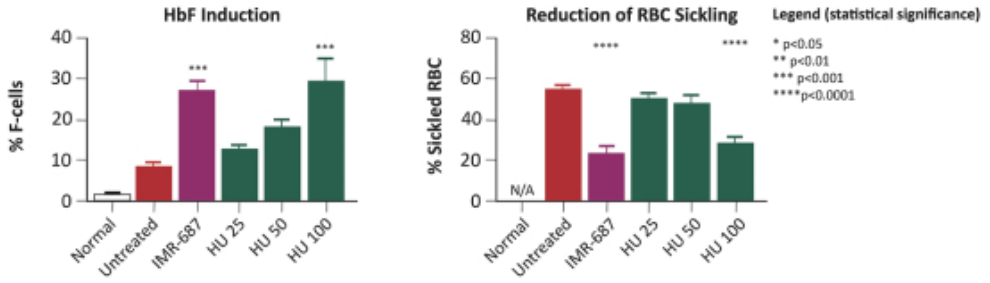
Cyclic GMP Levels After IMR-687 Treatment Compared to HU



In Vivo RBC Studies: We tested IMR-687 in a mouse model of SCD that expresses human sickle hemoglobin. Groups of mice were dosed with either vehicle, 30 mg/kg/day of IMR-687, or 100 mg/kg/day of HU. The administered dose of HU was a supra-therapeutic, has no human equivalent dose and was associated with some lethality in mice. After 30 days of treatment, both IMR-687 and HU were associated with statistically significant increases in %F-cells (left figure) and decreases in the percentage of sickled RBCs (right figure) as compared to vehicle:

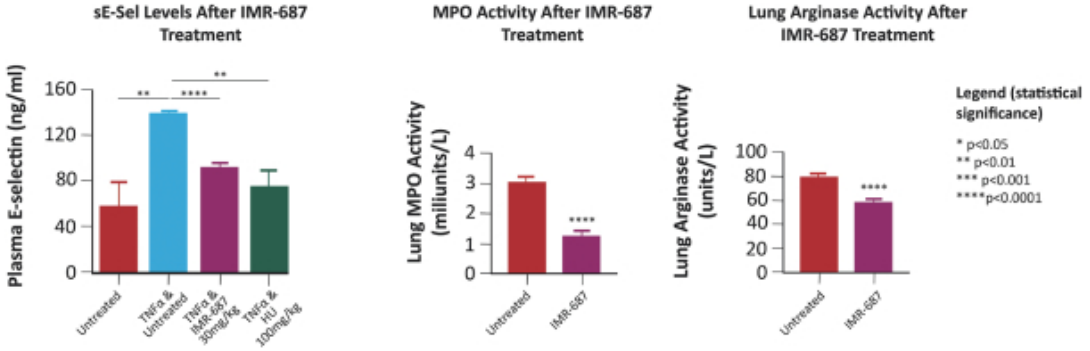


As shown in the graphics below, we also tested the impact of IMR-687 and HU on F-cells, RBC sickling and markers of hemolysis in another mouse transgene SCD model. After 30 days of once-a-day treatment at 30 mg/kg of IMR-687, we observed a greater than three-fold increase in %F-cells and a corresponding two-fold decrease in sickled RBC as compared to vehicle. We observed a similar increase in %F-cells and reduction in sickled RBC with mice treated with HU doses of 100 mg/kg, a supra-therapeutic dose with no human equivalent dose. At HU doses of 25 to 50 mg/kg that approximate those used in patients, the observed induction of HbF was modest and was not statistically significant compared to vehicle. There was also a minimal decrease observed in the percent of sickled RBCs at doses of 25 to 50 mg/kg of HU compared to vehicle.



IMR-687 administration was also associated with a decrease in markers of hemolysis, including an increase in hemoglobin and a reduction in plasma bilirubin levels, plasma LDH activity, plasma nitrate levels and reticulocyte counts and an increase in mature RBCs. These effects were muted or insignificant in the HU treatment groups at doses of 25 to 50 mg/kg.

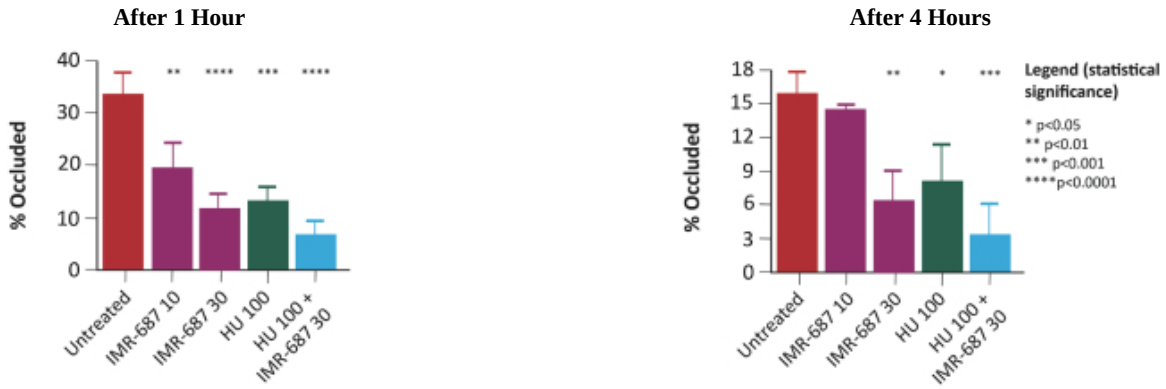
In Vivo WBC and Adhesion: In an SCD mouse model, we observed that 30 days of daily treatment with IMR-687 reduced relevant biomarkers of WBC adhesion, including soluble E-selectin, known as sE-Sel, as depicted in the graphics below. When mice were challenged with an inflammation agent, Tumor Necrosis Factor alpha, known as TNF-alpha, plasma sE-Sel increased 140% over levels seen in control mice. When TNF-alpha was administered in combination with IMR-687, we observed that sE-Sel levels in challenged mice was elevated by only 61% over control mice. We observed similar results in mice administered a combination of TNF-alpha and HU at 100mg/kg, a supra-therapeutic dose with no human equivalent dose. We also observed that mice administered IMR-687 had 67% lower levels of myeloid-derived myeloperoxidase, or MPO, a protein secreted by WBCs that damages the endothelial cell wall, and 26% lower levels of neutrophil-derived arginase in the lung, a marker of neutrophil activity, as compared to control mice.



SCD Mouse Exposure to VOC Events: To assess the impact of IMR-687 on VOCs, SCD mice were exposed to reduced oxygen supply to model a VOC event. The percent of occluded veins (i.e. veins with no blood flow) was quantified after return to normal oxygen conditions with or without pre-treatment with IMR-687 and/or HU.

As depicted in the graphic below, after SCD mice were returned to normal oxygen supply, we observed that the percent occlusion was improved in both the SCD mice treated with IMR-687 alone and with the combination of IMR-687 and supra-therapeutic dose of HU, as compared to control mice. SCD mice treated with a supra-therapeutic dose of HU alone exhibited a moderate reduction in the percent of occluded veins, but the treatment effect was not as robust as that observed with IMR-687 at 30mg/kg/day alone or with the combination of IMR-687 and HU.

Vaso-Occlusion After IMR-687 Treatment



IMR-SCD-101: Phase 1 Clinical Trial in Healthy Volunteers

Our Phase 1 clinical trial was a randomized, double-blind, placebo-controlled clinical trial to evaluate the safety, tolerability and PK of IMR-687 in 66 healthy male and female adults between the ages of 18 and 55 years. The trial was conducted at one site in the United States pursuant to an IND accepted by the FDA in October 2016. The trial was conducted in three parts, which included a single ascending dose stage (Part A), a food effect stage (Part B), and a multiple ascending dose stage (Part C). A total of 50 healthy volunteers received IMR-687 and 16 received placebo. The following table provides a summary of the three dose cohorts.

Phase 1 Clinical Trial Dose Cohorts

		Subjects	
Cohorts	Dose Levels	Control	On Drug
Part A: Single Ascending Dose	5 dose levels, fasted, 0.3 – 6.0 mg/kg	10	20
Part B: Food Effect	fasted/fed comparison, 1.0 mg/kg	0	12
Part C: Multiple Ascending Dose	3 dose levels, 1.0 – 4.5 mg/kg	6	18

In this trial, both single and multiple doses of IMR-687 were reported to be well tolerated up to a maximally tolerated dose of 4.5 mg/kg per day in healthy volunteers. The most common drug-related adverse effects, or AEs, were nausea and headache. No serious adverse events, or SAEs, were reported. We observed that concomitant food intake reduced IMR-687 max concentration by approximately 26% and simultaneously

reduced the incidence and severity of the observed AEs. IMR-687 exposure was not affected by food intake. Review of vital signs did not demonstrate any clinically significant and/or dose-dependent or dosing duration-dependent changes in heart rate or blood pressure. Steady state concentrations of IMR-687 were achieved after two daily doses, and minimal accumulation was observed with seven days of once daily dosing. Individual subjects were noted to have sporadic heart rates of greater than 100 bpm in a non-dose dependent fashion, including placebo subjects, none of which were classified as AEs. One subject at 4.5 mg/kg per day had multiple readings greater than 100 bpm, including at trial start, prior to any administration of trial drug. No efficacy or pharmacodynamics, or PD, evaluations were performed in this trial. A summary of the treatment-emergent AEs for the single ascending dose stage (Part A) and multiple ascending dose stage (Part C) cohorts of the Phase 1 clinical trial is below:

Treatment Emergent AEs

	Dose Group (mg/kg)	Nausea	Nausea + Emesis	Diarrhea/ Abnl Stool	Headache	Somnolence
TEAs in IMR-687 SAD Cohorts	0	0	0	1	0	1
	0.3	0	0	0	0	0
	1	1	0	0	2	0
	3	0	0	0	0	0
	4.5	3	0	0	0	1
	6	3	5	1	4	0
TEAs in IMR-687 MAD Cohorts	0	0	0	0	1	0
	1	0	0	0	0	0
	3	0	0	0	1	0
	4.5	2	3	0	1	0

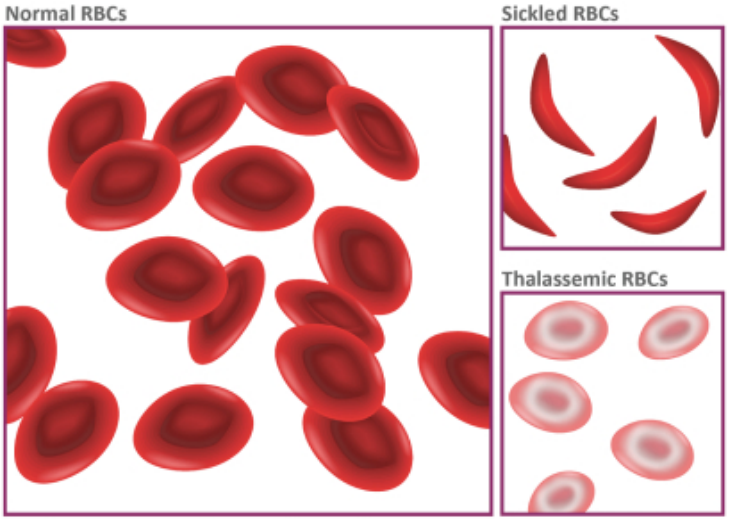
IMR-SCD-102: SCD Phase 2a Clinical Trial

Our Phase 2a clinical trial is a randomized, double-blind, placebo-controlled clinical trial in adult patients with the HbSS and HbS/b-0 thalassemia genotypes of SCD. The trial is being conducted at 17 sites in the United States and the United Kingdom. The goals of this trial are to evaluate the safety, tolerability, PK and exploratory PD and clinical outcomes of IMR-687 administered once daily for 16 or 24 weeks in two populations of patients with SCD. Population A is a monotherapy cohort of patients administered only IMR-687, and Population B is a cohort of patients who are receiving IMR-687 in combination with a fixed dose of HU. Patients in Population B must have been receiving HU for at least 60 days prior to randomization and will continue to receive the same dose of HU throughout the duration of the trial. A total of 82 patients are expected to be enrolled, of which approximately 54 patients are expected to be enrolled in Population A and approximately 28 patients are expected to be enrolled in Population B. We expect to report interim data from this trial in the second half of 2019 and top-line data in mid-2020. Finally, we have initiated an open label extension trial, which allows patients from the Phase 2a clinical trial to continue into a long-term, four-year trial to evaluate safety and tolerability of IMR-687.

b-thalassemia Disorder Overview

b-thalassemia, which is part of the second group of hemoglobinopathies, is a rare inherited RBC disorder. Unlike patients with SCD, patients with b-thalassemia have a mutation that causes the absence or decreased synthesis of the beta globin subunit of hemoglobin, thereby creating an over-abundance of the alpha globin subunit. This causes the formation and aggregation of insoluble clumps that lead to ineffective RBC production

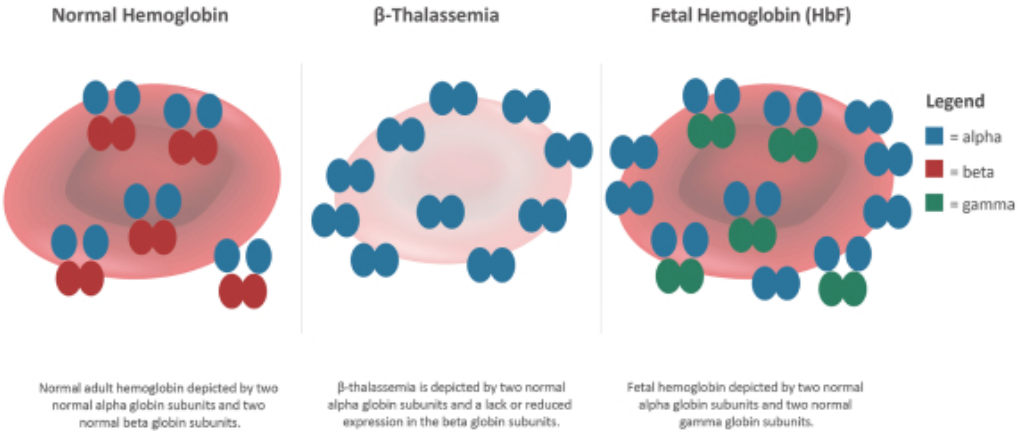
and a reduction in the number of functioning RBCs. Furthermore, the RBCs that do survive have shorter lifespans and are smaller, paler and less efficient at transporting oxygen throughout tissues of the body. Oftentimes, RBCs of smaller size, measured as mean corpuscular volume, is a first indication of b-thalassemia prior to genotyping. If left untreated, b-thalassemia causes severe anemia, splenomegaly, skeletal abnormalities, organ failure and early death. A simple comparison of SCD RBCs to those of b-thalassemia can be seen in the figure below:



b-thalassemia presents as a spectrum of disease, with patients categorized based on hemoglobin levels and clinical manifestations. Although b-thalassemia can be classified as “major,” “intermedia,” and “minor,” a more recent classification is based on a patient’s dependency on blood transfusion. Most b-thalassemia major patients are classified as TDT, while intermedia and minor patients are classified as NTDT. TDT patients have a transfusion regimen that is well established and generally lifelong. NTDT patients are a clinically diverse group, with transfusions required intermittently during periods of RBC stress, such as pregnancy, infection, surgery, times of rapid growth and sometimes later in life.

As in SCD, a promising way to address the missing or decreased presence of the beta globin subunit is to induce HbF production. In addition to resolving persistent anemia, HbF induction rectifies the missing or mutated beta globin subunit and thereby reduces the overabundance of free-floating alpha globin subunits. These benefits have the potential to result in increased functional RBC production, higher hemoglobin levels, reduced hemolysis and the reduction of adhesion and inflammation. Like in SCD, infants with b-thalassemia major do not present clinical symptoms of their disorder until age six to 24 months, and sometimes later, when their HbF is replaced by mutated adult hemoglobin. Natural history data show that patients with b-thalassemia who have high HbF levels, due to hereditary persistence of HbF, have less severe forms of the disorder. In addition, genetic variations associated with increased HbF production have been shown to correlate with reduced b-thalassemia severity.

The image below depicts how RBCs and hemoglobin can change as a result of gene mutations in b-thalassemia. In healthy individuals, there are equal amounts of alpha globin and beta globin subunits, which form normal hemoglobin. In b-thalassemia, the absence and/or mutation of beta globin subunits cause excessive alpha subunits that often aggregate into clusters. In cells with reactivated HbF, the gamma subunit reduces the effects of free-floating alpha chains and may improve hemoglobin efficiency and RBC health.



The potential of HbF induction has been observed through off-label use of HU to treat patients with b-thalassemia and has been explored in numerous clinical trials in both NTDT and TDT patients. Most of these efforts were not randomized controlled trials, and many of them lacked a placebo comparator. Nevertheless, HbF induction by HU showed promising early response in TDT and NTDT patients. In fact, there are numerous documented cases both in clinical trials and in off-label real world use where TDT patients have a reduced need for transfusions with continued HU treatment. Despite these observed benefits, and similar to SCD, there continue to be limitations with HU as a therapy in b-thalassemia, including its toxicity, dosing schedule and potential long-term effects.

Adhesion mediators are also highly upregulated in patients with b-thalassemia and may contribute to the increased number of clots in their blood vessels, known as a hypercoagulability state. Specifically, data show that two adhesion markers, ICAM-1 and VCAM-1, are over-expressed in patients with b-thalassemia as compared to controls. Furthermore, there is evidence that WBCs in patients with b-thalassemia express higher levels of CD11b and CD18, two important biomarkers in the WBC activation cascade. In preclinical SCD studies, we observed that IMR-687 reduced levels of CD11a and CD11b and CD18.

Addressable Patient Population

The prevalence of b-thalassemia globally is estimated to be 288,000, with an incidence of 60,000 births per year. The total combined prevalence of b-thalassemia in the United States and European Union is estimated to be approximately 19,000 patients. Of the patients currently treated in the United States and European Union, we believe approximately 50% and 10%, respectively, are transfusion dependent. b-thalassemia is especially prevalent in developing countries of Africa, South Asia, Southeast Asia, the Mediterranean region and the Middle East. Although historically prevalent in Mediterranean North Africa and South Asia, thalassemias are now encountered in other regions as a result of changing migration patterns. As such, there is a growing focus on developing new therapeutics aimed at improving quality of life for this significant unmet medical need.

Approved and Emerging Modalities and Their Limitations

Approved Treatments

Blood transfusions are the standard of care treatment for b-thalassemia. The risks associated with transfusions are similar to those seen in the SCD population, but higher frequency of use often results in iron overload toxicities, a secondary complication of this treatment. Over time, iron becomes trapped in the tissues of vital organs, which can lead to diabetes, cirrhosis, osteoarthritis, heart attack and hormone imbalances. If not addressed, excess iron can result in organ failure and death. There are several approved agents that remove iron from the body, known as iron chelators, but they have significant challenges including high costs, the requirement for frequent monitoring, therapy complications and patient incompatibility.

HSCT is a potential curative therapy for b-thalassemia and has demonstrated successful outcomes across patient types. However, as in SCD, there are numerous barriers to use, including increased mortality risk, that have limited its broader adoption. Recently, the European Union approved conditional marketing authorization for ZYNTEGLO, a gene therapy approach to b-thalassemia for patients 12 years and older with TDT and for whom HSCT is appropriate, but a donor has not yet been matched or been made available. The long-term efficacy of the therapy remains unknown, as do many of the associated risks.

Emerging Modalities

There has been increased development of new treatments for b-thalassemia, but none address the full spectrum of the disease in an oral once-a-day tablet. These treatments can be broadly categorized into the following approaches:

RBC Maturation: Luspatercept is a modified receptor protein that promotes RBC maturation and increases overall RBC production, but does not address other cell types implicated in b-thalassemia. This investigational therapy was submitted to the FDA for approval in adult TDT patients in April 2019. It is also being investigated in clinical trials to treat NTDT patients. However, variable response rates were observed when treating both TDT and NTDT populations. Luspatercept is dosed subcutaneously and is administered every three weeks in an outpatient setting.

Gene Editing: In situ gene mutagenesis with CRISPR-Cas9 is an alternative approach to gene modification that remains in early clinical development. Numerous questions remain with respect to the gene editing approach, including off-target mutagenesis and the ultimate access of such therapeutics.

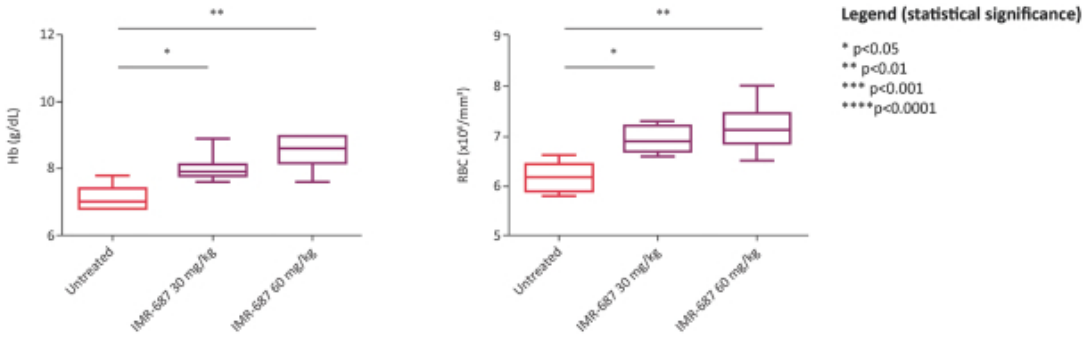
Our Solution for b-**thalassemia: IMR-687 as a Differentiated PDE9 Inhibitor**

PDE9 is a potent and highly selective mechanism that uniquely targets cyclic GMP degradation, making it a promising pathway to increasing cyclic GMP and reactivating HbF induction. Direct PDE9 inhibition is associated with robust increases in cyclic GMP levels, which in turn are associated with HbF induction, and reduction of WBC activation and adhesion across various cell types that are implicated in b-thalassemia. We believe IMR-687 is a differentiated PDE9 inhibitor that is highly potent, selective for its target, minimally brain penetrating, and is delivered in an oral once-a-day therapy, which could be used globally.

Preclinical Data of IMR-687 in b-**thalassemia**

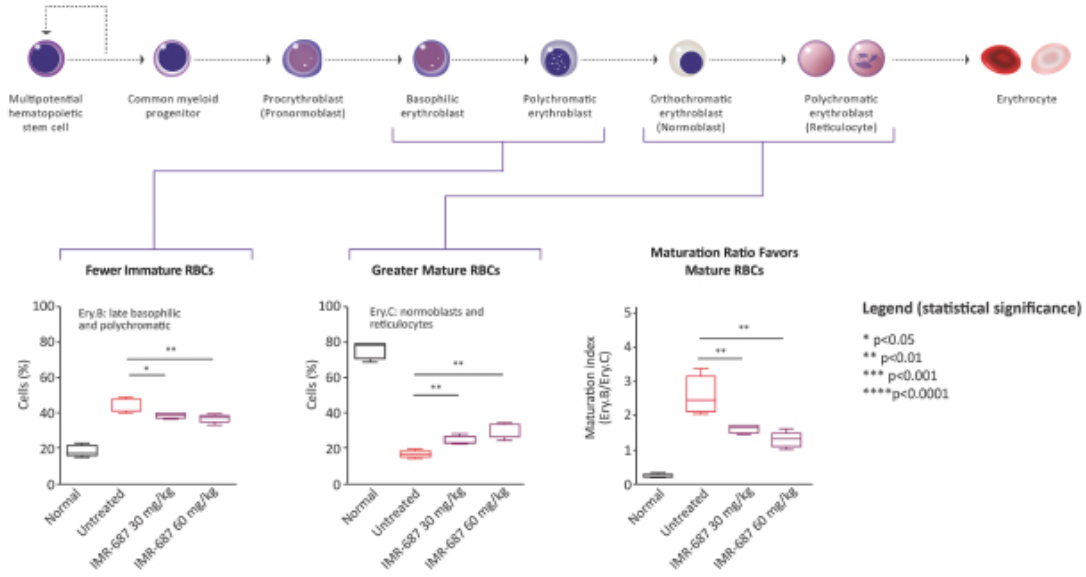
We conducted preclinical studies in a b-thalassemia mouse model that recapitulates the human NTDT condition. This mouse model lacks a functional beta globin subunit, leading to deficits in hemoglobin and RBCs, as well as slowed RBC maturation. As shown in the figure below, after 30 days of treatment at two different doses, we observed that IMR-687 induced statistically significant increases in functional hemoglobin and total RBC counts.

Effects of IMR-687 on Hemoglobin and RBC Counts



As depicted below, promotion of RBC maturation, a key mechanistic component in reducing b-thalassemia pathology, was also observed in preclinical studies. After 30 days of once-a-day treatment with 30 mg/kg and 60 mg/kg of IMR-687, we observed that erythroblast maturation was significantly improved as a result of increasing the amount of Ery.C, which is the population of mature erythroblasts, in comparison to Ery.B, which are more immature erythroblasts. These changes were also associated with a decrease on the ratio of Ery.B to Ery.C, otherwise known as a maturation index, where lower ratio indicates progression to maturity.

Treatment with IMR-687 Promotes RBC Maturation



We believe the NTDT mouse model provides promising *in vivo* proof of concept that IMR-687 can improve the RBC-mediated aspects of b-thalassemia. In addition, we believe the preclinical activity observed in NTDT models will translate to TDT preclinical models, and supports clinical development in both populations. We plan to incorporate the safety package from our clinical programs in SCD to further support clinical development in b-thalassemia. While SCD and b-thalassemia are distinct hemoglobinopathies, they share similar pathophysiology and symptomology which support our strategy of developing IMR-687 across these indications.

Clinical Development Plans for IMR-687 in b-thalassemia

We are in the process of designing a Phase 2 randomized, double-blind, placebo-controlled clinical trial to evaluate the safety and tolerability of daily treatment of IMR-687 in two substudies of b-thalassemia patients: TDT patients and NTDT patients. We expect this trial to enroll approximately 120 patients, 18 through 65 years of age, at the time of randomization with TDT or NTDT. We expect to initiate this Phase 2 clinical trial of IMR-687 for the treatment of adult patients with b-thalassemia in the first half of 2020.

Exclusive License Agreement

In April 2016, we entered into an agreement with H. Lundbeck A/S, or Lundbeck, for a worldwide license under certain patent rights and certain know-how owned or otherwise controlled by Lundbeck within the field of prevention, treatment or diagnosis of hemoglobinopathy disorders and/or other diseases or disorders, including those directly or indirectly related to hemoglobinopathies, which we refer to as the field. This agreement was amended in July 2016 and October 2017.

The agreement grants us an exclusive license under the licensed technology, including the right to grant sublicenses with certain restrictions, to research, develop, make, have made, use, sell, have sold, offer to sell, import, export and commercialize any product comprising or containing certain PDE9 inhibitors, in the field. We call such products licensed products. Subject to certain restrictions, under the agreement, we grant Lundbeck a non-exclusive, irrevocable, perpetual, worldwide, sub-licenseable, and fully paid-up right and license under patent rights we control to the extent necessary for Lundbeck to research, develop, make, have made, use, sell, have sold, offer to sell, import, export and commercialize licensed products outside of the field.

The agreement also grants us a non-exclusive license under the licensed technology to research and develop, and make, have made, use, import and export for purposes of enabling such research and development, enhancements, improvements, modifications or derivatives to licensed products, until but not beyond a specified pre-commercialization developmental stage with respect to each such enhancement, improvement, modification or derivative. We have the right to request that Lundbeck grant us an exclusive development and commercialization license to one or more compounds identified through these activities as a back-up compound.

As partial consideration for the licenses granted under the agreement, we issued 1,055,231 shares of our common stock to Lundbeck in April 2016. We issued 799,984 shares of our common stock to Lundbeck in December 2016 and 936,955 shares of our common stock in August 2017 as a result of antidilution provisions contained in the exclusive license agreement triggered by subsequent closings of our series A preferred stock financing. We are also obligated to make milestone payments to Lundbeck aggregating up to $23.5 million upon the achievement of specified clinical, regulatory and first commercial sale milestones by any licensed product and $11.8 million upon the achievement of specified clinical, regulatory and first commercial sale milestones by any IMARA product that is or comprises a PDE9 inhibitor but is not a licensed product, which is referred to as a PDE9 product, if any. We are obligated to pay tiered royalties of low-to-mid single-digit percentages to Lundbeck based on our, and any of our affiliates' and sublicensees', net sales of licensed products, and tiered royalties of low single-digit percentages to Lundbeck based on our, and any of our affiliates' and sublicensees', net sales of PDE9 products, if any. The royalties are payable on a product-by-product and country-by-country basis. Our obligation to make royalty payments extends with respect to a licensed product in a country until the later of ten years after the first commercial sale of that licensed product in that country and the expiration of the last-to-expire valid claim of a patent or patent application licensed from Lundbeck covering the licensed product or any constituent licensed compound in that country. Our obligation to make royalty payments extends with respect to a PDE9 product in a country until the ten years after the first commercial sale of such PDE9 product in that country. To date pursuant to this agreement, we have made cash payments to Lundbeck of $1.8 million consisting of an upfront payment and ongoing milestone payments.

The agreement obligates us to use commercially reasonable efforts to develop, seek regulatory approval for, manufacture, market and otherwise commercialize at least one licensed product, in accordance with a

development plan and a development milestone timetable specified in the agreement. We have the option to extend the development milestone timetable up to two times by agreeing to additional payment obligations.

Both we and Lundbeck have the right to terminate the agreement if the other party materially breaches the agreement and fails to cure such breach within specified cure periods or in the event the other party undergoes certain bankruptcy events. Lundbeck may terminate the agreement if we or any of our affiliates, sublicensees or subcontractors bring specified patent challenges against Lundbeck or assist others in bringing such a patent challenge against Lundbeck and fail to cease such challenge within a specified period of time. We have the right to terminate the agreement for our convenience at any time on six months' prior written notice to Lundbeck.

Competition

The biopharmaceutical industry is characterized by rapidly advancing technologies, intense competition and strong emphasis on proprietary products. While we believe that our technology, knowledge, experience and scientific resources provide us with competitive advantages, we face potential competition from many sources, including major pharmaceutical, specialty pharmaceutical and biotechnology companies, academic institutions and government agencies and public and private research institutions. Any product candidates that we successfully develop and commercialize will compete with existing therapies and new therapies that may become available in the future.

Our competitors may have significantly greater financial resources, established presence in the market, expertise in research and development, manufacturing, preclinical and clinical testing, obtaining regulatory approvals and reimbursement and marketing approved products than we do. These competitors may also compete with us in recruiting and retaining qualified scientific, sales, marketing and management personnel, and establishing clinical trial sites and patient registration for clinical trials. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies.

If our lead product candidate, IMR-687, is approved for the indications that we are currently targeting, it will likely compete with the currently marketed drugs and, if approved, the therapies in development discussed below.

Sickle Cell Disease

Approved drug treatments for SCD focus primarily on the management of anemia and reduction of VOCs. The two drug treatments approved in the United States are HU and Endari. HU, marketed under trade names including DROXIA by Bristol-Myers Squibb Company, as well as in generic form, is approved for the treatment of anemia related to SCD, to reduce the frequency of VOCs and the need for blood transfusions. Endari, marketed by Emmaus Life Sciences, Inc., is an oral powder form of L-glutamine approved to reduce severe complications associated with the disorder.

Blood transfusions are also used to treat SCD, and can transiently bolster hemoglobin levels by adding functional RBCs. There are a number of limitations associated with this therapeutic approach, including limited patient access and serious complications such as iron overload. The only potentially curative treatment currently approved for severe SCD is HSCT. However, this treatment option is not commonly used given the difficulties of finding a suitable matched donor and the risks associated with the treatment, which include an approximately 5% mortality rate. HSCT is more commonly offered to pediatric patients with available sibling-matched donors.

IMR-687 could face competition from a number of different therapeutic approaches in development for patients with SCD. Novartis AG, or Novartis, is conducting Phase 3 clinical trials of crizanlizumab, an anti-P-selectin monoclonal antibody, for the prevention of VOCs in patients with SCD. In July 2019, Novartis announced that the FDA had accepted and granted priority review for its biologic licensing application, or BLA,

for crizanlizumab. Global Blood Therapeutics, Inc. is conducting a Phase 3 clinical trial of voxelotor (previously known as GBT440), a hemoglobin modifier, to prevent the sickling of RBCs, and has announced that it plans to submit a new drug application, or NDA, to the FDA in the second half of 2019. In August 2019, GlycoMimetics Inc. and Pfizer, Inc. reported that rivipansel, a pan-selectin inhibitor, did not meet the primary and key secondary efficacy endpoints of the Phase 3 clinical trial. bluebird bio, Inc., or bluebird, plans to initiate a Phase 3 trial for LentiGlobin for the treatment of SCD. LentiGlobin is a one-time gene therapy treatment for SCD that aims to treat SCD by inserting a functional human beta-globin gene into the patient's own hematopoietic stem cells *ex vivo* and then transplanting the modified stem cell into the patient's bloodstream. EpiDestiny, Inc., or EpiDestiny, in collaboration with Novo Nordisk A/S, is evaluating EPI01, a small molecule designed to increase production of HbF, in Phase 2 clinical trials. Aruvant Sciences, Inc. is evaluating RVT-1801, a gene therapy, in a Phase 1/2 trial. Sangamo Therapeutics Inc., or Sangamo, in collaboration with Bioverativ Inc., or Bioverativ, is developing BIVV-003, a gene editing cell therapy that modifies cells to produce functional RBCs using HbF. Cyclerion, Inc. is developing olinciguat, a small molecule that is designed to amplify nitric oxide signaling. Fulcrum Therapeutics, Inc. is developing FTX-HbF, a small molecule designed to upregulate HbF. There are also several other gene editing approaches to treating SCD being evaluated by Intellia Therapeutics, Inc. (in collaboration with Novartis), Editas Medicine, Inc. and CRISPR Therapeutics AG (in collaboration with Vertex Pharmaceuticals Incorporated, or Vertex).

ß-thalassemia

There are currently no approved drug therapies for b-thalassemia. The current standard of care for many patients with b-thalassemia is frequent blood transfusions to manage anemia. A potentially curative therapy for b-thalassemia is HSCT, which is associated with serious risk and is limited to patients with a suitable donor. In June 2019, the European Commission granted conditional marketing authorization for ZYNTEGLO, a gene therapy developed by bluebird for the treatment of adult and adolescent patients with transfusion-dependent b-thalassemia and with certain genotypes. bluebird announced that it plans to submit a BLA to the FDA in 2019.

IMR-687 could face competition from a number of different therapeutic approaches that are in development as a therapeutic option for patients with transfusion-dependent b-thalassemia. Acceleron Pharma, Inc., or Acceleron, in collaboration with Celgene Corp., or Celgene, completed Phase 3 clinical trials of luspatercept (ACE-536), an RBC maturation agent. In June 2019 the FDA accepted Celgene's BLA and also granted priority review of this application for the treatment of adult patients with certain forms of b-thalassemia. Celgene and Acceleron also submitted a marketing authorization application, or MAA, to the EMA in the second quarter of 2019.

Bellicum Pharmaceuticals, Inc., or Bellicum, completed its Phase 1/2 clinical trial evaluating Rivo-cel, a modified donor T cell therapy to be used in conjunction with HSCT. Bellicum is expected to use results from this clinical trial to support Rivo-cel's European MAA. Kiadis Pharma N.V. is conducting Phase 2 and Phase 3 clinical trials of ATIR101, an adjunctive T cell immunotherapy treatment in conjunction with HSCT. EpiDestiny, in collaboration with Novo Nordisk A/S, is evaluating EPI01, a small molecule designed to increase production of HbF, in Phase 2 clinical trials. Orchard Therapeutics plc is conducting Phase 2 clinical trials of OTL-300, an autologous ex vivo gene therapy for the treatment of transfusion-dependent b-thalassemia. Sangamo, in collaboration with Bioverativ, is conducting a Phase 1/2 clinical trial of ST-400, which uses a genome-edited cell therapy approach designed to produce functional RBCs using HbF. CRISPR Therapeutics AG, in collaboration with Vertex, is conducting a Phase 1/2 clinical trial of CTX001, which uses a gene editing approach to upregulate the expression of HbF, in patients with transfusion-dependent b-thalassemia.

Intellectual Property

We strive to protect and enhance the proprietary technology, inventions and improvements that are commercially important to the development of our business, including by seeking, maintaining and defending patent rights, whether developed internally or licensed from third parties. We also rely on trade secrets,

know-how, continuing technological innovation and in-licensing opportunities to develop, strengthen and maintain our proprietary position in our field.

Our future commercial success depends, in part, on our ability to: obtain and maintain patent and other proprietary protection for commercially important technology, inventions and know-how related to our business; defend and enforce in our intellectual property rights, in particular our patent rights; preserve the confidentiality of our trade secrets; and operate without infringing, misappropriating or violating the valid and enforceable patents and proprietary rights of third parties. Our ability to stop third parties from making, using, selling, offering to sell or importing any products we develop may depend on the extent to which we have rights under valid and enforceable patents or trade secrets that cover these activities.

The patent positions of biopharmaceutical companies like ours are generally uncertain and can involve complex legal, scientific and factual issues. We cannot predict whether the patent applications we are currently pursuing will issue as patents in any particular jurisdiction or whether the claims of any issued patents will provide sufficient proprietary protection from competitors. We also cannot ensure that patents will issue with respect to any patent applications that we or our licensors may file in the future, nor can we ensure that any of our owned or licensed patents or future patents will be commercially useful in protecting our product candidates and methods of manufacturing the same. In addition, the coverage claimed in a patent application may be significantly reduced before a patent is issued, and its scope can be reinterpreted and even challenged after issuance. As a result, we cannot guarantee that any products we develop will be protected or remain protectable by enforceable patents. Moreover, any patents that we hold may be challenged, circumvented or invalidated by third parties. See “Risk Factors—Risks Related to Our Intellectual Property” for a more comprehensive description of risks related to our intellectual property.

We generally file patent applications directed to our key programs in an effort to secure our intellectual property positions vis-a-vis these programs. As of July 1, 2019, we owned, co-owned, or held exclusive license rights to numerous patent and patent applications, including at least five issued or allowed U.S. patents, two U.S. pending non-provisional patent applications, 18 issued or allowed non-U.S. patents, including four European patent applications which have been validated among individual European Patent Convention nations, 17 non-U.S. pending patent applications, and two pending Patent Cooperation Treaty, or PCT, applications.

The intellectual property portfolio for our most advanced program as of July 1, 2019, is summarized below. Prosecution is a lengthy process, during which the scope of the claims initially submitted for examination by the U.S. Patent and Trademark Office may be significantly narrowed before issuance, if issued at all. We expect this may be the case with respect to some of our pending patent applications referred to below.

IMR-687

The patent portfolio for our IMR-687 program includes at least four published patent families. As of July 1, 2019, we owned, co-owned, or held exclusive license rights to numerous patent and patent applications, including at least three issued or allowed U.S. patents, two U.S. pending non-provisional patent applications, nine issued or allowed non-U.S. patents, including two European patent applications which have been validated among individual European Patent Convention nations, 14 foreign pending patent applications, and two pending PCT applications relating to our IMR-687 program. While we believe that the specific and generic claims contained in our owned and licensed pending U.S., non-U.S., and PCT applications provide protection for the claimed pharmaceutical compositions and methods of use, third parties may nevertheless challenge such claims.

The term of individual patents depends upon the legal term of the patents in the countries in which they are obtained. In most countries in which we file, the patent term is 20 years from the earliest date of filing a non-provisional patent application.

In the United States, the term of a patent covering an FDA-approved drug may, in certain cases, be eligible for a patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984 as

compensation for the loss of patent term during the FDA regulatory review process. The period of extension may be up to five years, but cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval. Only one patent among those eligible for an extension and only those claims covering the approved drug, a method for using it, or a method for manufacturing it may be extended. Similar provisions are available in Europe and in certain other jurisdictions to extend the term of a patent that covers an approved drug. It is possible that issued U.S. patents covering IMR-687 may be entitled to patent term extensions. If our use of drug candidates or the drug candidate itself receive FDA approval, we intend to apply for patent term extensions, if available, to extend the term of patents that cover the approved use or drug candidate. We also intend to seek patent term extensions in any jurisdictions where available, however, there is no guarantee that the applicable authorities, including the FDA, will agree with our assessment of whether such extensions should be granted, and even if granted, the length of such extensions.

In addition to patent protection, we rely upon unpatented trade secrets and confidential know-how and continuing technological innovation to develop and maintain our competitive position. However, trade secrets and confidential know-how are difficult to protect. We seek to protect our proprietary information, in part, using confidentiality agreements with any collaborators, scientific advisors, employees and consultants and invention assignment agreements with our employees. We also have agreements requiring assignment of inventions with selected consultants, scientific advisors and collaborators. These agreements may not provide meaningful protection. These agreements may also be breached, and we may not have an adequate remedy for any such breach. In addition, our trade secrets and/or confidential know-how may become known or be independently developed by a third party, or misused by any collaborator to whom we disclose such information. Despite any measures taken to protect our intellectual property, unauthorized parties may attempt to copy aspects of our products or to obtain or use information that we regard as proprietary. Although we take steps to protect our proprietary information, third parties may independently develop the same or similar proprietary information or may otherwise gain access to our proprietary information. As a result, we may be unable to meaningfully protect our trade secrets and proprietary information. See “Risk Factors—Risks Related to Our Intellectual Property” for a more comprehensive description of risks related to our intellectual property.

Manufacturing

We currently contract with third parties for the manufacture of our product candidates for preclinical studies and clinical trials and intend to do so in the future. We do not own or operate manufacturing facilities for the production of clinical or commercial quantities of our product candidates. We currently have no plans to build our own clinical or commercial scale manufacturing capabilities. To date, our third-party manufacturers have met our manufacturing requirements. We expect third-party manufacturers to be capable of providing sufficient quantities of our program materials to meet anticipated clinical-trial scale demands. To meet our projected needs for commercial manufacturing, third parties with whom we currently work will need to increase their scale of production or we will need to secure alternate suppliers. We believe that there are alternate sources of supply that can satisfy our clinical and commercial requirements, although we cannot be certain that identifying and establishing relationships with such sources, if necessary, would not result in significant delay or material additional costs. Although we rely on contract manufacturers, we have personnel with manufacturing experience to oversee our relationships with contract manufacturers.

Sales and Marketing

In light of our stage of development, we have not yet established a commercial organization or distribution capabilities. We have retained worldwide commercial rights for our product candidates. If our product candidates receive marketing approval, we plan to commercialize them in the United States and Europe and potentially other international regions with our own sales force.

Government Regulation and Product Approvals

Government authorities in the United States at the federal, state and local level, and in other countries and jurisdictions, including the European Union, extensively regulate, among other things, the research, development, testing, manufacture, pricing, reimbursement, quality control, approval, packaging, storage, recordkeeping, labeling, advertising, promotion, distribution, marketing, post-approval monitoring and reporting, and import and export of biopharmaceutical products. The processes for obtaining marketing approvals in the United States and in foreign countries and jurisdictions, along with compliance with applicable statutes and regulations and other regulatory authorities, require the expenditure of substantial time and financial resources.

Approval and Regulation of Drugs in the United States

In the United States, drug products are regulated under the Federal Food, Drug and Cosmetic Act, or FDCA, and applicable implementing regulations and guidance. The failure of an applicant to comply with the applicable regulatory requirements at any time during the product development process, including non-clinical testing, clinical testing, the approval process or post-approval process, may result in delays to the conduct of a study, regulatory review and approval and/or administrative or judicial sanctions. These sanctions may include, but are not limited to, the FDA's refusal to allow an applicant to proceed with clinical trials, refusal to approve pending applications, license suspension or revocation, withdrawal of an approval, imposition of a clinical hold, issuance of warning letters and other types of letters, adverse publicity, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, restitution, disgorgement of profits or civil or criminal investigations and penalties brought by the FDA or Department of Justice, or DOJ, or other government entities, including state agencies.

An applicant seeking approval to market and distribute a new drug in the United States generally must satisfactorily complete each of the following steps before the product candidate will be approved by the FDA:

- preclinical testing including laboratory tests, animal studies and formulation studies, which must be performed in accordance with the FDA's good laboratory practice, or GLP, regulations and standards;
- submission to the FDA of an IND for human clinical testing, which must become effective before human clinical trials may begin;
- approval by an independent institutional review board, or IRB, representing each clinical site before each clinical trial may be initiated;
- performance of adequate and well-controlled human clinical trials to establish the safety, potency and purity of the product candidate for each proposed indication, in accordance with current good clinical practices, or GCP;
- preparation and submission to the FDA of a new drug application, or NDA, for a drug product which includes not only the results of the clinical trials, but also, detailed information on the chemistry, manufacture and quality controls for the product candidate and proposed labelling for one or more proposed indication(s);
- review of the product candidate by an FDA advisory committee, where appropriate or if applicable;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities, including those of third parties, at which the product candidate or components thereof are manufactured to assess compliance with current good manufacturing practices, or cGMP, requirements and to assure that the facilities, methods and controls are adequate to preserve the product's identity, strength, quality and purity;
- satisfactory completion of any FDA audits of the non-clinical and clinical trial sites to assure compliance with GCP and the integrity of clinical data in support of the NDA;
- payment of user fees and securing FDA approval of the NDA to allow marketing of the new drug product; and

- compliance with any post-approval requirements, including the potential requirement to implement a Risk Evaluation and Mitigation Strategy, or REMS, and the potential requirement to conduct any post-approval studies required by the FDA.

Preclinical Studies

Before an applicant begins testing a product candidate with potential therapeutic value in humans, the product candidate enters the preclinical testing stage, including *in vitro* and animal studies to assess the safety and activity of the drug for initial testing in humans and to establish a rationale for therapeutic use. Preclinical tests include laboratory evaluations of product chemistry, formulation and stability, as well as other studies to evaluate, among other things, the toxicity of the product candidate. The conduct of the preclinical tests and formulation of the compounds for testing must comply with federal regulations and requirements, including GLP regulations and standards. The results of the preclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and plans for clinical trials, among other things, are submitted to the FDA as part of an IND. Some long-term preclinical testing, such as animal tests of reproductive adverse events and carcinogenicity and long-term toxicity studies may continue after the IND is submitted.

The IND and IRB Processes

Clinical trials involve the administration of the investigational product to human subjects under the supervision of qualified investigators in accordance with GCP requirements, which include, among other things, the requirement that all research subjects provide their voluntary informed consent in writing before their participation in any clinical trial. Clinical trials are conducted under written study protocols detailing, among other things, the inclusion and exclusion criteria, the objectives of the study, the parameters to be used in monitoring safety and the effectiveness criteria to be evaluated. A protocol for each clinical trial and any subsequent protocol amendments must be submitted to the FDA as part of the IND.

An IND is an exemption from the FDCA that allows an unapproved product candidate to be shipped in interstate commerce for use in an investigational clinical trial and a request for FDA authorization to administer such investigational product to humans. Such authorization must be secured prior to interstate shipment and administration of any product candidate that is not the subject of an approved NDA. In support of a request for an IND, applicants must submit a protocol for each clinical trial, and any subsequent protocol amendments must be submitted to the FDA as part of the IND. In addition, the results of the preclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and plans for clinical trials, among other things, must be submitted to the FDA as part of an IND. The FDA requires a 30-day waiting period after the filing of each IND before clinical trials may begin. This waiting period is designed to allow the FDA to review the IND to determine whether human research subjects will be exposed to unreasonable health risks. At any time during this 30-day period or thereafter, the FDA may raise concerns or questions about the conduct of the trials as outlined in the IND and impose a clinical hold or partial clinical hold. In these cases, the IND sponsor and the FDA must resolve any outstanding concerns before clinical trials can begin.

Following commencement of a clinical trial under an IND, the FDA may also place a clinical hold or partial clinical hold on that trial. Clinical holds are imposed by the FDA whenever there is concern for patient safety and may be a result of new data, findings, or developments in clinical, nonclinical, and/or chemistry, manufacturing, and controls, or CMC. A clinical hold is an order issued by the FDA to the sponsor to delay a proposed clinical investigation or to suspend an ongoing investigation. A partial clinical hold is a delay or suspension of only part of the clinical work requested under the IND. For example, a specific protocol or part of a protocol may not be allowed to proceed, while other protocols may be allowed. No more than 30 days after imposition of a clinical hold or partial clinical hold, the FDA will provide the sponsor a written explanation of the basis for the hold. Following issuance of a clinical hold or partial clinical hold, a clinical trial may only resume after the FDA has so notified the sponsor. The FDA will base that determination on information provided by the sponsor correcting the deficiencies previously cited or otherwise satisfying the FDA that the clinical trial can proceed.

A sponsor may choose, but is not required, to conduct a foreign clinical study under an IND. When a foreign clinical study is conducted under an IND, all FDA IND requirements must be met unless waived. When a foreign clinical study is not conducted under an IND, the sponsor must ensure that such studies are conducted in accordance with GCP, including review and approval by an independent ethics committee, or IEC, and informed consent from subjects.

In addition to the foregoing IND requirements, an IRB representing each institution participating in the clinical trial must review and approve the plan for any clinical trial before it commences at that institution, and the IRB must conduct continuing review and reapprove the study at least annually. The IRB must review and approve, among other things, the study protocol and informed consent information to be provided to study subjects. An IRB must operate in compliance with FDA regulations. An IRB can suspend or terminate approval of a clinical trial at its institution, or an institution it represents, if the clinical trial is not being conducted in accordance with the IRB's requirements or if the product candidate has been associated with unexpected serious harm to patients.

Additionally, some trials are overseen by an independent group of qualified experts organized by the trial sponsor, known as a data safety monitoring board or committee, or DSMB. This group provides authorization as to whether or not a trial may move forward at designated check points based on access that only the group maintains to available data from the study. Suspension or termination of development during any phase of clinical trials can occur if it is determined that the participants or patients are being exposed to an unacceptable health risk. Other reasons for suspension or termination may be made by us based on evolving business objectives and/or the competitive environment.

Information about clinical trials must be submitted within specific timeframes to the National Institutes of Health, or NIH, for public dissemination on its ClinicalTrials.gov website.

Expanded Access to an Investigational Drug for Treatment Use

Expanded access, sometimes called "compassionate use," is the use of investigational new drug products outside of clinical trials to treat patients with serious or immediately life-threatening diseases or conditions when there are no comparable or satisfactory alternative treatment options. The rules and regulations related to expanded access are intended to improve access to investigational drugs for patients who may benefit from investigational therapies. FDA regulations allow access to investigational drugs under an IND by the company or the treating physician for treatment purposes on a case-by-case basis for: individual patients (single-patient IND applications for treatment in emergency settings and non-emergency settings); intermediate-size patient populations; and larger populations for use of the drug under a treatment protocol or Treatment IND Application.

When considering an IND application for expanded access to an investigational product with the purpose of treating a patient or a group of patients, the sponsor and treating physicians or investigators will determine suitability when all of the following criteria apply: patient(s) have a serious or immediately life-threatening disease or condition, and there is no comparable or satisfactory alternative therapy to diagnose, monitor, or treat the disease or condition; the potential patient benefit justifies the potential risks of the treatment and the potential risks are not unreasonable in the context or condition to be treated; and the expanded use of the investigational drug for the requested treatment will not interfere with the initiation, conduct, or completion of clinical investigations that could support marketing approval of the product or otherwise compromise the potential development of the product.

Human Clinical Trials in Support of an NDA

Clinical trials involve the administration of the investigational product candidate to human subjects under the supervision of a qualified investigator in accordance with GCP requirements, which include, among other things, the requirement that all research subjects provide their informed consent in writing before their

participation in any clinical trial. Clinical trials are conducted under written clinical trial protocols detailing, among other things, the objectives of the study, inclusion and exclusion criteria, the parameters to be used in monitoring safety and the effectiveness criteria to be evaluated.

Human clinical trials are typically conducted in three sequential phases, but the phases may overlap or be combined. Additional studies may also be required after approval.

Phase 1 clinical trials are initially conducted in a limited population to test the product candidate for safety, including adverse effects, dose tolerance, absorption, metabolism, distribution, excretion and pharmacodynamics in healthy humans or in patients. During Phase 1 clinical trials, information about the investigational drug product's pharmacokinetics and pharmacological effects may be obtained to permit the design of well-controlled and scientifically valid Phase 2 clinical trials.

Phase 2 clinical trials are generally conducted in a limited patient population to identify possible adverse effects and safety risks, evaluate the efficacy of the product candidate for specific targeted indications and determine dose tolerance and optimal dosage. Multiple Phase 2 clinical trials may be conducted by the sponsor to obtain information prior to beginning larger and more costly Phase 3 clinical trials. Phase 2 clinical trials are well controlled, closely monitored and conducted in a limited patient population. A Phase 2 trial may be further subdivided to Phase 2a and Phase 2b trials. A Phase 2a trial is typically an exploratory (non-pivotal) study that has clinical efficacy, pharmacodynamics or biological activity as the primary endpoint. A Phase 2b trial is a definite dose range finding study with efficacy as the primary endpoint.

Phase 3 clinical trials proceed if the Phase 2 clinical trials demonstrate that a dose range of the product candidate is potentially effective and has an acceptable safety profile. Phase 3 clinical trials are undertaken within an expanded patient population to further evaluate dosage, provide substantial evidence of clinical efficacy and further test for safety in an expanded and diverse patient population at multiple, geographically dispersed clinical trial sites. A well-controlled, statistically robust Phase 3 clinical trial may be designed to deliver the data that regulatory authorities will use to decide whether or not to approve, and, if approved, how to appropriately label a drug. Such Phase 3 studies are referred to as "pivotal."

In some cases, the FDA may approve an NDA for a product candidate but require the sponsor to conduct additional clinical trials to further assess the product candidate's safety and effectiveness after approval. Such post-approval trials are typically referred to as Phase 4 clinical trials. These studies are used to gain additional experience from the treatment of a larger number of patients in the intended treatment group and to further document a clinical benefit in the case of drugs approved under Accelerated Approval regulations. Failure to exhibit due diligence with regard to conducting Phase 4 clinical trials could result in withdrawal of approval for products.

Progress reports detailing the results of the clinical trials must be submitted at least annually to the FDA and more frequently if serious adverse events occur. In addition, IND safety reports must be submitted to the FDA for any of the following: serious and unexpected suspected adverse reactions; findings from other studies or animal or *in vitro* testing that suggest a significant risk in humans exposed to the product; and any clinically important increase in the case of a serious suspected adverse reaction over that listed in the protocol or investigator brochure. Phase 1, Phase 2 and Phase 3 clinical trials may not be completed successfully within any specified period, or at all. Furthermore, the FDA or the sponsor may suspend or terminate a clinical trial at any time on various grounds, including a finding that the research subjects are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution, or an institution it represents, if the clinical trial is not being conducted in accordance with the IRB's requirements or if the product has been associated with unexpected serious harm to patients. The FDA will typically inspect one or more clinical sites to assure compliance with GCP and the integrity of the clinical data submitted.

Concurrent with clinical trials, companies often complete additional animal studies. They must also develop additional information about the chemistry and physical characteristics of the drug as well as finalize a process

for manufacturing the product in commercial quantities in accordance with cGMP requirements. The manufacturing process must be capable of consistently producing quality batches of the drug candidate and, among other things, must develop methods for testing the identity, strength, quality, purity, and potency of the final drug. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the drug candidate does not undergo unacceptable deterioration over its shelf life.

Pediatric Studies

Under the Pediatric Research Equity Act of 2003, an NDA or supplement thereto must contain data that are adequate to assess the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. Sponsors must also submit pediatric study plans prior to the assessment data. Those plans must contain an outline of the proposed pediatric study or studies the applicant plans to conduct, including study objectives and design, any deferral or waiver requests and other information required by regulation. The applicant, the FDA, and the FDA's internal review committee must then review the information submitted, consult with each other and agree upon a final plan. The FDA or the applicant may request an amendment to the plan at any time.

For drugs intended to treat a serious or life-threatening disease or condition, the FDA must, upon the request of an applicant, meet to discuss preparation of the initial pediatric study plan or to discuss deferral or waiver of pediatric assessments. In addition, the FDA will meet early in the development process to discuss pediatric study plans with sponsors, and the FDA must meet with sponsors by no later than the end-of-phase 1 meeting for serious or life-threatening diseases and by no later than ninety (90) days after the FDA's receipt of the study plan.

The FDA may, on its own initiative or at the request of the applicant, grant deferrals for submission of some or all pediatric data until after approval of the product for use in adults, or full or partial waivers from the pediatric data requirements. Additional requirements and procedures relating to deferral requests and requests for extension of deferrals are contained in the Food and Drug Administration Safety and Innovation Act, or FDASIA, in 2012. Unless otherwise required by regulation, the pediatric data requirements do not apply to products with orphan designation.

Rare Pediatric Disease Priority Review Voucher Program

With enactment of the FDASIA in 2012, and subsequent passage of the Advancing Hope Act of 2016, Congress authorized the FDA to award priority review vouchers to sponsors of certain rare pediatric disease product applications that meet the criteria specified in the law. This provision is designed to encourage development of new drug and biological products for prevention and treatment of certain rare pediatric diseases. Specifically, under this program, a sponsor who receives an approval for a drug or biologic for a "rare pediatric disease" may qualify for a voucher that can be redeemed to receive a priority review of a subsequent marketing application for a different product. The sponsor of a rare pediatric disease drug product receiving a priority review voucher may transfer (including by sale) the voucher to another sponsor. The voucher may be further transferred any number of times before the voucher is used, as long as the sponsor making the transfer has not yet submitted the application.

For the purposes of this program, a "rare pediatric disease" is a (a) serious or life-threatening disease in which the serious or life-threatening manifestations primarily affect individuals aged from birth to 18 years, including age groups often called neonates, infants, children, and adolescents; and (b) rare disease or conditions within the meaning of the Orphan Drug Act. A sponsor may choose to request rare pediatric disease designation, but the designation process is entirely voluntary; requesting designation is not a prerequisite to requesting or receiving a priority review voucher. In addition, sponsors who choose not to submit a rare pediatric disease designation request may nonetheless receive a priority review voucher if they request such a voucher in their original marketing application and meet all of the eligibility criteria. The Rare Pediatric Disease Priority Review

Voucher program was reauthorized until 2020. However, if a drug candidate is designated before October 1, 2020, it is eligible to receive a voucher if it is approved before October 2022.

Review and Approval of an NDA

In order to obtain approval to market a drug product in the United States, a marketing application must be submitted to the FDA that provides sufficient data establishing the safety, purity and potency of the proposed drug product for its intended indication. The application includes all relevant data available from pertinent preclinical and clinical trials, including negative or ambiguous results as well as positive findings, together with detailed information relating to the product's chemistry, manufacturing, controls and proposed labeling, among other things. Data can come from company-sponsored clinical trials intended to test the safety and effectiveness of a use of a product, or from a number of alternative sources, including studies initiated by independent investigators. To support marketing approval, the data submitted must be sufficient in quality and quantity to establish the safety, purity and potency of the drug product to the satisfaction of the FDA.

The NDA is a vehicle through which applicants formally propose that the FDA approve a new product for marketing and sale in the United States for one or more indications. Every new non-biologic drug product candidate must be the subject of an approved NDA before it may be commercialized in the United States. Biologic License Applications, or BLAs, are submitted for approval of biologic products. Under federal law, the submission of most NDAs is subject to an application user fee. The sponsor of an approved NDA is also subject to an annual program fee. Certain exceptions and waivers are available for some of these fees, such as an exception from the application fee for products with orphan designation, an exception from the program fee when the program does not engage in manufacturing the drug during a particular fiscal year and a waiver for certain small businesses.

The FDA conducts a preliminary review of the application, generally within 60 calendar days of its receipt, and strives to inform the sponsor within 74 days whether the application is sufficiently complete to permit substantive review. The FDA may request additional information rather than accept the application for filing. In this event, the application must be resubmitted with the additional information. The resubmitted application is also subject to review before the FDA accepts it for filing. Once the submission is accepted for filing, the FDA begins an in-depth substantive review. The FDA has agreed to specified performance goals in the review process of NDAs. Under that agreement, 90% of applications seeking approval of New Molecular Entities, or NMEs, are meant to be reviewed within ten months from the date on which the FDA accepts the application for filing, and 90% of applications for NMEs that have been designated for Priority Review are meant to be reviewed within six months of the filing date. For applications seeking approval of products that are not NMEs, the ten-month and six-month review periods run from the date that the FDA receives the application. The review process and the Prescription Drug User Fee Act, or PDUFA, goal date may be extended by the FDA for three additional months to consider new information or clarification provided by the applicant to address an outstanding deficiency identified by the FDA following the original submission.

Before approving an application, the FDA typically will inspect the facility or facilities where the product is being or will be manufactured. These pre-approval inspections may cover all facilities associated with an NDA submission, including component manufacturing, finished product manufacturing and control testing laboratories. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. Additionally, before approving an NDA, the FDA will typically inspect one or more clinical sites to assure compliance with GCP.

In addition, as a condition of approval, the FDA may require an applicant to develop a REMS. A REMS uses risk-minimization strategies beyond the professional labeling to ensure that the benefits of the product outweigh the potential risks. To determine whether a REMS is needed, the FDA will consider the size of the population likely to use the product, the seriousness of the disease, the expected benefit of the product, the

expected duration of treatment, the seriousness of known or potential adverse events and whether the product is a new molecular entity.

The FDA may refer an application for a novel product to an advisory committee or explain why such referral was not made. Typically, an advisory committee is a panel of independent experts, including clinicians and other scientific experts, that review, evaluate and provide a recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but the FDA considers such recommendations carefully when making decisions.

Fast Track, Breakthrough Therapy, Priority Review and Regenerative Advanced Therapy Designations

The FDA is authorized to designate certain products for expedited review if they are intended to address an unmet medical need in the treatment of a serious or life-threatening disease or condition. These programs are referred to as Fast Track designation, Breakthrough Therapy designation, Priority Review designation and Regenerative Advanced Therapy designation.

Specifically, the FDA may designate a product for Fast Track review if it is intended, whether alone or in combination with one or more other products, for the treatment of a serious or life-threatening disease or condition and it demonstrates the potential to address unmet medical needs for such a disease or condition. For Fast Track products, sponsors may have greater interaction with the FDA, and the FDA may initiate review of sections of a Fast Track product's application before the application is complete. This rolling review may be available if the FDA determines, after preliminary evaluation of clinical data submitted by the sponsor, that a Fast Track product may be effective. The sponsor must also provide, and the FDA must approve, a schedule for the submission of the remaining information, and the sponsor must pay applicable user fees. However, the FDA's time-period goal for reviewing a Fast Track application does not begin until the last section of the application is submitted. In addition, the Fast Track designation may be withdrawn by the FDA if the FDA believes that the designation is no longer supported by data emerging in the clinical trial process.

Second, a product may be designated as a Breakthrough Therapy if it is intended, either alone or in combination with one or more other products, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the product may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. The FDA may take certain actions with respect to Breakthrough Therapies, including holding meetings with the sponsor throughout the development process; providing timely advice to the product sponsor regarding development and approval; involving more senior staff in the review process; assigning a cross-disciplinary project lead for the review team and taking other steps to design the clinical trials in an efficient manner.

Third, the FDA may designate a product for Priority Review if it treats a serious condition and, if approved, would provide a significant improvement in safety or effectiveness. The FDA determines, on a case-by-case basis, whether the proposed product represents a significant improvement when compared with other available therapies. Significant improvement may be illustrated by evidence of increased effectiveness in the treatment of a condition, elimination or substantial reduction of a treatment-limiting product reaction, documented enhancement of patient compliance that may lead to improvement in serious outcomes, and evidence of safety and effectiveness in a new subpopulation. A Priority Review designation is intended to direct overall attention and resources to the evaluation of such applications and to shorten the FDA's goal for taking action on a marketing application from ten months to six months.

With passage of the 21st Century Cures Act, or the Cures Act, in December 2016, Congress authorized the FDA to accelerate review and approval of products designated as Regenerative Advanced Therapies. A product is eligible for this designation if it is a regenerative medicine therapy that is intended to treat, modify, reverse or cure a serious or life-threatening disease or condition and if preliminary clinical evidence indicates that the

product has the potential to address unmet medical needs for such disease or condition. The benefits of a Regenerative Advanced Therapy designation include early interactions with the FDA to expedite development and review, benefits available to breakthrough therapies, potential eligibility for Priority Review and Accelerated Approval based on surrogate or intermediate endpoints.

Accelerated Approval Pathway

The FDA may grant Accelerated Approval to a product for a serious or life-threatening condition that provides meaningful therapeutic advantage to patients over existing treatments based upon a determination that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit. The FDA may also grant Accelerated Approval for such a condition when the product has an effect on an intermediate clinical endpoint that can be measured earlier than an effect on irreversible morbidity or mortality, or IMM, and that is reasonably likely to predict an effect on IMM or other clinical benefit, taking into account the severity, rarity or prevalence of the condition and the availability or lack of alternative treatments. Products granted Accelerated Approval must meet the same statutory standards for safety and effectiveness as those granted traditional approval.

For the purposes of Accelerated Approval, a surrogate endpoint is a marker, such as a laboratory measurement, radiographic image, physical sign or other measure that is thought to predict clinical benefit but is not itself a measure of clinical benefit. Surrogate endpoints can often be measured more easily or more rapidly than clinical endpoints. An intermediate clinical endpoint is a measurement of a therapeutic effect that is considered reasonably likely to predict the clinical benefit of a drug, such as an effect on IMM. The FDA has limited experience with Accelerated Approvals based on intermediate clinical endpoints but has indicated that such endpoints generally may support Accelerated Approval where the therapeutic effect measured by the endpoint is not itself a clinical benefit and basis for traditional approval, if there is a basis for concluding that the therapeutic effect is reasonably likely to predict the ultimate clinical benefit of a product.

The Accelerated Approval pathway is most often used in settings in which the course of a disease is long and an extended period of time is required to measure the intended clinical benefit of a product, even if the effect on the surrogate or intermediate clinical endpoint occurs rapidly. The benefit of Accelerated Approval derives from the potential to receive approval based on surrogate endpoints sooner than possible for trials with clinical or survival endpoints, rather than deriving from any explicit shortening of the FDA approval timeline, as is the case with Priority Review.

The Accelerated Approval pathway is usually contingent on a sponsor's agreement to conduct, in a diligent manner, additional post-approval confirmatory studies to verify and describe the product's clinical benefit. As a result, a product candidate approved on this basis is subject to rigorous post-marketing compliance requirements, including the completion of Phase 4 or post-approval clinical trials to confirm the effect on the clinical endpoint. Failure to conduct required post-approval studies, or to confirm a clinical benefit during post-marketing studies, would allow the FDA to initiate expedited proceedings to withdraw approval of the product. All promotional materials for product candidates approved under accelerated regulations are subject to prior review by the FDA.

The FDA's Decision on an NDA

On the basis of the FDA's evaluation of the application and accompanying information, including the results of the inspection of the manufacturing facilities, the FDA may issue an approval letter or a complete response letter. An approval letter authorizes commercial marketing of the product with specific prescribing information for specific indications. A complete response letter generally outlines the deficiencies in the submission and may require substantial additional testing or information in order for the FDA to reconsider the application. If and when those deficiencies have been addressed to the FDA's satisfaction in a resubmission of the NDA, the FDA will issue an approval letter. The FDA has committed to reviewing such resubmissions in two or six months depending on the type of information included. Even with submission of this additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

If the FDA approves a new product, it may limit the approved indications for use of the product, require that contraindications, warnings or precautions be included in the product labeling, or require that post-approval studies, including Phase 4 clinical trials, be conducted to further assess the drug's safety after approval. The agency may also require testing and surveillance programs to monitor the product after commercialization, or impose other conditions, including distribution restrictions or other risk management mechanisms, including a REMS, to help ensure that the benefits of the product outweigh the potential risks. REMS programs can include medication guides, communication plans for health care professionals, and elements to assure safe use, or ETASU. ETASU can include, but are not limited to, special training or certification for prescribing or dispensing, dispensing only under certain circumstances, special monitoring and the use of patent registries. The FDA may prevent or limit further marketing of a product based on the results of post-market studies or surveillance programs. The FDA may require a REMS before or after approval if it becomes aware of a serious risk associated with use of the product. The requirement for a REMS can materially affect the potential market and profitability of a product. After approval, many types of changes to the approved product, such as adding new indications, changing manufacturing processes and adding labeling claims, are subject to further testing requirements and FDA review and approval.

Post-Approval Regulation

If regulatory approval for marketing of a product or new indication for an existing product is obtained, the sponsor will be required to comply with all regular post-approval regulatory requirements as well as any post-approval requirements that the FDA may have imposed as part of the approval process. The sponsor will be required to report, among other things, certain adverse reactions and manufacturing problems to the FDA, provide updated safety and efficacy information and comply with requirements concerning advertising and promotional labeling requirements. Manufacturers and certain of their subcontractors are required to register their establishments with the FDA and certain state agencies and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with ongoing regulatory requirements, including cGMP regulations, which impose certain procedural and documentation requirements upon manufacturers. Changes to the manufacturing process are strictly regulated and often require prior FDA approval before being implemented. Accordingly, the sponsor and its third-party manufacturers must continue to expend time, money and effort in the areas of production and quality control to maintain compliance with cGMP regulations and other regulatory requirements.

A product may also be subject to official lot release, meaning that the manufacturer is required to perform certain tests on each lot of the product before it is released for distribution. If the product is subject to official release, the manufacturer must submit to the FDA samples of each lot, together with a release protocol showing a summary of the history of manufacture of the lot and the results of all of the manufacturer's tests performed on the lot. The FDA may also perform certain confirmatory tests on lots of some products before releasing the lots for distribution. Finally, the FDA will conduct laboratory research related to the safety, purity, potency and effectiveness of pharmaceutical products.

Once an approval is granted, the FDA may withdraw the approval if compliance with regulatory requirements is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information; imposition of post-market studies or clinical trials to assess safety risks; or imposition of distribution or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of the product, complete withdrawal of the product from the market or product recalls;
- fines, warning letters or holds on post-approval clinical trials;

- refusal of the FDA to approve pending applications or supplements to approved applications, or suspension or revocation of product license approvals;
- product seizure or detention, or refusal to permit the import or export of products; or
- injunctions or the imposition of civil or criminal penalties.

The FDA strictly regulates the marketing, labeling, advertising and promotion of prescription drug products placed on the market. This regulation includes, among other things, standards and regulations for direct-to-consumer advertising, communications regarding unapproved uses, industry-sponsored scientific and educational activities, and promotional activities involving the Internet and social media. Promotional claims about a drug's safety or effectiveness are prohibited before the drug is approved. After approval, a drug product generally may not be promoted for uses that are not approved by the FDA, as reflected in the product's prescribing information. In the United States, health care professionals are generally permitted to prescribe drugs for such uses not described in the drug's labeling, known as off-label uses, because the FDA does not regulate the practice of medicine. However, FDA regulations impose rigorous restrictions on manufacturers' communications, prohibiting the promotion of off-label uses. It may be permissible, under very specific, narrow conditions, for a manufacturer to engage in nonpromotional, non-misleading communication regarding off-label information, such as distributing scientific or medical journal information.

If a company is found to have promoted off-label uses, it may become subject to adverse public relations and administrative and judicial enforcement by the FDA, the Department of Justice, or the Office of the Inspector General of the Department of Health and Human Services, as well as state authorities. This could subject a company to a range of penalties that could have a significant commercial impact, including civil and criminal fines and agreements that materially restrict the manner in which a company promotes or distributes drug products. The federal government has levied large civil and criminal fines against companies for alleged improper promotion, and has also requested that companies enter into consent decrees or permanent injunctions under which specified promotional conduct is changed or curtailed.

In addition, the distribution of prescription pharmaceutical products is subject to the Prescription Drug Marketing Act, or PDMA, and its implementing regulations, as well as the Drug Supply Chain Security Act, or DSCA, which regulate the distribution and tracing of prescription drug samples at the federal level, and set minimum standards for the regulation of distributors by the states. The PDMA, its implementing regulations and state laws limit the distribution of prescription pharmaceutical product samples, and the DSCA imposes requirements to ensure accountability in distribution and to identify and remove counterfeit and other illegitimate products from the market.

Pediatric Exclusivity

Pediatric exclusivity is another type of non-patent marketing exclusivity in the United States and, if granted, provides for the attachment of an additional six months of marketing protection to the term of any existing regulatory exclusivity, including the non-patent and orphan exclusivity. This six-month exclusivity may be granted if an NDA sponsor submits pediatric data that fairly respond to a written request from the FDA for such data. The data do not need to show the product to be effective in the pediatric population studied; rather, if the clinical trial is deemed to fairly respond to the FDA's request, the additional protection is granted. If reports of requested pediatric studies are submitted to and accepted by the FDA within the statutory time limits, whatever statutory or regulatory periods of exclusivity or patent protection cover the product are extended by six months. This is not a patent term extension, but it effectively extends the regulatory period during which the FDA cannot approve another application.

Orphan Drug Designation and Exclusivity

Under the Orphan Drug Act, the FDA may designate a drug product as an "orphan drug" if it is intended to treat a rare disease or condition, generally meaning that it affects fewer than 200,000 individuals in the United

States, or more in cases in which there is no reasonable expectation that the cost of developing and making a product available in the United States for treatment of the disease or condition will be recovered from sales of the product. A company must seek orphan drug designation before submitting an NDA for the candidate product. If the request is granted, the FDA will disclose the identity of the therapeutic agent and its potential use. Orphan drug designation does not shorten the PDUFA goal dates for the regulatory review and approval process, although it does convey certain advantages such as tax benefits and exemption from the PDUFA application fee.

If a product with orphan designation receives the first FDA approval for the disease or condition for which it has such designation or for a select indication or use within the rare disease or condition for which it was designated, the product generally will receive orphan drug exclusivity. Orphan drug exclusivity means that the FDA may not approve another sponsor's marketing application for the same drug for the same condition for seven years, except in certain limited circumstances. Orphan exclusivity does not block the approval of a different product for the same rare disease or condition, nor does it block the approval of the same product for different conditions. If a drug designated as an orphan drug ultimately receives marketing approval for an indication broader than what was designated in its orphan drug application, it may not be entitled to exclusivity.

Orphan drug exclusivity will not bar approval of another product under certain circumstances, including if a subsequent product with the same drug for the same condition is shown to be clinically superior to the approved product on the basis of greater efficacy or safety, or providing a major contribution to patient care, or if the company with orphan drug exclusivity is not able to meet market demand. This is the case despite an earlier court opinion holding that the Orphan Drug Act unambiguously required the FDA to recognize orphan exclusivity regardless of a showing of clinical superiority.

Patent Term Restoration and Extension

A patent claiming a new drug product may be eligible for a limited patent term extension under the Hatch-Waxman Act, which permits a patent restoration of up to five years for patent term lost during the FDA regulatory review. The restoration period granted on a patent covering a product is typically one-half the time between the effective date of a clinical investigation involving human beings is begun and the submission date of an application, plus the time between the submission date of an application and the ultimate approval date. Patent term restoration cannot be used to extend the remaining term of a patent past a total of 14 years from the product's approval date. Only one patent applicable to an approved product is eligible for the extension, and only those claims covering the approved product, a method for using it, or a method for manufacturing it may be extended. Additionally, the application for the extension must be submitted prior to the expiration of the patent in question. A patent that covers multiple products for which approval is sought can only be extended in connection with one of the approvals. The United States Patent and Trademark Office reviews and approves the application for any patent term extension or restoration in consultation with the FDA.

Health Care Law and Regulation

Health care providers and third-party payers play a primary role in the recommendation and prescription of drug products that are granted marketing approval. Arrangements with providers, consultants, third-party payers and customers are subject to broadly applicable fraud and abuse laws, including the anti-kickback and false claims laws; patient privacy and security laws; federal transparency laws; and other health care laws that may constrain business and/or financial arrangements. Restrictions under applicable federal and state health care laws and regulations, include the following:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons and entities from knowingly and willfully soliciting, offering, paying, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made, in whole or in part, under a federal health care program such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;

- the federal civil and criminal false claims laws, including the civil False Claims Act (which can be enforced through civil whistleblower actions), and civil monetary penalties laws, which prohibit individuals or entities from, among other things, knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false, fictitious or fraudulent or knowingly making, using or causing to made or used a false record or statement to avoid, decrease or conceal an obligation to pay money to the federal government. In addition, the government may assert that a claim including items and services resulting from a violation of the. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;
- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which created additional federal criminal laws that prohibit, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any health care benefit program or making false statements relating to health care matters. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or the specific intent to violate it in order to have committed a violation;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, and their respective implementing regulations, including the Final Omnibus Rule published in January 2013, which impose obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information of covered entities, such as health plans, healthcare clearinghouses and certain healthcare providers, as well as their business associates that perform certain services involving the use or disclosure of individually identifiable information on their behalf;
- the federal false statements statute, which prohibits knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement in connection with the delivery of or payment for health care benefits, items or services;
- the federal transparency requirements known as the federal Physician Payments Sunshine Act, under the Patient Protection and Affordable Care Act, as amended by the Health Care Education Reconciliation Act, or the ACA, which requires certain manufacturers of drugs, devices, biologics and medical supplies to report annually to the Centers for Medicare & Medicaid Services, or CMS, within the United States Department of Health and Human Services, information related to certain payments and other transfers of value made by that entity to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members; and
- analogous state and foreign laws, such as state anti-kickback and false claims laws, which may apply to health care items or services that are reimbursed by non-government third-party payors, including private insurers.

Further, some state laws require pharmaceutical companies to comply with the pharmaceutical industry’s voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring manufacturers to report information related to payments and other transfers of value to physicians and other health care providers or marketing expenditures. Additionally, some state and local laws require the registration of pharmaceutical sales representatives in the jurisdiction. State and foreign laws also govern the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

In addition to the health care laws set forth above, we may also be subject to additional federal laws, such as the U.S. Foreign Corrupt Practices Act of 1977, as amended, which prohibits, among other things, companies and their intermediaries from making, or offering or promising go make improper payments to non-U.S. officials for the purpose of obtaining or retaining business or otherwise seeking favorable treatment.

Pharmaceutical Insurance Coverage and Health Care Reform

In the United States and markets in other countries, patients who are prescribed treatments for their conditions and providers performing the prescribed services generally rely on third-party payers to reimburse all or part of the associated health care costs. Significant uncertainty exists as to the coverage and reimbursement status of products approved by the FDA and other government authorities. Thus, even if a product candidate is approved, sales of the product will depend, in part, on the extent to which third-party payers, including government health programs in the United States such as Medicare and Medicaid, commercial health insurers and managed care organizations, provide coverage and establish adequate reimbursement levels for, the product. The process for determining whether a payer will provide coverage for a product may be separate from the process for setting the price or reimbursement rate that the payer will pay for the product once coverage is approved. Third-party payers are increasingly challenging the prices charged, examining the medical necessity and reviewing the cost-effectiveness of medical products and services and imposing controls to manage costs. Third-party payers may limit coverage to specific products on an approved list, also known as a formulary, which might not include all of the approved products for a particular indication.

In order to secure coverage and reimbursement for any product that might be approved for sale, a company may need to conduct expensive pharmacoeconomic studies in order to demonstrate the medical necessity and cost-effectiveness of the product, in addition to the costs required to obtain FDA or other comparable marketing approvals. Nonetheless, product candidates may not be considered medically necessary or cost effective. A decision by a third-party payer not to cover a product could reduce market acceptance once the product is approved and have a material adverse effect on sales, results of operations and financial condition. Additionally, a payer's decision to provide coverage for a product does not imply that an adequate reimbursement rate will be approved. Further, one payer's determination to provide coverage for a product does not assure that other payers will also provide coverage and reimbursement for the product, and the level of coverage and reimbursement can differ significantly from payer to payer.

In international markets, reimbursement and health care payment systems vary significantly by country, and many countries have instituted price ceilings on specific products and therapies. In some countries, the pricing of prescription pharmaceuticals is subject to government control. In these countries, pricing negotiations with governmental authorities can take considerable time after the receipt of marketing approval for a product. To obtain coverage and adequate reimbursement or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost-effectiveness of our product to other available therapies.

The containment of health care costs also has become a priority of federal, state and foreign governments and the prices of products have been a focus in this effort. Governments have shown significant interest in implementing cost-containment programs, including price controls, restrictions on reimbursement and requirements for substitution of generic products. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit a company's revenue generated from the sale of any approved products. Coverage policies and third-party reimbursement rates may change at any time. Even if favorable coverage and reimbursement status is attained for one or more products for which a company or its collaborators receive marketing approval, less favorable coverage policies and reimbursement rates may be implemented in the future

There have been a number of federal and state proposals recently regarding the pricing of pharmaceutical and biopharmaceutical products, limiting coverage and reimbursement for drugs and biologics and other medical products, government control and other changes to the health care system in the United States.

For example, in March 2010, the United States Congress enacted the ACA, which, among other things, includes changes to the coverage and payment for drug products under government health care programs. Among the provisions of the ACA of importance to our potential product candidates are:

- an annual, nondeductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents, apportioned among these entities according to their market share in certain government healthcare programs;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer's Medicaid rebate liability;
- expanded manufacturers' rebate liability under the Medicaid Drug Rebate Program by increasing the minimum rebate for both branded and generic drugs and revising the definition of "average manufacturer price," or AMP, for calculating and reporting Medicaid drug rebates on outpatient prescription drug prices;
- addressed a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected;
- expanded the types of entities eligible for the 340B drug discount program;
- established the Medicare Part D coverage gap discount program by requiring manufacturers to provide a 70% point-of-sale-discount off the negotiated price of applicable brand drugs to eligible beneficiaries during their coverage gap period as a condition for the manufacturers' outpatient drugs to be covered under Medicare Part D; and
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

Other legislative changes have been proposed and adopted in the United States since the ACA was enacted. In August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions of Medicare payments to providers up to 2% per fiscal year, which went into effect in April 2013 and, due to subsequent legislative amendments, will remain in effect through 2027 unless additional Congressional action is taken. In January 2013, President Obama signed into law the American Taxpayer Relief Act of 2012, which, among other things, further reduced Medicare payments to several providers, including hospitals, imaging centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Since enactment of the ACA, there have been numerous legal challenges and Congressional actions, as well as recent efforts by the Trump administration, to repeal and replace provisions of the law. While Congress has not passed comprehensive repeal legislation, two bills affecting the implementation of certain taxes under the ACA have been signed into law. For example, with enactment of the Tax Cuts and Jobs Act of 2017, which was signed by President Trump on December 22, 2017, Congress repealed the "individual mandate," effective January 1, 2019. According to the Congressional Budget Office, the repeal of the individual mandate will cause 13 million fewer Americans to be insured in 2027 and premiums in insurance markets may rise. Additionally, on January 22, 2018, President Trump signed a continuing resolution on appropriations for fiscal year 2018 that delayed the implementation of certain ACA-mandated fees, including the so-called "Cadillac" tax on certain high cost employer-sponsored insurance plans, the annual fee imposed on certain health insurance providers based on market share, and the medical device excise tax on non-exempt medical devices. Further, the Bipartisan Budget Act of 2018, among other things, amends the ACA, effective January 1, 2019, to increase from 50 percent to 70 percent the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D and to close the coverage gap in most Medicare drug plans, commonly referred to as the "donut hole".

In addition, on December 14, 2018, a U.S. District Court judge in the Northern District of Texas ruled that the individual mandate portion of the ACA is an essential and inseverable feature of the ACA, and therefore because the mandate was repealed as part of the Tax Cuts and Jobs Act, the remaining provisions of the ACA are invalid as well. The Trump administration and CMS have both stated that the ruling will have no immediate effect, and on December 30, 2018 the same judge issued an order staying the judgment pending appeal. The Trump Administration recently represented to the Court of Appeals considering this judgment that it does not oppose the lower court's ruling. On July 10, 2019, the Court of Appeals for the Fifth Circuit heard oral argument in this case. Litigation and legislation over the ACA are likely to continue, with unpredictable and uncertain results.

In addition, the Trump Administration has also taken executive actions to undermine or delay implementation of the ACA. Since January 2017, President Trump has signed two Executive Orders designed to delay the implementation of certain provisions of the ACA or otherwise circumvent some of the requirements for health insurance mandated by the ACA. One Executive Order directs federal agencies with authorities and responsibilities under the ACA to waive, defer, grant exemptions from, or delay the implementation of any provision of the ACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. The second Executive Order terminates the cost-sharing subsidies that reimburse insurers under the ACA. Several state Attorneys General filed suit to stop the administration from terminating the subsidies, but their request for a restraining order was denied by a federal judge in California on October 25, 2017. In addition, CMS has recently proposed regulations that would give states greater flexibility in setting benchmarks for insurers in the individual and small group marketplaces, which may have the effect of relaxing the essential health benefits required under the ACA for plans sold through such marketplaces. Further, on June 14, 2018, U.S. Court of Appeals for the Federal Circuit ruled that the federal government was not required to pay more than $12 billion in ACA risk corridor payments to third-party payors who argued were owed to them. The effects of this gap in reimbursement on third-party payors, the viability of the ACA marketplace, providers, and potentially our business, are not yet known.

Further, there have been several recent U.S. congressional inquiries and proposed federal and proposed and enacted state legislation designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, reduce the costs of drugs under Medicare and reform government program reimbursement methodologies for drug products.

At the federal level, Congress and the Trump administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs. In addition, the Trump administration's budget proposals for fiscal years 2019 and 2020 contain further drug price control measures that could be enacted during the budget process or in other future legislation. Further, on May 11, 2018, the Trump administration issued a plan to lower drug prices. Under this blueprint for action, the Administration indicated that the Department of Health and Human Services, or HHS, will: take steps to end the gaming of regulatory and patent processes by drug makers to unfairly protect monopolies; advance biosimilars and generics to boost price competition; evaluate the inclusion of prices in drug makers' ads to enhance price competition; speed access to and lower the cost of new drugs by clarifying policies for sharing information between insurers and drug makers; avoid excessive pricing by relying more on value-based pricing by expanding outcome-based payments in Medicare and Medicaid; work to give Part D plan sponsors more negotiation power with drug makers; examine which Medicare Part B drugs could be negotiated for a lower price by Part D plans, and improving the design of the Part B Competitive Acquisition Program; update Medicare's drug-pricing dashboard to increase transparency; prohibit Part D contracts that include "gag rules" that prevent pharmacists from informing patients when they could pay less out-of-pocket by not using insurance; and require that Part D plan members be provided with an annual statement of plan payments, out-of-pocket spending, and drug price increases.

At the state level, individual states are increasingly aggressive in passing legislation and implementing regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and

transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. In addition, regional health care authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other health care programs. These measures could reduce the ultimate demand for our products, once approved, or put pressure on our product pricing. We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our product candidates or additional pricing pressures.

Review and Approval of Medicinal Products in the European Union

In order to market any product outside of the United States, a company must also comply with numerous and varying regulatory requirements of other countries and jurisdictions regarding quality, safety and efficacy and governing, among other things, clinical trials, marketing authorization, commercial sales and distribution of products. Whether or not it obtains FDA approval for a product, an applicant will need to obtain the necessary approvals by the comparable non-U.S. regulatory authorities before it can commence clinical trials or marketing of the product in those countries or jurisdictions. The approval process ultimately varies between countries and jurisdictions and can involve additional product testing and additional administrative review periods. The time required to obtain approval in other countries and jurisdictions might differ from and be longer than that required to obtain FDA approval. Regulatory approval in one country or jurisdiction does not ensure regulatory approval in another, but a failure or delay in obtaining regulatory approval in one country or jurisdiction may negatively impact the regulatory process in others. Specifically, however, the process governing approval of medicinal products in the European Union generally follows the same lines as in the United States. It entails satisfactory completion of preclinical studies and adequate and well-controlled clinical trials to establish the safety and efficacy of the product for each proposed indication. It also requires the submission to the relevant competent authorities of a marketing authorization application, or MAA, and granting of a marketing authorization by these authorities before the product can be marketed and sold in the European Union.

Clinical Trial Approval

The Clinical Trials Directive 2001/20/EC, the Directive 2005/28/EC on GCP and the related national implementing provisions of the individual member states of the European Union, or EU Member States, govern the system for the approval of clinical trials in the European Union. Under this system, an applicant must obtain prior approval from the competent national authority of the EU Member States in which the clinical trial is to be conducted. Furthermore, the applicant may only start a clinical trial at a specific study site after the competent ethics committee has issued a favorable opinion. The clinical trial application must be accompanied by, among other documents, an investigational medicinal product dossier (the Common Technical Document) with supporting information prescribed by Directive 2001/20/EC, Directive 2005/28/EC, where relevant the implementing national provisions of the individual EU Member States and further detailed in applicable guidance documents.

In April 2014, the new Clinical Trials Regulation, (EU) No 536/2014, was adopted. The Clinical Trials Regulation was published on June 16, 2014 but is not expected to apply until later in 2019. The Clinical Trials Regulation will be directly applicable in all the EU Member States, repealing the current Clinical Trials Directive 2001/20/EC and replacing any national legislation that was put in place to implement the Directive. Conduct of all clinical trials performed in the European Union will continue to be bound by currently applicable provisions until the new Clinical Trials Regulation becomes applicable. The extent to which on-going clinical trials will be governed by the Clinical Trials Regulation will depend on when the Clinical Trials Regulation becomes applicable and on the duration of the individual clinical trial. If a clinical trial continues for more than three years from the day on which the Clinical Trials Regulation becomes applicable the Clinical Trials Regulation will at that time begin to apply to the clinical trial.

The new Clinical Trials Regulation aims to simplify and streamline the approval of clinical trials in the European Union. The main characteristics of the regulation include: a streamlined application procedure via a single entry point, the "EU Portal and Database"; a single set of documents to be prepared and submitted for the application as well as simplified reporting procedures for clinical trial sponsors; and a harmonized procedure for the assessment of applications for clinical trials, which is divided in two parts. Part I is assessed by the appointed reporting Member State, whose assessment report is submitted for review by the sponsor and all other competent authorities of all EU Member States in which an application for authorization of a clinical trial has been submitted (Concerned Member States). Part II is assessed separately by each Concerned Member State. Strict deadlines have been established for the assessment of clinical trial applications. The role of the relevant ethics committees in the assessment procedure will continue to be governed by the national law of the Concerned Member State. However, overall related timelines will be defined by the Clinical Trials Regulation.

PRIME Designation in the European Union

In March 2016, the European Medicines Agency, or EMA, launched an initiative to facilitate development of product candidates in indications, often rare, for which few or no therapies currently exist. The PRIority MEdicines, or PRIME, scheme is intended to encourage drug development in areas of unmet medical need and provides accelerated assessment of products representing substantial innovation reviewed under the centralized procedure. Products from small- and medium-sized enterprises, or SMEs, may qualify for earlier entry into the PRIME scheme than larger companies. Many benefits accrue to sponsors of product candidates with PRIME designation, including but not limited to, early and proactive regulatory dialogue with the EMA, frequent discussions on clinical trial designs and other development program elements, and accelerated marketing authorization application assessment once a dossier has been submitted. Importantly, a dedicated Agency contact and rapporteur from the Committee for Human Medicinal Products, or CHMP, or Committee for Advanced Therapies, or CAT, are appointed early in PRIME scheme facilitating increased understanding of the product at EMA's Committee level. A kick-off meeting initiates these relationships and includes a team of multidisciplinary experts at the EMA to provide guidance on the overall development and regulatory strategies.

Marketing Authorization

To obtain a marketing authorization for a product under European Union regulatory systems, an applicant must submit an MAA either under a centralized procedure administered by the EMA, or one of the procedures administered by competent authorities in the EU Member States (decentralized procedure, national procedure or mutual recognition procedure). A marketing authorization may be granted only to an applicant established in the European Union. Regulation (EC) No 1901/2006 provides that prior to obtaining a marketing authorization in the EU, applicants have to demonstrate compliance with all measures included in an EMA-approved Paediatric Investigation Plan, or PIP, covering all subsets of the pediatric population, unless the EMA has granted (1) a product-specific waiver, (2) a class waiver or (3) a deferral for one or more of the measures included in the PIP.

The centralized procedure provides for the grant of a single marketing authorization by the European Commission that is valid across the European Economic Area (i.e. the European Union as well as Iceland, Liechtenstein and Norway). Pursuant to Regulation (EC) No 726/2004, the centralized procedure is compulsory for specific products, including for medicines produced by certain biotechnological processes, products designated as orphan medicinal products, advanced therapy medicinal products and products with a new active substance indicated for the treatment of certain diseases. For products with a new active substance indicated for the treatment of other diseases and products that are highly innovative or for which a centralized process is in the interest of patients, the centralized procedure may be optional. The centralized procedure may at the request of the applicant also be used in certain other cases. We anticipate that the centralized procedure will be mandatory for the product candidates we are developing.

Under the centralized procedure, the CHMP is responsible for conducting the initial assessment of a product and for several post-authorization and maintenance activities, such as the assessment of modifications or

extensions to an existing marketing authorization. Under the centralized procedure in the European Union, the maximum timeframe for the evaluation of an MAA is 210 days, excluding clock stops, when additional information or written or oral explanation is to be provided by the applicant in response to questions of the CHMP. Accelerated evaluation might be granted by the CHMP in exceptional cases, when a medicinal product is of major interest from the point of view of public health and in particular from the viewpoint of therapeutic innovation. If the CHMP accepts such request, the time limit of 210 days will be reduced to 150 days but it is possible that the CHMP can revert to the standard time limit for the centralized procedure if it considers that it is no longer appropriate to conduct an accelerated assessment. At the end of this period, the CHMP provides a scientific opinion on whether or not a marketing authorization should be granted in relation to a medicinal product. Within 15 calendar days of receipt of a final opinion from the CHMP, the European Commission must prepare a draft decision concerning an application for marketing authorization. This draft decision must take the opinion and any relevant provisions of European Union law into account. Before arriving at a final decision on an application for centralized authorization of a medicinal product the European Commission must consult the Standing Committee on Medicinal Products for Human Use. The Standing Committee is composed of representatives of the EU Member States and chaired by a non-voting European Commission representative. The European Parliament also has a related “droit de regard”. The European Parliament’s role is to ensure that the European Commission has not exceeded its powers in deciding to grant or refuse to grant a marketing authorization.

The European Commission may grant a so-called “marketing authorization under exceptional circumstances”. Such authorization is intended for products for which the applicant can demonstrate that it is unable to provide comprehensive data on the efficacy and safety under normal conditions of use, because the indications for which the product in question is intended are encountered so rarely that the applicant cannot reasonably be expected to provide comprehensive evidence, or in the present state of scientific knowledge, comprehensive information cannot be provided, or it would be contrary to generally accepted principles of medical ethics to collect such information. Consequently, marketing authorization under exceptional circumstances may be granted subject to certain specific obligations, which may include the following:

- the applicant must complete an identified program of studies within a time period specified by the competent authority, the results of which form the basis of a reassessment of the benefit/risk profile;
- the medicinal product in question may be supplied on medical prescription only and may in certain cases be administered only under strict medical supervision, possibly in a hospital and in the case of a radiopharmaceutical, by an authorized person; and
- the package leaflet and any medical information must draw the attention of the medical practitioner to the fact that the particulars available concerning the medicinal product in question are as yet inadequate in certain specified respects.

A marketing authorization under exceptional circumstances is subject to annual review to reassess the risk-benefit balance in an annual reassessment procedure. Continuation of the authorization is linked to the annual reassessment and a negative assessment could potentially result in the marketing authorization being suspended or revoked. The renewal of a marketing authorization of a medicinal product under exceptional circumstances, however, follows the same rules as a “normal” marketing authorization. Thus, a marketing authorization under exceptional circumstances is granted for an initial five years, after which the authorization will become valid indefinitely, unless the EMA decides that safety grounds merit one additional five-year renewal.

The European Commission may also grant a so-called “conditional marketing authorization” prior to obtaining the comprehensive clinical data required for an application for a full marketing authorization. Such conditional marketing authorizations may be granted for product candidates (including medicines designated as orphan medicinal products), if (i) the risk-benefit balance of the product candidate is positive, (ii) it is likely that the applicant will be in a position to provide the required comprehensive clinical trial data, (iii) the product fulfills an unmet medical need and (iv) the benefit to public health of the immediate availability on the market of

the medicinal product concerned outweighs the risk inherent in the fact that additional data are still required. A conditional marketing authorization may contain specific obligations to be fulfilled by the marketing authorization holder, including obligations with respect to the completion of ongoing or new studies, and with respect to the collection of pharmacovigilance data. Conditional marketing authorizations are valid for one year, and may be renewed annually, if the risk-benefit balance remains positive, and after an assessment of the need for additional or modified conditions and/or specific obligations. The timelines for the centralized procedure described above also apply with respect to the review by the CHMP of applications for a conditional marketing authorization.

The European Union medicines rules expressly permit the EU Member States to adopt national legislation prohibiting or restricting the sale, supply or use of any medicinal product containing, consisting of or derived from a specific type of human or animal cell, such as embryonic stem cells. While the products we have in development do not make use of embryonic stem cells, it is possible that the national laws in certain EU Member States may prohibit or restrict us from commercializing our products, even if they have been granted a European Union marketing authorization.

Unlike the centralized authorization procedure, the decentralized marketing authorization procedure requires a separate application to, and leads to separate approval by, the competent authorities of each EU Member State in which the product is to be marketed. This application is identical to the application that would be submitted to the EMA for authorization through the centralized procedure. The reference EU Member State prepares a draft assessment and drafts of the related materials within 120 days after receipt of a valid application. The resulting assessment report is submitted to the concerned EU Member States who, within 90 days of receipt, must decide whether to approve the assessment report and related materials. If a concerned EU Member State cannot approve the assessment report and related materials due to concerns relating to a potential serious risk to public health, disputed elements may be referred to the European Commission, whose decision is binding on all EU Member States.

The mutual recognition procedure similarly is based on the acceptance by the competent authorities of the EU Member States of the marketing authorization of a medicinal product by the competent authorities of other EU Member States. The holder of a national marketing authorization may submit an application to the competent authority of an EU Member State requesting that this authority recognize the marketing authorization delivered by the competent authority of another EU Member State.

Regulatory Data Protection in the European Union

In the European Union, innovative medicinal products approved on the basis of a complete independent data package qualify for eight years of data exclusivity upon marketing authorization and an additional two years of market exclusivity pursuant to Directive 2001/83/EC. Regulation (EC) No 726/2004 repeats this entitlement for medicinal products authorized in accordance the centralized authorization procedure. Data exclusivity prevents applicants for authorization of generics of these innovative products from referencing the innovator’s data to assess a generic (abridged) application for a period of eight years. During an additional two-year period of market exclusivity, a generic marketing authorization application can be submitted and authorized, and the innovator’s data may be referenced, but no generic medicinal product can be placed on the European Union market until the expiration of the market exclusivity. The overall ten-year period will be extended to a maximum of 11 years if, during the first eight years of those ten years, the marketing authorization holder obtains an authorization for one or more new therapeutic indications which, during the scientific evaluation prior to their authorization, are held to bring a significant clinical benefit in comparison with existing therapies. Even if a compound is considered to be a new chemical entity so that the innovator gains the prescribed period of data exclusivity, another company nevertheless could also market another version of the product if such company obtained marketing authorization based on an MAA with a complete independent data package of pharmaceutical tests, preclinical tests and clinical trials.

Periods of Authorization and Renewals

A marketing authorization has an initial validity for five years in principle. The marketing authorization may be renewed after five years on the basis of a re-evaluation of the risk-benefit balance by the EMA or by the competent authority of the EU Member State. To this end, the marketing authorization holder must provide the EMA or the competent authority with a consolidated version of the file in respect of quality, safety and efficacy, including all variations introduced since the marketing authorization was granted, at least six months before the marketing authorization ceases to be valid. The European Commission or the competent authorities of the EU Member States may decide, on justified grounds relating to pharmacovigilance, to proceed with one further five-year period of marketing authorization. Once subsequently definitively renewed, the marketing authorization shall be valid for an unlimited period. Any authorization which is not followed by the actual placing of the medicinal product on the European Union market (in case of centralized procedure) or on the market of the authorizing EU Member State within three years after authorization ceases to be valid (the so-called sunset clause).

Pediatric Studies and Exclusivity

Prior to obtaining a marketing authorization in the European Union, applicants must demonstrate compliance with all measures included in an EMA-approved PIP covering all subsets of the pediatric population, unless the EMA has granted a product-specific waiver, a class waiver, or a deferral for one or more of the measures included in the PIP. The respective requirements for all marketing authorization procedures are laid down in Regulation (EC) No 1901/2006, the so-called Paediatric Regulation. This requirement also applies when a company wants to add a new indication, pharmaceutical form or route of administration for a medicine that is already authorized. The Paediatric Committee of the EMA, or PDCO, may grant deferrals for some medicines, allowing a company to delay development of the medicine for children until there is enough information to demonstrate its effectiveness and safety in adults. The PDCO may also grant waivers when development of a medicine for children is not needed or is not appropriate, such as for diseases that only affect the elderly population. Before an MAA can be filed, or an existing marketing authorization can be amended, the EMA determines that companies actually comply with the agreed studies and measures listed in each relevant PIP. If an applicant obtains a marketing authorization in all EU Member States, or a marketing authorization granted in the centralized procedure by the European Commission, and the study results for the pediatric population are included in the product information, even when negative, the medicine is then eligible for an additional six-month period of qualifying patent protection through extension of the term of the Supplementary Protection Certificate, or SPC.

Orphan Drug Designation and Exclusivity

Regulation (EC) No. 141/2000, as implemented by Regulation (EC) No. 847/2000 provides that a drug can be designated as an orphan drug by the European Commission if its sponsor can establish: that the product is intended for the diagnosis, prevention or treatment of (1) a life-threatening or chronically debilitating condition affecting not more than five in ten thousand persons in the European Union when the application is made, or (2) a life-threatening, seriously debilitating or serious and chronic condition in the European Union and that without incentives it is unlikely that the marketing of the drug in the European Union would generate sufficient return to justify the necessary investment. For either of these conditions, the applicant must demonstrate that there exists no satisfactory method of diagnosis, prevention or treatment of the condition in question that has been authorized in the EU or, if such method exists, the drug will be of significant benefit to those affected by that condition.

Once authorized, orphan medicinal products are entitled to 10 years of market exclusivity in all EU Member States and in addition a range of other benefits during the development and regulatory review process including scientific assistance for study protocols, authorization through the centralized marketing authorization procedure covering all member countries and a reduction or elimination of registration and marketing authorization fees. However, marketing authorization may be granted to a similar medicinal product with the same orphan indication

during the 10-year period with the consent of the marketing authorization holder for the original orphan medicinal product or if the manufacturer of the original orphan medicinal product is unable to supply sufficient quantities. Marketing authorization may also be granted to a similar medicinal product with the same orphan indication if this product is safer, more effective or otherwise clinically superior to the original orphan medicinal product. The period of market exclusivity may, in addition, be reduced to six years if it can be demonstrated on the basis of available evidence that the original orphan medicinal product is sufficiently profitable not to justify maintenance of market exclusivity.

Regulatory Requirements After a Marketing Authorization has been Obtained

In case an authorization for a medicinal product in the European Union is obtained, the holder of the marketing authorization is required to comply with a range of requirements applicable to the manufacturing, marketing, promotion and sale of medicinal products. These include:

- Compliance with the European Union's stringent pharmacovigilance or safety reporting rules must be ensured. These rules can impose post-authorization studies and additional monitoring obligations.
- The manufacturing of authorized medicinal products, for which a separate manufacturer's license is mandatory, must also be conducted in strict compliance with the applicable European Union laws, regulations and guidance, including Directive 2001/83/EC, Directive 2003/94/EC, Regulation (EC) No 726/2004 and the European Commission Guidelines for Good Manufacturing Practice. These requirements include compliance with European Union cGMP standards when manufacturing medicinal products and active pharmaceutical ingredients, including the manufacture of active pharmaceutical ingredients outside of the European Union with the intention to import the active pharmaceutical ingredients into the European Union.
- The marketing and promotion of authorized drugs, including industry-sponsored continuing medical education and advertising directed toward the prescribers of drugs and/or the general public, are strictly regulated in the European Union notably under Directive 2001/83EC, as amended, and are also subject to EU Member State laws. Direct-to-consumer advertising of prescription medicines is prohibited across the European Union.

Brexit and the Regulatory Framework in the United Kingdom

On June 23, 2016, the electorate in the United Kingdom voted in favor of leaving the European Union, commonly referred to as Brexit. Thereafter, on March 29, 2017, the country formally notified the European Union of its intention to withdraw pursuant to Article 50 of the Lisbon Treaty. The withdrawal of the United Kingdom from the European Union was meant to take effect either on the effective date of the withdrawal agreement or, in the absence of agreement, two years after the United Kingdom provides a notice of withdrawal pursuant to the European Union Treaty, which was March 29, 2019. That date has now been extended to October 31, 2019. Discussions between the United Kingdom and the European Union have focused on finalizing withdrawal issues and transition agreements, but have been extremely difficult to date. Limited progress to date in these negotiations and ongoing uncertainty within the UK Government and Parliament sustains the possibility of the United Kingdom leaving the European Union on the given deadline without a withdrawal agreement and associated transition period in place, which is likely to cause significant market and economic disruption.

Since the regulatory framework for pharmaceutical products in the United Kingdom covering quality, safety and efficacy of pharmaceutical products, clinical trials, marketing authorization, commercial sales and distribution of pharmaceutical products is derived from European Union directives and regulations, Brexit could materially impact the future regulatory regime that applies to products and the approval of product candidates in the United Kingdom. It remains to be seen how, if at all, Brexit will impact regulatory requirements for product candidates and products in the United Kingdom.

General Data Protection Regulation

The collection, use, disclosure, transfer, or other processing of personal data regarding individuals in the European Union, including personal health data, is subject to the GDPR, which became effective on May 25, 2018. The GDPR is wide-ranging in scope and imposes numerous requirements on companies that process personal data, including requirements relating to processing health and other sensitive data, obtaining consent of the individuals to whom the personal data relates, providing information to individuals regarding data processing activities, implementing safeguards to protect the security and confidentiality of personal data, providing notification of data breaches, and taking certain measures when engaging third-party processors. The GDPR also imposes strict rules on the transfer of personal data to countries outside the European Union, including the United States, and permits data protection authorities to impose large penalties for violations of the GDPR, including potential fines of up to €20 million or 4% of annual global revenues, whichever is greater. The GDPR also confers a private right of action on data subjects and consumer associations to lodge complaints with supervisory authorities, seek judicial remedies, and obtain compensation for damages resulting from violations of the GDPR. Compliance with the GDPR will be a rigorous and time-intensive process that may increase the cost of doing business or require companies to change their business practices to ensure full compliance.

Pricing Decisions for Approved Products

In the European Union, pricing and reimbursement schemes vary widely from country to country. Some countries provide that products may be marketed only after a reimbursement price has been agreed. Some countries may require the completion of additional studies that compare the cost-effectiveness of a particular product candidate to currently available therapies or so-called health technology assessments, in order to obtain reimbursement or pricing approval. For example, EU Member States have the option to restrict the range of products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. EU Member States may approve a specific price for a product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the product on the market. Other EU Member States allow companies to fix their own prices for products, but monitor and control prescription volumes and issue guidance to physicians to limit prescriptions. Recently, many countries in the European Union have increased the amount of discounts required on pharmaceuticals and these efforts could continue as countries attempt to manage health care expenditures, especially in light of the severe fiscal and debt crises experienced by many countries in the European Union. The downward pressure on health care costs in general, particularly prescription products, has become intense. As a result, increasingly high barriers are being erected to the entry of new products. Political, economic and regulatory developments may further complicate pricing negotiations, and pricing negotiations may continue after reimbursement has been obtained. Reference pricing used by various EU Member States, and parallel trade, i.e., arbitrage between low-priced and high-priced EU Member States, can further reduce prices. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any products, if approved in those countries.

Employees

As of June 30, 2019, we had 13 full-time employees, including a total of four employees with M.D., Pharm.D. or Ph.D. degrees. Of these full-time employees, eight employees are engaged in research and development. None of our employees are represented by labor unions or covered by collective bargaining agreements. We consider our relationship with our employees to be good.

Facilities

Our principal facilities consist of office space. Our headquarters consists of approximately 4,210 square feet of office space in Boston, Massachusetts under a 62-month lease that we entered into in May 2019. This lease expires in October 2024, and we have an option to extend it for a term of five years through October 2029. In

addition, we have a right of first option to lease an additional 2,069 square feet of the premises if such space becomes available during the term of the lease. We believe this office space will be sufficient to meet our needs for the foreseeable future and that suitable additional space will be available as and when needed.

Legal Proceedings

From time to time, we may become involved in legal proceedings arising in the ordinary course of our business. We are not currently subject to any material legal proceedings.

MANAGEMENT

Executive Officers and Directors

The following table sets forth the name, age as of June 30, 2019, and position of each of our executive officers and directors.

Name	Age	Position
Executive Officers		
Rahul D. Ballal, Ph.D.	42	President and Chief Executive Officer, Director
Michael P. Gray	48	Chief Financial Officer, Chief Operating Officer
Willem H. Scheele, M.D.	58	Chief Medical Officer
Non-Employee Directors		
David M. Mott	53	Chairman of the Board of Directors
Mette Kirstine Agger	54	Director
David Bonita, M.D.	43	Director
Mark Chin	37	Director
Barbara J. Dalton, Ph.D.	66	Director
Carl Goldfischer, M.D.	60	Director
James McArthur, Ph.D.	57	Director
Sara Nayeem, M.D.	41	Director

(1) Member of the audit committee.
(2) Member of the compensation committee.
(3) Member of the nominating and corporate governance committee.

Executive Officers

Rahul D. Ballal, Ph.D. has served as our President and Chief Executive Officer and as a member of our board of directors since June 2018. Prior to joining us, Dr. Ballal served as Chief Business Officer of Northern Biologics Inc., a biotechnology company, from May 2016 to June 2018, and as an Entrepreneur-in-Residence at Versant Ventures Management LLC, a life sciences venture capital firm, from May 2016 to June 2018. Previously, Dr. Ballal was Vice President, Business Development at Flexion Therapeutics, Inc., or Flexion, a public biopharmaceutical company, from March 2011 to May 2016. Prior to Flexion, he held a venture fellowship position at Novartis Venture Funds, a venture capital fund, as part of the Kauffman Fellowship, from June 2010 to June 2012, and overlapped in business development at the Broad Institute of Massachusetts Institute of Technology, a biomedical and genomic research center, from September 2009 to March 2011. Dr. Ballal was also the founder and CEO of Redmind LLC, a venture backed data analytics startup that was sold to Ikimbo Inc. in June 2002. Dr. Ballal received his Ph.D. in biochemistry and molecular biology from Georgetown University, his M.S. in biotechnology from Johns Hopkins University and his B.A. in biology from Brown University. We believe Dr. Ballal is qualified to serve on our board of directors based on his broad experience in the life sciences industry, including in various investment, operating and leadership roles.

Michael P. Gray has served as our Chief Financial Officer and Chief Operating Officer since April 2019. Prior to joining us, Mr. Gray held various leadership positions at Arsanis, Inc., now X4 Pharmaceuticals, Inc., a public biopharmaceutical company, including President and Chief Executive Officer from November 2018 to March 2019, Chief Financial Officer from March 2016 to March 2019, Chief Operating Officer from September 2017 to November 2018, and Chief Business Officer from March 2016 to September 2017. Mr. Gray also served in various leadership positions from January 1998 through February 2016 at Curis Inc., or Curis, a public oncology drug development company. He served as Curis' Chief Financial Officer and Chief Business Officer from February 2014 to February 2016 and as its Chief Financial Officer and Chief Operating Officer from December 2006 to February 2014. From December 2003 until December 2006, Mr. Gray served as Curis' Vice President of Finance and Chief Financial Officer and from August 2000 until December 2003, served as its

Senior Director of Finance and Controller. Previously, Mr. Gray held positions including Controller at Reprogenesis Inc., a biotechnology company focused on the development of cell therapy drug candidates, and as an audit professional for the accounting and consulting firm of Ernst & Young, LLP. Mr. Gray received his M.B.A. in corporate finance and entrepreneurial management from the F.W. Olin Graduate School of Business at Babson College and a B.S. in accounting from Bryant University.

Willem H. Scheele, M.D. has served as our Chief Medical Officer since March 2019. Prior to joining us, Dr. Scheele held various clinical development positions with increasing responsibility at Pfizer Inc., a public pharmaceutical company. He served as Executive Director, Clinician Group Lead, Rare Disease Clinical Development and Operations from October 2016 to March 2019, as Senior Director, Global Innovative Pharma, Medicines Development from 2014 to October 2016, and Director of Specialty Care Clinical Affairs from 2009 to 2014. Dr. Scheele served as Director, Women's Health and Bone (Global Medicine Monitor) at Wyeth Pharmaceuticals, Inc., a pharmaceutical company acquired by Pfizer, from 2004 to October 2009, and as an Associate Clinical Research Physician at Eli Lilly and Company, a public pharmaceutical company, from 1993 to 1994 and as a Global Clinical Research Physician from 1995 to 2003. Dr. Scheele received his M.D. from Vrije Universiteit Medical School, Amsterdam, The Netherlands.

Non-Employee Directors

David M. Mott has served as a member of our board of directors since January 2016. Mr. Mott has served as a General Partner of New Enterprise Associates, Inc., or New Enterprise Associates, an investment firm focused on venture capital and growth equity investments and, with its affiliates, a holder of more than 5% of our voting securities, since September 2008, where he leads the healthcare investing practice. From 1992 until 2008, Mr. Mott worked at MedImmune, Inc., or MedImmune, a biotechnology company and subsidiary of AstraZeneca plc, or AstraZeneca, a public global, science-led biopharmaceutical company, and served in numerous roles during his tenure, including most recently as Chief Executive Officer from October 2000 to July 2008. During that time, Mr. Mott also served as Executive Vice President of AstraZeneca from June 2007 to July 2008 following AstraZeneca's acquisition of MedImmune in June 2007. Mr. Mott has served on the board of directors of several public companies, including Epizyme, Inc., or Epizyme, a public late-stage biopharmaceutical company, since 2009, Ardelyx, Inc., a public specialized biopharmaceutical company, since 2009, Adaptimmune Therapeutics plc, a public clinical-stage biopharmaceutical company, since February 2015, Mersana Therapeutics, Inc., a public life sciences company, since 2012, and Tiburio Therapeutics, Inc., a biopharmaceutical company since, December 2018, and previously served on the board of Nightstar Therapeutics plc, or Nightstar, a clinical-stage gene therapy company, from September 2017 to June 2019, Clementia Pharmaceuticals, Inc., a clinical-stage company, from August 2015 to February 2018, Tesaro, Inc., an oncology-focused company, from 2010 to January 2019, and Prosensa Holding, N.V., a Dutch biotechnology company, from 2012 to 2014. Mr. Mott also serves on the boards of several private biopharmaceutical companies. Mr. Mott received his B.A. in economics and government from Dartmouth College. We believe Mr. Mott is qualified to serve on our board of directors based on his experience as an executive officer at MedImmune and his role on several public and private boards of directors as well as his leadership position in healthcare investing.

Mette Kirstine Agger has served as a member of our board of directors since January 2016. Since 2009, Ms. Agger has served as a Managing Partner of Lundbeckfonden Ventures, a life science venture fund and, with its affiliates, a holder of more than 5% of our voting securities. Prior to joining Lundbeckfonden Ventures, Ms. Agger co-founded 7TM A/S, a biotech company engaged in therapeutic drug discovery and development, in 2000, and served as its Chief Executive Officer from founding to 2009. Prior to founding 7TM, Ms. Agger was part of the management team of NeuroSearch A/S, a drug research and development company. Ms. Agger served on the board of Trevi Therapeutics, Inc., a public life sciences company, from July 2017 to June 2019 and has served on the board of directors of scPharmaceuticals Inc., a public pharmaceutical company, since March 2014, Tiburio Therapeutics, Inc., a biopharmaceutical company, since December 2018, and Veloxis Pharmaceuticals A/S, an emerging specialty pharmaceutical company that is publicly traded on Nasdaq OMX Copenhagen, since April 2010. She also serves on the boards of several private companies, including Cydan II, Inc., or Cydan.

Ms. Agger received her M.Sc. in biology from the University of Copenhagen and received her M.B.A. from Henley Business School at the University of Reading. We believe Ms. Agger is qualified to serve on our board of directors based on her experience holding senior leadership positions within biotechnology companies and her role on public and private boards of directors, as well as her experience in investing in healthcare companies.

David Bonita, M.D. has served as a member of our board of directors since March 2019. Since June 2013, Dr. Bonita has held the position of Private Equity Partner at OrbiMed Advisors LLC, or OrbiMed, a venture capital firm and, with its affiliates, a holder of more than 5% of our voting securities. From June 2004 to June 2013, Dr. Bonita held other positions at OrbiMed. Dr. Bonita has served on the board of directors of Tricida, Inc., a public pharmaceutical company, since January 2014. Dr. Bonita also previously served on the boards of directors of Ambit Biosciences Corporation, a pharmaceutical company, Clementia Pharmaceuticals Inc., a pharmaceutical company, Loxo Oncology, Inc., a biopharmaceutical company, Si-Bone, Inc., a medical device company, and ViewRay Inc., a medical device company. Dr. Bonita currently serves, and has previously served, on the boards of directors of numerous private companies. Dr. Bonita has also worked as a corporate finance analyst in the healthcare investment banking groups of Morgan Stanley and UBS. He has published scientific articles in peer-reviewed journals based on signal transduction research performed at Harvard Medical School. He received his B.A. in biology from Harvard University and his joint M.D./M.B.A. from Columbia University. We believe that Dr. Bonita is qualified to serve on our board of directors based on his roles on several public and private boards of directors as well as his extensive experience in investing in healthcare companies.

Mark Chin has served as a member of our board of directors since March 2019. Since August 2016, Mr. Chin has served as an Investment Director at Arix Bioscience plc, a life science investment company and, with its affiliates, a holder of more than 5% of our voting securities. From September 2012 to July 2016, Mr. Chin served as a Principal at Longitude Capital Management Co. LLC, a healthcare venture capital firm. From January 2011 to September 2012, Mr. Chin served as a Consultant with the Boston Consulting Group, a global management consulting firm. Mr. Chin has served on the board of Harpoon Therapeutics Inc., a public clinical-stage immunotherapy company, since May 2017, and Iterum Therapeutics plc, a public clinical-stage pharmaceutical company, since May 2017. Mr. Chin earned his B.S. in management science from the University of California, San Diego, his M.B.A. from the Wharton School at the University of Pennsylvania and his M.S. in biotechnology from the University of Pennsylvania. We believe Mr. Chin is qualified to serve on our board of directors based on his roles on several public and private boards of directors and his extensive experience in investing in healthcare companies as well as his consulting experience.

Barbara J. Dalton, Ph.D. has served as a member of our board of directors since January 2016. Dr. Dalton is the Vice President of Venture Capital for Pfizer Ventures, the venture capital group of Pfizer Inc. and, with its affiliates, a holder of more than 5% of our voting securities, since she joined Pfizer in 2007. She serves on the board of Artios Ltd., Complexa Inc., Cydan, Ixchelsis Ltd, Petra Pharma Corporation, and System1 Biosciences, Inc., which are all private independent biopharmaceutical companies. Barbara also serves on several other Pfizer Venture Investments portfolio companies as a board observer. Dr. Dalton began her pharmaceutical career as a Research Scientist in Immunology at SmithKline Beecham Ltd. (formerly SmithKline and French Laboratories), a pharmaceutical company that merged with Glaxo Holdings to become GSK, and joined their venture capital group, SR One, Ltd., in the early 1990s. She was also a founding member and Partner with EuclidSR Partners LP, a private venture capital firm, where SmithKline was a leading limited partner. She received her Ph.D. in microbiology and immunology from The Medical College of Pennsylvania (now the Drexel University College of Medicine) and received her B.S. in General Science from Pennsylvania State University. We believe Dr. Dalton is qualified to serve on our board of directors based on her research background, her past role on several public and private boards of directors, as well as her extensive experience in venture investing in healthcare companies.

Carl Goldfischer, M.D. has served as a member of our board of directors since January 2016. Dr. Goldfischer has served as an Investment Partner, Managing Director, member of the board of directors and member of the executive committee of Bay City Capital LLC, or Bay City Capital, a life sciences investment firm and, with its affiliates, a holder of more than 5% of our voting securities, since January 2000. Prior to

joining Bay City Capital, Dr. Goldfischer was Chief Financial Officer and VP of Finance and Strategic Planning of ImClone Systems Inc., a biopharmaceutical company. Dr. Goldfischer has served on the board of directors of Epizyme since September 2009. He has previously served on the board of directors of EnteroMedics Inc., now ReShape Lifesciences Inc., a public medical device company, from 2004 to September 2017, MAP Pharmaceuticals, Inc., a biopharmaceutical company, from 2004 to 2011 and Poniard Pharmaceuticals, Inc., a public biopharmaceutical company, from 2000 to 2012. Dr. Goldfischer received his B.A. in Liberal Arts from Sarah Lawrence College and his M.D. with honors in scientific research from Albert Einstein College of Medicine at Yeshiva University. We believe Dr. Goldfischer is qualified to serve on our board of directors based on his experience as chief financial officer at ImClone Systems and his role on several public and private boards of directors as well as his experience in investing in healthcare companies.

James McArthur, Ph.D. has served as a member of our board of directors since January 2016. Dr. McArthur, a co-founder of our company, also served as our President and Chief Executive Officer from January 2016 to May 2018. He was also a founder of Vtesse Inc., or Vtesse, which was acquired by Sucampo, Inc. in April 2017, Tiburio Therapeutics and Cydan, and served as a member of the board of directors of Nightstar Therapeutics, a public gene therapy company that was acquired by Biogen in June 2019. He also serves as a member of the board of directors and Scientific Advisory Board of the Friedreich's Ataxia Research Alliance (FARA), a leading patient advocacy group. Before co-founding our company in 2016, Tiburio in 2018, Vtesse in 2015 and Cydan in 2013, Dr. McArthur was an Entrepreneur-in-Residence at HealthCare Ventures LLC, a life science venture capital firm, and was the founding employee and chief scientific officer of Synovex, which was renamed Adheron Therapeutics, Inc., or Adheron, from June 2006 to September 2012, and a consultant to Adheron from September 2012 to January 2015. Dr. McArthur obtained his Ph.D. in molecular oncology at McGill University of Montreal and was a post-doctoral fellow studying immunology at Massachusetts Institute of Technology in Cambridge and the University of California, Berkeley. Dr. McArthur received his BSc in biochemistry from McGill University. We believe Dr. McArthur is qualified to serve on our board of directors based on his scientific expertise and his role of co-founding several biotechnology companies, including IMARA, as well as his role as a director on several boards of directors.

Sara Nayeem, M.D. has served as a member of our board of directors since January 2016. Dr. Nayeem joined New Enterprise Associates, a venture capital firm and, with its affiliates, a holder of more than 5% of our voting securities, in January 2009 and has served as a Partner since October 2015. Prior to joining New Enterprise Associates, Dr. Nayeem was an Associate with Merrill Lynch and Co. Inc.'s Global Healthcare Group from August 2006 to January 2009. Dr. Nayeem previously served on the board of directors of Mersana Therapeutics, Inc., a public life sciences company, from July 2012 to June 2018. Dr. Nayeem currently serves on the board of directors of several private biopharmaceutical companies, including Centrexion Therapeutics Corp., Cydan, Cydan LLC, Complexa Inc. and Tiburio Therapeutics, Inc., as well as on the board of BioHealth Innovation Management, Inc., the for-profit arm of a regional innovation intermediary. Previously, she served on the boards of Vtesse, Inc. from July 2014 to April 2017, Eperia Inc. from July 2016 to December 2018, and Therachon Holding AG a clinical stage global biotechnology company from July 2015 to October 2016. Dr. Nayeem received her M.D. and M.B.A. from Yale University and her B.A. in biology from Harvard University. We believe Dr. Nayeem is qualified to serve on our board of directors based on her experience in healthcare investment banking, her experience in investing in healthcare companies and her role as a member of the boards of directors for several biotechnology companies.

Board Composition and Election of Directors

Board Composition

Effective upon the closing of this offering, our board of directors will have members. Our directors hold office until their successors have been elected and qualified or until the earlier of their death, resignation or removal.

Our certificate of incorporation and bylaws that will become effective upon the closing of this offering provide that the authorized number of directors may be changed only by resolution of our board of directors. Our

certificate of incorporation and bylaws will also provide that our directors may be removed only for cause by the affirmative vote of the holders of at least 75% of our shares of capital stock present in person or by proxy and entitled to vote, and that any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled only by vote of a majority of our directors then in office.

In accordance with the terms of our certificate of incorporation and bylaws that will become effective upon the closing of this offering, our board of directors will be divided into three classes, class I, class II and class III, with members of each class serving staggered three-year terms. Upon the closing of this offering, the members of the classes will be divided as follows:

- the class I directors will be , and , and their term will expire at the annual meeting of stockholders to be held in 2020;
- the class II directors will be , and , and their term will expire at the annual meeting of stockholders to be held in 2021; and
- the class III directors will be , and , and their term will expire at the annual meeting of stockholders to be held in 2022.

Upon the expiration of the term of a class of directors, directors in that class will be eligible to be elected for a new three-year term at the annual meeting of stockholders in the year in which their term expires.

The classification of our board of directors may have the effect of delaying or preventing changes in our control or management. See “Description of Capital Stock—Delaware Anti-Takeover Law and Certain Charter and Bylaw Provisions.”

Director Independence

The Nasdaq Stock Market LLC, or Nasdaq, Marketplace Rules, or the Nasdaq Listing Rules, require a majority of a listed company’s board of directors to be composed of independent directors within one year of listing. In addition, the Nasdaq Listing Rules require that, subject to specified exceptions, each member of a listed company’s audit, compensation and nominating and corporate governance committees be independent under the Securities Exchange Act of 1934, as amended, or the Exchange Act. Audit committee members must also satisfy the independence criteria set forth in Rule 10A-3 under the Exchange Act and compensation committee members must also satisfy the independence criteria set forth in Rule 10C-1 under the Exchange Act. Under the Nasdaq Listing Rules, a director will only qualify as an “independent director” if, in the opinion of the listed company’s board of directors, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. In order to be considered independent for purposes of Rule 10A-3, a member of an audit committee of a listed company may not, other than in his or her capacity as a member of the audit committee, the board of directors, or any other board committee, accept, directly or indirectly, any consulting, advisory, or other compensatory fee from the listed company or any of its subsidiaries or otherwise be an affiliated person of the listed company or any of its subsidiaries. In order to be considered independent for purposes of Rule 10C-1, the board must consider, for each member of a compensation committee of a listed company, all factors specifically relevant to determining whether a director has a relationship to such company which is material to that director’s ability to be independent from management in connection with the duties of a compensation committee member, including, but not limited to: (1) the source of compensation of the director, including any consulting advisory or other compensatory fee paid by such company to the director; and (2) whether the director is affiliated with the company or any of its subsidiaries or affiliates.

In 2019, our board of directors undertook a review of the composition of our board of directors and its committees and the independence of each director. Based upon information requested from and provided by each director concerning his or her background, employment and affiliations, including family relationships,

our board of directors has determined that each of our directors, with the exception of Rahul D. Ballal, , and , are "independent directors" as defined under the Nasdaq Listing Rules. In making such determination, our board of directors considered the relationships that each such director has with our company and all other facts and circumstances that our board of directors deemed relevant in determining his or her independence, including the beneficial ownership of our capital stock by each director. Dr. Ballal is not an independent director under these rules because he is our President and Chief Executive Officer.

There are no family relationships among any of our directors or executive officers.

Role of the Board in Risk Oversight

One of the key functions of our board of directors is informed oversight of our risk management process. Our board of directors does not have a standing risk management committee, but rather administers this oversight function directly through the board of directors as a whole, as well as through various standing committees of our board of directors that address risks inherent in their respective areas of oversight. In particular, our board of directors is responsible for monitoring and assessing strategic risk exposure and our audit committee has the responsibility to discuss, including guidelines and policies to govern the process by which risk assessment and management is undertaken. The audit committee also monitors compliance with legal and regulatory requirements.

Board Committees

Our board of directors has established an audit committee, a compensation committee and a nominating and corporate governance committee, each of which operates under a charter that has been approved by our board. The composition of each committee will be effective as of the date of this prospectus.

Audit Committee

The members of our audit committee are , and . is the chair of the audit committee. Upon the effectiveness of the registration statement of which this prospectus is a part, our audit committee's responsibilities will include:

- appointing, approving the compensation of, and assessing the independence of our registered public accounting firm;
- overseeing the work of our independent registered public accounting firm, including through the receipt and consideration of reports from that firm;
- reviewing and discussing with management and our independent registered public accounting firm our annual and quarterly financial statements and related disclosures;
- monitoring our internal control over financial reporting, disclosure controls and procedures and code of business conduct and ethics;
- overseeing our internal audit function;
- overseeing our risk assessment and risk management policies;
- establishing policies regarding hiring employees from our independent registered public accounting firm and procedures for the receipt and retention of accounting related complaints and concerns;
- meeting independently with our internal auditing staff, if any, our independent registered public accounting firm and management;
- reviewing and approving or ratifying any related person transactions; and
- preparing the audit committee report required by Securities and Exchange Commission, or SEC, rules.

All audit and non-audit services, other than *de minimis* non-audit services, to be provided to us by our independent registered public accounting firm must be approved in advance by our audit committee.

Our board of directors has determined that is an "audit committee financial expert" as defined in applicable SEC rules. We believe that the composition of our audit committee will meet the requirements for independence under current Nasdaq and SEC rules and regulations. Our board of directors has also determined that each member of our audit committee can read and understand fundamental financial statements, in accordance with applicable requirements. In arriving at these determinations, the board of directors has examined each audit committee member's scope of experience and the nature of their employment in the corporate finance sector.

Compensation Committee

The members of our compensation committee are and . is the chair of the compensation committee. Upon the effectiveness of the registration statement of which this prospectus is a part, our compensation committee's responsibilities will include:

- reviewing and approving, or making recommendations to our board of directors with respect to, the compensation of our chief executive officer and our other executive officers;
- overseeing an evaluation of our senior executives;
- overseeing and administering our cash and equity incentive plans;
- reviewing and making recommendations to our board of directors with respect to director compensation;
- reviewing and discussing annually with management our "Compensation Discussion and Analysis" disclosure if and to the extent then required by SEC rules; and
- preparing the compensation committee report if and to the extent then required by SEC rules.

We believe that the composition of our compensation committee will meet the requirements for independence under current Nasdaq and SEC rules and regulations.

Nominating and Corporate Governance Committee

The members of our nominating and corporate governance committee are and . is the chair of the nominating and corporate governance committee. Upon the effectiveness of the registration statement of which this prospectus is a part, our nominating and corporate governance committee's responsibilities will include:

- recommending to our board of directors the persons to be nominated for election as directors and to each of our board's committees;
- reviewing and making recommendations to our board with respect to our board leadership structure;
- reviewing and making recommendations to our board with respect to management succession planning;
- developing and recommending to our board of directors corporate governance principles; and
- overseeing a periodic evaluation of our board of directors.

We believe that the composition of our nominating and corporate governance committee will meet the requirements for independence under current Nasdaq and SEC rules and regulations.

Compensation Committee Interlocks and Insider Participation

None of our executive officers serves as a member of the board of directors or compensation committee, or other committee serving an equivalent function, of any other entity that has one or more of its executive officers

serving as a member of our board of directors or our compensation committee. None of the members of our compensation committee is, or has ever been, an officer or employee of our company.

Code of Business Conduct and Ethics

We intend to adopt, upon the effectiveness of the registration statement of which this prospectus is a part, a written code of business conduct and ethics that applies to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. We intend to post a current copy of the code on our website, www.imaratx.com. In addition, we intend to post on our website all disclosures that are required by law or Nasdaq listing standards concerning any amendments to, or waivers from, any provision of the code.

EXECUTIVE COMPENSATION

The following discussion relates to the compensation of our President and Chief Executive Officer, Rahul D. Ballal, Ph.D., and our former President and Chief Executive Officer, James McArthur, Ph.D., for the year ended December 31, 2018. These two individuals are collectively referred to in this prospectus as our named executive officers.

In preparing to become a public company, we have begun a thorough review of all elements of our executive compensation program, including the function and design of our equity incentive programs. We have begun, and expect to continue in the coming months, to evaluate the need for revisions to our executive compensation program to ensure that our program is competitive with the companies with which we compete for executive talent and is appropriate for a public company.

Summary Compensation Table

The following table sets forth information regarding compensation awarded to, earned by or paid to each of our named executive officers for the year ended December 31, 2018.

Name and Principal Position	Year	Salary ($)	Bonus ($)(1)	Option awards ($)(2)	Total ($)
Rahul D. Ballal, Ph.D.(3) *President and Chief Executive Officer*	2018	242,386	136,352	559,161	937,899
James McArthur, Ph.D.(4) *Former President and Chief Executive Officer*	2018	53,185	—	—	53,185

(1) Includes a $76,352 discretionary annual cash bonus paid for Dr. Ballal's performance and a $60,000 signing bonus paid to Dr. Ballal in connection with the commencement of his employment.

(2) The amounts reported in the "Option awards" column reflect the aggregate fair value of stock-based compensation awarded during the year computed in accordance with the provisions of Financial Accounting Standards Board Accounting Standards Codification, or ASC, Topic 718. See Note 9 of the notes to our consolidated financial statements appearing at the end of this prospectus regarding assumptions underlying the valuation of equity awards. These amounts reflect the accounting cost for these stock options and do not reflect the actual economic value that may be realized by the named executive officer upon the vesting of the stock options, the exercise of the stock options or the sale of the common stock underlying such stock options.

(3) Dr. Ballal commenced employment with us on May 28, 2018. Dr. Ballal also serves as a member of our board of directors but does not receive any additional compensation for his service as a director.

(4) Dr. McArthur served as our President and Chief Executive Officer from January 2016 until his resignation in May 2018. In 2018, Dr. McArthur entered into an agreement with us to forfeit a portion of his 2016 option grant in connection with his resignation. As a result of such agreement, he forfeited an option to purchase 478,610 shares in connection with such resignation. Dr. McArthur currently serves as a member of our board of directors but did not receive any additional compensation for his service as a director in 2018.

Narrative to Summary Compensation Table

Base Salary. In 2018, we paid Dr. Ballal an annualized base salary of $405,000, which was pro-rated to reflect the number of days he served with our company following his hire in June 2018. Effective as of April 1, 2019, his annualized base salary was increased to $425,000. In 2018, we paid Dr. McArthur an annualized base salary of $127,644 until his resignation in May 2018. We use base salaries to recognize the experience, skills, knowledge and responsibilities required of all our employees, including our named executive officers. None of our named executive officers are currently party to an employment agreement or other agreement or arrangement that provides for automatic or scheduled increases in base salary.

Annual Bonus. Our board of directors may, in its discretion, award bonuses to our executive officers, including our named executive officers, from time to time. Our letter agreement with Dr. Ballal provides that he will be eligible for an annual discretionary bonus up to a specified percentage of his salary based upon our achievements and Dr. Ballal's performance, as determined by our board of directors. Performance-based bonuses, which are calculated as a percentage of base salary, are designed to motivate our employees to achieve

annual goals based on our strategic, financial and operating performance objectives. From time to time, our board of directors has approved discretionary annual cash bonuses to our named executive officers with respect to their prior year performance. In 2018, Dr. Ballal was eligible to receive a discretionary bonus of up to 35% of his annualized base salary, pro-rated to reflect the number of days he served with our company following his hire in June 2018. In 2019, Dr. Ballal's annual discretionary bonus eligibility was increased up to 40% of his annualized base salary. We paid Dr. Ballal a signing bonus of $60,000 and a discretionary bonus of $76,352 in 2018.

Equity Incentives. Although we do not have a formal policy with respect to the grant of equity incentive awards to our executive officers, or any formal equity ownership guidelines applicable to them, we believe that equity grants provide our executives with a strong link to our long-term performance, create an ownership culture and help to align the interests of our executives and our stockholders. In addition, we believe that equity grants with a time-based vesting feature promote executive retention because this feature incentivizes our executive officers to remain in our employment during the vesting period. Accordingly, our board of directors periodically reviews the equity incentive compensation of our executive officers, including our named executive officers, and from time to time may grant equity incentive awards to them in the form of stock options.

We granted an option to purchase 1,694,428 shares of our common stock to Dr. Ballal in October 2018 in connection with the commencement of his employment with us, which we refer to as the Hire Option. We subsequently granted two options to purchase an aggregate of 2,654,618 shares of our common stock to Dr. Ballal in May 2019: one option to purchase 2,023,804 shares of our common stock, which award is subject solely to time-based vesting and which we refer to as the Initial 2019 Option, and a second option to purchase 630,814 shares of our common stock, which award is subject to both time-based and performance-based vesting and which we refer to as the Milestone Option. The Hire Option and the Initial 2019 Option each vest as to 25% of the shares underlying the option on the first anniversary of the applicable vesting commencement date (which vesting commencement date is May 29, 2018 for the Hire Option and March 12, 2019 for the Initial 2019 Option) and in equal quarterly installments for three years thereafter. The Milestone Option also vests as to 25% of the shares underlying the option on the first anniversary of the vesting commencement date and in quarterly installments for three years thereafter but its vesting commencement date is the date of the milestone closing of our Series B preferred stock financing (provided such milestone closing occurs on or before September 15, 2020). All of the shares underlying the unvested portion of the Hire Option, the Initial 2019 Option and the Milestone Option will immediately vest if, within twelve months following a change in control, Dr. Ballal's service is terminated by us without cause or by Dr. Ballal with good reason (as each such term is defined in his letter agreement with us), except that, with respect to the Milestone Option, no vesting will be accelerated if the milestone closing has not occurred.

We granted an option to purchase 2,187,928 shares of our common stock to Dr. McArthur in December 2016, which vested in equal quarterly installments from the vesting commencement date of October 1, 2016. This option award was amended in April 2018 to reflect a reduction in the number of shares underlying the unvested portion of the option in the event Dr. McArthur was replaced as our President and Chief Executive Officer. Accordingly, Dr. McArthur forfeited the option to purchase 478,610 shares in connection with Dr. Ballal's succession to the role of President and Chief Executive Officer in June 2018. All of the shares underlying Dr. McArthur's remaining unvested options will vest if, within twelve months following a change of control, Dr. McArthur's service as a member of our board of directors is terminated by us without cause or by Dr. McArthur with good reason (as such term is defined in his option award agreement).

Prior to this offering, our executives were eligible to participate in our 2016 Stock Incentive Plan, as amended, or the 2016 Plan. During 2018 (and through the effectiveness of the registration statement of which this prospectus forms a part), all stock options were granted pursuant to the 2016 Plan, and we did not grant any restricted stock awards during 2018. Following this offering, our employees and executives will be eligible to receive stock options and other stock-based awards pursuant to our 2019 Equity Incentive Plan, or the 2019 Plan.

We have used stock options and restricted stock awards to compensate our executive officers in the form of initial grants in connection with the commencement of employment and also at various times, often but not

necessarily annually, if we have performed as expected or better than expected. Prior to this offering, the award of stock options and restricted stock to our executive officers has been made by our board of directors or compensation committee. None of our executive officers is currently party to an employment agreement that provides for automatic award of stock options or restricted stock. We have granted stock options and restricted stock to our executive officers with time-based and performance-based vesting. The options and restricted stock that we have granted to our executive officers typically vest as to 25% of the shares underlying the award on the first anniversary of the grant date and in equal quarterly installments for three years thereafter. We have also granted performance-based awards tied to the achievement of milestones. Vesting rights cease upon termination of employment and exercise rights for stock options cease shortly after termination, except that vesting is fully accelerated upon certain terminations in connection with a change of control and exercisability is extended in the case of death or disability. Prior to the exercise of a stock option, the holder has no rights as a stockholder with respect to the shares subject to such option, including no voting rights and no right to receive dividends or dividend equivalents.

We have historically awarded stock options and restricted stock with exercise prices or purchase prices, as applicable, that are equal to the fair market value of our common stock on the date of grant as determined by our board of directors.

Outstanding Equity Awards at Fiscal Year-End

The following table sets forth information regarding all outstanding stock options held by each of our named executive officers as of December 31, 2018.

Name	Number of securities underlying unexercised options (#) exercisable	Number of securities underlying unexercised options (#) unexercisable	Option exercise price ($)	Option expiration date
Rahul D. Ballal	—	1,694,428(1)	0.50	10/19/2028
James McArthur	1,367,455	341,863(2)	0.68	12/15/2026

(1) This option was granted on October 19, 2018, and the shares underlying the option vest and become exercisable over four years, with 25% of the shares vesting on May 29, 2019 and the remaining shares vesting in equal quarterly installments thereafter, subject to Dr. Ballal's continuous service with us. The vesting of this stock option will be fully accelerated upon a qualifying termination of Dr. Ballal's employment within twelve months following a change in control.

(2) This option was granted on December 15, 2016, and the shares underlying the option vest and become exercisable over four years in equal quarterly installments beginning on October 1, 2016, subject to Dr. McArthur's continuous service with us. This option was amended and restated in April 2018, such that in connection with Dr. Ballal's succession to the role of President and Chief Executive Officer in June 2018, Dr. McArthur forfeited the option to purchase 478,610 shares underlying the option. Of the remaining 615,350 unvested shares underlying the option, 136,746 shares vested in April 2018 and the remainder vests in equal quarterly installments through January 26, 2020, subject to Dr. McArthur's continuous service with us on our board of directors. The vesting of this stock option will be fully accelerated upon a qualifying termination of Dr. McArthur's service within twelve months following a change in control.

Employment Agreements

Letter Agreement with Rahul D. Ballal, Ph.D.

In connection with our initial hiring of Dr. Ballal as our President and Chief Executive Officer, we entered into a letter agreement with him dated April 17, 2018, which was amended and restated on August 12, 2019. We refer to the amended and restated letter agreement as the letter agreement. Under the letter agreement, Dr. Ballal is an at-will employee, and his employment with us can be terminated by Dr. Ballal or us at any time and for any reason. Pursuant to the letter agreement, Dr. Ballal's annualized base salary is $425,000, and he is eligible to receive an annual discretionary bonus of up to 40% of his annualized base salary. We will also reimburse all of Dr. Ballal's monthly parking costs at a designated parking garage lot or his commuting costs for public transportation.

Under the letter agreement, Dr. Ballal is entitled, subject to his execution and nonrevocation of a release of claims in our favor and his continued compliance with certain restrictive covenants, in the event of the

termination of his employment by us without cause or by him for good reason, each as defined in the letter agreement, to (i) continue receiving his then-current annual base salary for a period of twelve months following the date his employment with us is terminated, and (ii) reimbursement of COBRA premiums for health benefit coverage for a period of up to twelve months following the date that his employment with us is terminated.

In the event that Dr. Ballal's employment is terminated by us without cause or by Dr. Ballal with good reason within twelve months following a change of control, each as defined in the letter agreement, Dr. Ballal will be entitled, subject to his execution and nonrevocation of a release of claims in our favor and his continued compliance with certain restrictive covenants, to (i) continue receiving his then-current annual base salary for a period of twelve months following the date his employment with us is terminated, (ii) reimbursement of COBRA premiums for health benefit coverage for a period of up to twelve months following the date that his employment with us is terminated and (iii) one hundred percent of his annual bonus target amount for the year in which the termination occurs, payable as a lump sum. In addition, Dr. Ballal will be entitled to full acceleration of vesting of the Hire Option, the Initial 2019 Option and the Milestone Option (provided, in the case of the Milestone Option, that the milestone closing of our Series B preferred stock financing has occurred). Under the letter agreement, if payments and benefits payable to Dr. Ballal in connection with a change of control are subject to Section 4999 of the Code, then such payments and benefits will be reduced so that the excise tax does not apply.

Employee Non-Competition, Non-Solicitation, Confidentiality and Assignment Agreements

Each of our executive officers has entered into a standard form of agreement with respect to non-competition, non-solicitation, confidential information and assignment of inventions. Under this agreement, each executive officer has agreed not to compete with us during his employment and for a period ranging from six months to one year after the termination of his employment, not to solicit our employees, consultants, clients or customers during his employment and for a period ranging from six months to one year after the termination of his employment, and to protect our confidential and proprietary information indefinitely. In addition, under this agreement, each executive officer has agreed that we own all inventions that are developed by such executive officer during his employment with us that are related to our business or research and development conducted or planned to be conducted by us at the time such development is created. Each executive officer also agreed to provide us with a non-exclusive, royalty-free, perpetual license to use any prior inventions that such executive officer incorporates into inventions assigned to us under this agreement.

Stock Option and Other Compensation Plans

In this section we describe the 2016 Plan, the 2019 Plan and our 2019 Employee Stock Purchase Plan, or the 2019 ESPP. Prior to this offering, we granted awards to eligible participants under the 2016 Plan. Following the closing of this offering, we expect to grant awards to eligible participants under the 2019 Plan.

2016 Stock Incentive Plan

The 2016 Plan was initially approved by our board of directors and stockholders in April 2016 and was subsequently amended in November 2016, May 2018, March 2019, and June 2019, in each case solely to increase the total number of shares reserved for issuance under the 2016 Plan. The 2016 Plan provides for the grant of incentive stock options, nonstatutory stock options, stock appreciation rights, awards of restricted stock, restricted stock units and other stock-based awards. Our employees, officers, directors, consultants and advisors are eligible to receive awards under the 2016 Plan; however, incentive stock options may only be granted to our employees. The type of award granted under the 2016 Plan and the terms of such award are set forth in the applicable award agreement. Pursuant to the terms of the 2016 Plan, our board of directors (or a committee delegated by our board of directors) administers the plan and, subject to any limitations in the plan, selects the recipients of awards and determines:

- the number of shares of our common stock covered by options and the dates upon which the options become exercisable;

- the type of options to be granted;
- the duration of options, which may not be in excess of ten years;
- the exercise price of options, which must be at least equal to the fair market value of our common stock on the date of grant; and
- the number of shares of our common stock subject to and the terms of any stock appreciation rights, restricted stock awards, restricted stock units or other stock-based awards and the terms and conditions of such awards, including conditions for repurchase, measurement price, issue price and repurchase price (though the measurement price of stock appreciation rights must be at least equal to the fair market value of our common stock on the date of grant and the duration of such awards may not be in excess of ten years).

The maximum number of shares of common stock authorized for issuance under the 2016 Plan is 12,177,327 shares. Our board of directors may amend, suspend or terminate the 2016 Plan at any time, except that stockholder approval may be required to comply with applicable law.

Effect of Certain Changes in Capitalization. Upon the occurrence of any stock split, reverse stock split, stock dividend, recapitalization, combination of shares, reclassification of shares, spin-off or other similar change in capitalization or event, or any dividend or distribution to holders of our common stock other than an ordinary cash dividend, under the terms of the 2016 Plan, we are required to equitably adjust (or make substitute awards, if applicable), in the manner determined by our board of directors:

- the number and class of securities available under the 2016 Plan;
- the number and class of securities and exercise price per share of each outstanding option;
- the share and per-share provisions and the measurement price of each outstanding stock appreciation right;
- the number of shares subject to and the repurchase price per share subject to each outstanding restricted stock award or restricted stock unit award; and
- the share and per-share-related provisions and the purchase price, if any, of each outstanding other stock-based award.

Effect of Certain Corporate Transactions. Upon the occurrence of a merger or other reorganization event (as defined in the 2016 Plan), our board of directors may, on such terms as our board of directors determines (except to the extent specifically provided otherwise in an applicable award agreement or other agreement between the participant and us), take any one or more of the following actions pursuant to the 2016 Plan as to all or any (or any portion of) outstanding awards, other than awards of restricted stock:

- provide that outstanding awards will be assumed, or substantially equivalent awards will be substituted, by the acquiring or succeeding corporation (or an affiliate thereof);
- upon written notice to a participant, provide that all of the participant's unexercised awards will terminate immediately prior to the consummation of the reorganization event unless exercised by the participant (to the extent then exercisable) within a specified period following the date of the notice;
- provide that outstanding awards shall become exercisable, realizable or deliverable, or restrictions applicable to an award will lapse, in whole or in part, prior to or upon such reorganization event;
- in the event of a reorganization event pursuant to which holders of shares of our common stock will receive a cash payment for each share surrendered in the reorganization event, make or provide for a cash payment to participants with respect to each award held by a participant equal to (1) the number of shares of our common stock subject to the vested portion of the award (after giving effect to any acceleration of vesting that occurs upon or immediately prior to the reorganization event) multiplied by

(2) the excess, if any, of the cash payment for each share surrendered in the reorganization event over the exercise, measurement or purchase price of such award and any applicable tax withholdings, in exchange for the termination of the award;

- provide that, in connection with our liquidation or dissolution, awards will convert into the right to receive liquidation proceeds (if applicable, net of the exercise, measurement or purchase price thereof and any applicable tax withholdings); or
- any combination of the foregoing.

Our board of directors is not obligated under the 2016 Plan to treat all awards, all awards held by a participant, or all awards of the same type, identically.

In the case of certain restricted stock units, no assumption or substitution is permitted, and the restricted stock units will instead be settled in accordance with the terms of the applicable restricted stock unit agreement.

Upon the occurrence of a reorganization event other than our liquidation or dissolution, the repurchase and other rights with respect to outstanding restricted stock awards will continue for the benefit of the succeeding company and will, unless our board of directors determines otherwise, apply to the cash, securities, or other property which our common stock was converted into or exchanged for in the reorganization event in the same manner and to the same extent as they applied to the common stock subject to the restricted stock award. However, our board of directors may provide for the termination or deemed satisfaction of such repurchase or other rights under the restricted stock award agreement or any other agreement between a participant and us, either initially or by amendment. Upon our liquidation or dissolution, except to the extent specifically provided to the contrary in the restricted stock award agreement or any other agreement between the plan participant and us, all restrictions and conditions on all restricted stock awards then outstanding will automatically be deemed terminated or satisfied.

Our board of directors may at any time provide that any award under the 2016 Plan shall become immediately exercisable in whole or in part, free of some or all restrictions or conditions, or otherwise realizable in whole or in part, as the case may be.

As of June 30, 2019, there were options to purchase an aggregate of 11,838,614 shares of common stock outstanding under the 2016 Plan at a weighted-average exercise price of $0.71 per share and options to purchase 338,713 shares of common stock were available for future issuance under the 2016 Plan. No further awards will be made under the 2016 Plan on or after the effective date of the 2019 Plan described below; however, awards outstanding under the 2016 Plan will continue to be governed by their existing terms.

2019 Equity Incentive Plan

We expect our board of directors to adopt and our stockholders to approve the 2019 Plan, which will become effective immediately prior to the effectiveness of the registration statement for this offering. The 2019 Plan provides for the grant of incentive stock options, non-qualified stock options, stock appreciation rights, restricted stock awards, restricted stock units and other stock-based awards. Upon effectiveness of the 2019 Plan, the number of shares of our common stock that will be reserved for issuance under the 2019 Plan will be the sum of: (1) shares of our common stock; plus (2) the number of shares (up to a maximum of shares) equal to the sum of (x) the number of shares of our common stock reserved for issuance under the 2016 Plan that remain available for grant under the 2016 Plan immediately prior to the effectiveness of the registration statement for this offering and (y) the number of shares of our common stock subject to outstanding awards granted under the 2016 Plan that expire, terminate or are otherwise surrendered, cancelled, forfeited or repurchased by us at their original issuance price pursuant to a contractual repurchase right; plus (3) an annual increase, to be added on the first day of each fiscal year, beginning with the fiscal year ending December 31, 2020 and continuing until, and including, the fiscal year ending December 31, 2029, equal to the lowest of

(i) shares of our common stock, (ii) % of the number of shares of our common stock outstanding on the first day of such fiscal year and (iii) an amount determined by our board of directors.

Our employees, officers, directors, consultants and advisors will be eligible to receive awards under the 2019 Plan. Incentive stock options, however, may only be granted to our employees.

Pursuant to the terms of the 2019 Plan, our board of directors (or a committee delegated by our board of directors) will administer the 2019 Plan and, subject to any limitations in the 2019 Plan, will select the recipients of awards and determine:

- the number of shares of our common stock covered by options and the dates upon which the options become exercisable;
- the type of options to be granted;
- the duration of options, which may not be in excess of ten years;
- the exercise price of options, which must be at least equal to the fair market value of our common stock on the date of grant; and
- the number of shares of our common stock subject to and the terms of any stock appreciation rights, restricted stock awards, restricted stock units or other stock-based awards, including conditions for repurchase, measurement price, issue price and repurchase price (though the measurement price of stock appreciation rights must be at least equal to the fair market value of our common stock on the date of grant and the duration of such awards may not be in excess of ten years).

If our board of directors delegates authority to one or more of our officers to grant awards under the 2019 Plan, the officers will have the power to make awards to all of our employees, except executive officers (as such terms are defined in the 2019 Plan). Our board of directors will fix the terms of the awards to be granted by any such officer, the maximum number of shares subject to awards that such officer may grant, and the time period in which such awards may be granted.

Effect of Certain Changes in Capitalization. Upon the occurrence of any stock split, reverse stock split, stock dividend, recapitalization, combination of shares, reclassification of shares, spin-off or other similar change in capitalization or event or any dividend or distribution to holders of our common stock other than an ordinary cash dividend, under the terms of the 2019 Plan, we are required to equitably adjust (or make substitute awards, if applicable), in the manner determined by our board of directors:

- the number and class of securities available under the 2019 Plan;
- the share counting rules under the 2019 Plan;
- the number and class of securities and exercise price per share of each outstanding option;
- the share and per-share provisions and the measurement price of each outstanding stock appreciation right;
- the number of shares and the repurchase price per share subject to each outstanding award of restricted stock; and
- the share and per-share-related provisions and the purchase price, if any, of each outstanding restricted stock unit award and other stock-based award.

Effect of Certain Corporate Transactions. Upon the occurrence of a merger or other reorganization event (as defined in the 2019 Plan), our board of directors may, on such terms as our board of directors determines (except to the extent specifically provided otherwise in an applicable award agreement or other agreement

between the participant and us), take any one or more of the following actions pursuant to the 2019 Plan as to all or any (or any portion of) outstanding awards, other than awards of restricted stock:

- provide that outstanding awards will be assumed, or substantially equivalent awards will be substituted, by the acquiring or succeeding corporation (or an affiliate thereof);
- upon written notice to a participant, provide that all of the participant's unvested awards will be forfeited immediately prior to the consummation of the reorganization event and/or unexercised awards will terminate immediately prior to the consummation of the reorganization event unless exercised by the participant (to the extent then exercisable) within a specified period following the date of the notice;
- provide that outstanding awards will become exercisable, realizable or deliverable, or restrictions applicable to an award will lapse, in whole or in part, prior to or upon such reorganization event;
- in the event of a reorganization event pursuant to which holders of shares of our common stock will receive a cash payment for each share surrendered in the reorganization event, make or provide for a cash payment to participants with respect to each award held by a participant equal to (1) the number of shares of our common stock subject to the vested portion of the award (after giving effect to any acceleration of vesting that occurs upon or immediately prior to such reorganization event) multiplied by (2) the excess, if any, of the cash payment for each share surrendered in the reorganization event over the exercise, measurement or purchase price of such award and any applicable tax withholdings, in exchange for the termination of the award;
- provide that, in connection with our liquidation or dissolution, awards will convert into the right to receive liquidation proceeds (if applicable, net of the exercise, measurement or purchase price thereof and any applicable tax withholdings); or
- any combination of the foregoing.

Our board of directors is not obligated under the 2019 Plan to treat all awards, all awards held by a participant, or all awards of the same type, identically.

In the case of certain restricted stock units, no assumption or substitution is permitted, and the restricted stock units will instead be settled in accordance with the terms of the applicable restricted stock unit agreement.

Upon the occurrence of a reorganization event other than our liquidation or dissolution, our repurchase and other rights with respect to outstanding awards of restricted stock will continue for the benefit of the succeeding company (or any affiliate of the succeeding company) and will, unless our board of directors determines otherwise, apply to the cash, securities, or other property which our common stock was converted into or exchanged for pursuant to the reorganization event. However, our board of directors may provide for the termination or deemed satisfaction of such repurchase or other rights under the restricted stock award agreement or in any other agreement between a participant and us, either initially or by amendment. Upon our liquidation or dissolution, except to the extent specifically provided to the contrary in the restricted stock award agreement or any other agreement between the participant and us, all restrictions and conditions on all restricted stock awards then outstanding will automatically be deemed terminated or satisfied.

At any time, our board of directors may provide that any award under the 2019 Plan will become immediately exercisable in full or in part, free of some or all restrictions or conditions, or otherwise realizable in whole or in part, as the case may be.

Except with respect to certain actions requiring stockholder approval under the Code or Nasdaq Stock Market rules, our board of directors may amend, modify or terminate any outstanding award under the 2019 Plan, including but not limited to, substituting for the award another award of the same or a different type, changing the date of exercise or realization, and converting an incentive stock option to a non-qualified stock option,

subject to certain participant consent requirements. However, unless our stockholders approve such action, the 2019 Plan provides that we may not (except as otherwise permitted in connection with a change in capitalization or reorganization event):

- amend any outstanding stock option or stock appreciation right granted under the 2019 Plan to provide an exercise or measurement price per share that is lower than the then-current exercise or measurement price per share of such outstanding award;
- cancel any outstanding stock option or stock appreciation right (whether or not granted under the 2019 Plan) and grant a new award under the 2019 Plan in substitution for the cancelled award (other than substitute awards permitted in connection with a merger or consolidation of an entity with us or our acquisition of property or stock of another entity) covering the same or a different number of shares of our common stock and having an exercise or measurement price per share lower than the then-current exercise or measurement price per share of the cancelled award;
- cancel in exchange for a cash payment any outstanding option or stock appreciation right with an exercise or measurement price per share above the then-current fair market value of our common stock (valued in the manner determined by (or in the manner approved by) our board of directors); or
- take any other action that constitutes a "repricing" within the meaning of Nasdaq Stock Market rules or rules of any other exchange or marketplace on which our common stock is listed or traded.

No award may be granted under the 2019 Plan on or after the date that is ten years following the effectiveness of the 2019 Plan. Our board of directors may amend, suspend or terminate the 2019 Plan at any time, except that stockholder approval may be required to comply with applicable law or stock market requirements.

2019 Employee Stock Purchase Plan

We expect our board of directors to adopt and our stockholders to approve the 2019 ESPP, which will become effective immediately prior to the effectiveness of the registration statement for this offering. The 2019 ESPP will be administered by our board of directors or by a committee appointed by our board of directors. The 2019 ESPP initially provides participating employees with the opportunity to purchase up to an aggregate of shares of our common stock. The number of shares of our common stock reserved for issuance under the 2019 ESPP will automatically increase on the first day of each fiscal year, beginning with the fiscal year commencing on January 1, 2020 and continuing until, and including, the fiscal year commencing on January 1, 2030, in an amount equal to the lowest of (i) shares of our common stock, (ii) % of the number of shares of our common stock outstanding on the first day of such fiscal year and (iii) an amount determined by our board of directors.

All of our employees and employees of any designated subsidiary, as defined in the 2019 ESPP, are eligible to participate in the 2019 ESPP, provided that:

- such person is customarily employed by us or a designated subsidiary for more than 20 hours a week and for more than five months in a calendar year;
- such person has been employed by us or by a designated subsidiary for at least three months prior to enrolling in the 2019 ESPP; and
- such person was our employee or an employee of a designated subsidiary on the first day of the applicable offering period under the 2019 ESPP.

We retain the discretion to determine which eligible employees may participate in an offering under applicable regulations.

We expect to make one or more offerings to our eligible employees to purchase stock under the 2019 ESPP beginning at such time and on such dates as our board of directors may determine, or the first business day

thereafter. Each offering will consist of a six-month offering period during which payroll deductions will be made and held for the purchase of our common stock at the end of the offering period. Our board of directors or a committee designated by the board of directors may, at its discretion, choose a different period of not more than 12 months for offerings.

On each offering commencement date, each participant will be granted the right to purchase, on the last business day of the offering period, up to a number of shares of our common stock determined by multiplying $2,083 by the number of full months in the offering period and dividing that product by the closing price of our common stock on the first day of the offering period. No employee may be granted an option under the 2019 ESPP that permits the employee's rights to purchase shares under the 2019 ESPP and any other employee stock purchase plan of ours or of any of our subsidiaries to accrue at a rate that exceeds $25,000 of the fair market value of our common stock (determined as of the first day of each offering period) for each calendar year in which the option is outstanding. In addition, no employee may purchase shares of our common stock under the 2019 ESPP that would result in the employee owning 5% or more of the total combined voting power or value of our stock or the stock of any of our subsidiaries.

Each eligible employee may authorize up to a maximum of % of his or her compensation to be deducted by us during the offering period. Each employee who continues to be a participant in the 2019 ESPP on the last business day of the offering period will be deemed to have exercised an option to purchase from us the number of whole shares of our common stock that his or her accumulated payroll deductions on such date will pay for, not in excess of the maximum numbers set forth above. Under the terms of the 2019 ESPP, the purchase price shall be determined by our board of directors or the committee for each offering period and will be at least 85% of the applicable closing price of our common stock. If our board of directors or the committee does not make a determination of the purchase price, the purchase price will be 85% of the lesser of the closing price of our common stock on the first business day of the offering period or on the last business day of the offering period.

An employee may at any time prior to the close of business on the fifteenth business day prior to the end of an offering period (or such other number of days as is determined by us), and for any reason, permanently withdraw from participating in an offering and permanently withdraw the balance accumulated in the employee's account. Partial withdrawals are not permitted. If an employee elects to discontinue his or her payroll deductions during an offering period but does not elect to withdraw his or her funds, funds previously deducted will be applied to the purchase of common stock at the end of the offering period. If a participating employee's employment ends before the last business day of an offering period, no additional payroll deductions will be taken and the balance in the employee's account will be paid to the employee.

We will be required to make equitable adjustments to the extent determined by our board of directors or a committee thereof to the number and class of securities available under the 2019 ESPP, the share limitations under the 2019 ESPP, and the purchase price for an offering period under the 2019 ESPP to reflect stock splits, reverse stock splits, stock dividends, recapitalizations, combinations of shares, reclassifications of shares, spin-offs and other similar changes in capitalization or events or any dividends or distributions to holders of our common stock other than ordinary cash dividends.

In connection with a merger or other reorganization event, as defined in the 2019 ESPP, our board of directors or a committee of our board of directors may take any one or more of the following actions as to outstanding options to purchase shares of our common stock under the 2019 ESPP on such terms as our board of directors or committee thereof determines:

- provide that options will be assumed, or substantially equivalent options will be substituted, by the acquiring or succeeding corporation (or an affiliate thereof);
- upon written notice to employees, provide that all outstanding options will be terminated immediately prior to the consummation of such reorganization event and that all such outstanding options will become exercisable to the extent of accumulated payroll deductions as of a date specified by our board

of directors or committee thereof in such notice, which date shall not be less than ten days preceding the effective date of the reorganization event;

- upon written notice to employees, provide that all outstanding options will be cancelled as of a date prior to the effective date of the reorganization event and that all accumulated payroll deductions will be returned to participating employees on such date;
- in the event of a reorganization event under the terms of which holders of our common stock will receive upon consummation thereof a cash payment for each share surrendered in the reorganization event, change the last day of the offering period to be the date of the consummation of the reorganization event and make or provide for a cash payment to each employee equal to (1) the cash payment for each share surrendered in the reorganization event times the number of shares of our common stock that the employee's accumulated payroll deductions as of immediately prior to the reorganization event could purchase at the applicable purchase price, where the cash payment for each share surrendered in the reorganization event is treated as the fair market value of our common stock on the last day of the applicable offering period for purposes of determining the purchase price and where the number of shares that could be purchased is subject to the applicable limitations under the 2019 ESPP minus (2) the result of multiplying such number of shares by the purchase price; and/or
- provide that, in connection with our liquidation or dissolution, options will convert into the right to receive liquidation proceeds (net of the purchase price thereof).

Our board of directors may at any time, and from time to time, amend or suspend the 2019 ESPP or any portion of the 2019 ESPP. We will obtain stockholder approval for any amendment if such approval is required by Section 423 of the Code. Further, our board of directors may not make any amendment that would cause the 2019 ESPP to fail to comply with Section 423 of the Code. The 2019 ESPP may be terminated at any time by our board of directors. Upon termination, we will refund all amounts in the accounts of participating employees.

401(k) Plan

We maintain a defined contribution employee retirement plan for our employees, including our named executive officers. The plan is intended to qualify as a tax-qualified 401(k) plan so that contributions to the 401(k) plan, and income earned on such contributions, are not taxable to participants until withdrawn or distributed from the 401(k) plan (except in the case of contributions under the 401(k) plan designated as Roth contributions). Under the 401(k) plan, each employee is fully vested in his or her deferred salary contributions and any qualified nonelective contributions made by us. Employee contributions are held and invested by the plan's trustee as directed by participants. The 401(k) plan provides us with the discretion to match employee contributions.

Limitation of Liability and Indemnification

Our certificate of incorporation, which will become effective upon the closing of this offering, limits the personal liability of directors for breach of fiduciary duty to the maximum extent permitted by the Delaware General Corporation Law, or the DGCL, and provides that no director will have personal liability to us or to our stockholders for monetary damages for breach of fiduciary duty as a director. However, these provisions do not eliminate or limit the liability of any of our directors:

- for any breach of the director's duty of loyalty to us or our stockholders;
- for acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law;
- for voting for or assenting to unlawful payments of dividends, stock repurchases or other distributions; or
- for any transaction from which the director derived an improper personal benefit.

Any amendment to or repeal of these provisions will not eliminate or reduce the effect of these provisions in respect of any act, omission or claim that occurred or arose prior to such amendment or repeal. If the DGCL is amended to provide for further limitations on the personal liability of directors of corporations, then the personal liability of our directors will be further limited to the greatest extent permitted by the DGCL.

In addition, our certificate of incorporation, which will become effective upon the closing of this offering, provides that we must indemnify our directors and officers and we must advance expenses, including attorneys' fees, to our directors and officers in connection with legal proceedings, subject to very limited exceptions.

We maintain a general liability insurance policy that covers specified liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers. In addition, we intend to enter into new indemnification agreements with all of our directors and executive officers prior to the completion of this offering. These indemnification agreements may require us, among other things, to indemnify each such executive officer or director for some expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by him or her in any action or proceeding arising out of his or her service as one of our executive officers or directors.

Some of our non-employee directors may, through their relationships with their employers, be insured or indemnified against specified liabilities incurred in their capacities as members of our board of directors.

Insofar as indemnification for liabilities arising under the Securities Act of 1933, as amended, or the Securities Act, may be permitted to directors, executive officers or persons controlling us, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Rule 10b5-1 Plans

Our directors and executive officers may adopt written plans, known as Rule 10b5-1 plans, in which they will contract with a broker to buy or sell shares of our common stock on a periodic basis. Under a Rule 10b5-1 plan, a broker executes trades pursuant to parameters established by the director or officer when entering into the plan, without further direction from the director or officer. It also is possible that the director or officer could amend or terminate the plan when not in possession of material, nonpublic information. In addition, our directors and executive officers may buy or sell additional shares outside of a Rule 10b5-1 plan when they are not in possession of material, nonpublic information.

Director Compensation

The table below shows all compensation to our non-employee directors during the year ended December 31, 2018.

Name	Fees earned or paid in cash ($)	Stock awards ($)(1)	Option awards ($)(2)(3)	Total ($)
David M. Mott	—	—	—	—
Mette Kirstine Agger	—	—	—	—
Carl Goldfischer, M.D.	—	—	—	—
Barbara J. Dalton, Ph.D.	—	—	—	—
James McArthur, Ph.D.(4)	—	—	—	—
Sara Nayeem	—	—	—	—
Christoph Adams, Ph.D.(5)	—	—	42,000	42,000

(1) As of December 31, 2018, the aggregate number of shares of our common stock held pursuant to restricted stock awards by each non-employee director was as follows: Mr. Mott, 0 shares; Ms. Agger, 0 shares; Dr. Goldfischer, 0 shares; Dr. Dalton, 0 shares; Dr. McArthur, 525,483 shares; and Dr. Adams, 595,621 shares.

(2) The amounts reported in the "Option awards" column reflect the aggregate fair value of stock-based compensation awarded during the year computed in accordance with the provisions of ASC 718. See Note 9 of the notes to our consolidated financial statements appearing at the end of this prospectus regarding assumptions underlying the valuation of equity awards. These amounts reflect the accounting cost for these stock options and do not reflect the actual economic value that may be realized by the directors upon the vesting of the stock options, the exercise of the stock options or the sale of the common underlying such stock options.

(3) As of December 31, 2018, the aggregate number of shares of our common stock subject to outstanding option awards for each non-employee director was as follows: Mr. Mott, 0 shares; Ms. Agger, 0 shares; Dr. Goldfischer, 0 shares; Dr. Dalton, 0 shares; Dr. McArthur, 1,709,318 shares; and Dr. Adams, 0 shares.

(4) Dr. McArthur served as our President and Chief Executive Officer until he resigned effective as of May 29, 2018, after which he continued to serve as a non-employee director. The salary paid to Dr. McArthur in connection with his service as our former President and Chief Executive Officer is reported in the Summary Compensation Table, and Dr. McArthur does not receive any additional compensation for his service as a director.

(5) Dr. Adams resigned from our board of directors effective as of May 27, 2018.

Prior to this offering, we paid cash fees and granted shares of restricted stock to certain of our non-employee directors for their service on our board of directors; however, we did not have a written agreement with any of our directors or a formal non-employee director compensation policy. We have historically reimbursed our non-employee directors for reasonable travel and out-of-pocket expenses incurred in connection with attending board of director and committee meetings.

Dr. Ballal, one of our directors who also serves as our President and Chief Executive Officer, does not receive any additional compensation for his service as director. Dr. Ballal is one of our named executive officers and, accordingly, the compensation that we pay to Dr. Ballal is discussed under "—Summary Compensation Table" and "—Narrative to Summary Compensation Table."

In , 2019, our board of directors approved a director compensation program that will become effective on the effective date of the registration statement of which this prospectus is a part. Under this director compensation program, we will pay our non-employee directors a cash retainer for service on the board of directors and for service on each committee on which the director is a member. The chairman of the board and the chairman of each committee will receive higher retainers for such service. These fees are payable in arrears in four equal quarterly installments on the last day of each quarter, provided that the amount of such payment will be prorated for any portion of such quarter that the director is not serving on our board of directors and no fee shall be payable in respect of any period prior to the completion of this offering. The fees paid to non-employee directors for service on the board of directors and for service on each committee of the board of directors on which the director is a member are as follows:

	Member Annual Fee	Chairman Incremental Annual Fee
Board of Directors	$	$
Audit Committee	$	$
Compensation Committee	$	$
Nominating and Corporate Governance Committee	$	$

We also will continue to reimburse our non-employee directors for reasonable travel and other expenses incurred in connection with attending meetings of our board of directors and any committee of our board of directors on which he or she serves.

In addition, under our director compensation program to be effective on the effective date of the registration statement of which this prospectus is a part, each non-employee director will receive under the 2019 Plan, upon his or her initial election or appointment to our board of directors, an option to purchase shares of our common stock. Each of these options will vest , subject to the non-employee director's continued service as a director, employee or consultant. Further, on the dates of each of our annual meetings of stockholders, each non-employee director that has served on our board of directors for at least months will receive, under the 2019 Plan, an option to purchase shares of our common stock. Each of these options will vest , subject to the non-employee director's continued service as a director, employee or consultant. All options issued to our non-employee directors under our director compensation program will be issued at exercise prices equal to the fair market value of our common stock on the date of grant and will have a term of ten years.

TRANSACTIONS WITH RELATED PERSONS

Since January 1, 2016, we have engaged in the following transactions in which the amounts involved exceeded $120,000 and any of our directors, executive officers, or holders of more than 5% of our capital stock, or any member of the immediate family of, or person sharing the household with, the foregoing persons, had or will have a direct or indirect material interest. We believe that all of these transactions were on terms as favorable as could have been obtained from unrelated third parties.

Series Seed Preferred Stock Financing

In January 2016, we issued 1,300,000 shares of our series seed preferred stock with an aggregate fair value of $0.8 million on the date of the transaction to Cydan Development, Inc., or Cydan, in exchange for intellectual property assets pursuant to a Contribution Agreement between us and Cydan. At the time of the transaction, James McArthur was our founder, President and Chief Executive Officer, a member of our board of directors and a holder of more than 5% of our capital stock and the Chief Scientific Officer of Cydan; Christoph Adams was our Treasurer and Secretary, a member of our board of directors and a holder of more than 5% of our capital stock and the Chief Executive Officer of Cydan; Vered Bisker-Leib was a holder of more than 5% of our capital stock and the Chief Business Officer of Cydan; and certain other members of our board of directors, including Mette Kirstine Agger, Barbara Dalton, Carl Goldfischer, David Mott and Sara Nayeem, were also members of the board of directors of Cydan. Cydan transferred all 1,300,000 shares of series seed preferred stock to its sole stockholder, Cydan, LLC, by declaring a special dividend in March 2016.

In April 2016, we issued an additional 1,412,960 shares of our series seed preferred stock with an aggregate fair value of $0.7 million on the date of the transaction to Cydan in exchange for services rendered to us by Cydan, which, together with its affiliate Cydan, LLC, was then a holder of more than 5% of our capital stock, pursuant to a Business Services Agreement between us and Cydan. Cydan subsequently transferred all of its remaining 1,412,960 shares of series seed preferred stock to Cydan, LLC by declaring a special dividend in April 2016. In April 2016, Cydan, LLC declared a special distribution of all 2,712,960 shares of our series seed preferred stock to its members, including the entities listed in the table below. The following table sets forth the aggregate number of shares of our series seed preferred stock held by our directors and 5% stockholders and their affiliates:

Purchaser(1)	Shares of Series Seed Preferred Stock
New Enterprise Associates 14, L.P.(2)	1,342,780
Pfizer Inc.(3)	478,749
Lundbeckfond Invest A/S(4)	478,749
Entities affiliated with Bay City Capital(5)	287,250

(1) See “Principal Stockholders” for additional information about shares held by these entities.
(2) David M. Mott, the chairman of our board of directors, is a general partner of New Enterprise Associates and Sara Nayeem, M.D., a member of our board of directors, is a partner of New Enterprise Associates.
(3) Barbara J. Dalton, Ph.D., a member of our board of directors, is Vice President of Venture Capital of Pfizer Venture Investments, an affiliate of Pfizer Inc.
(4) Mette Kirstine Agger, a member of our board of directors, is the Managing Partner of Lundbeckfonden Ventures.
(5) Carl Goldfischer, M.D., a member of our board of directors, is the Managing Director of Bay City Capital.

Cydan Business Services Agreement

In January 2016, we entered into a Business Services Agreement with Cydan, or the Business Services Agreement, pursuant to which Cydan provides office space, personnel assistance, and other business services to us on an as-needed basis. At the time the agreement was signed, Cydan was a holder of more than 5% of our capital stock, Dr. McArthur was our founder, President and Chief Executive Officer, a member of our board of

directors and a holder of more than 5% of our capital stock and the Chief Scientific Officer of Cydan; Dr. Adams was our Treasurer and Secretary, a member of our board of directors and a holder of more than 5% of our capital stock and the Chief Executive Officer of Cydan; Dr. Bisker-Leib was a holder of more than 5% of our capital stock and the Chief Business Officer of Cydan; and certain other members of our board of directors, including Ms. Agger, Dr. Dalton, Mr. Mott and Dr. Nayeem, were also members of the board of directors of Cydan and continue to serve on both our board of directors and the board of directors of Cydan. We paid Cydan $1.0 million in 2017 and $0.7 million in 2018, and $0.2 million during the six months ended June 30, 2019, related to these services under the Business Services Agreement. See Note 12 of the notes to our consolidated financial statements appearing at the end of this prospectus for additional information regarding the Business Services Agreement.

Lundbeck Exclusive License Agreement

In April 2016, we entered into an exclusive license agreement with H. Lundbeck A/S, or Lundbeck, pursuant to which Lundbeck granted us a worldwide license under certain patent rights and certain know-how owned or otherwise controlled by Lundbeck within the field of prevention, treatment or diagnosis of hemoglobinopathy disorders and/or diseases or disorders, including those directly or indirectly related to hemoglobinopathies. As partial consideration for the licenses granted under the agreement, we issued 1,055,231 shares of our common stock to Lundbeck in April 2016. We issued 799,984 shares of our common stock to Lundbeck in December 2016 and 936,955 shares of our common stock in August 2017 as a result of antidilution provisions contained in the exclusive license agreement triggered by subsequent closings of our series A preferred stock, described below. In addition, pursuant to this exclusive license agreement, we have made cash payments to Lundbeck of $1.8 million to date consisting of an upfront payment and ongoing milestone payments. See “Business—Exclusive License Agreement” for additional information regarding the exclusive license agreement. Together with its majority stockholder, Lundbeckfond Invest A/S, Lundbeck owns more than 5% of our capital stock. Ms. Agger, a member of our board of directors, is also the Managing Partner of Lundbeckfond Invest A/S.

Series A Preferred Stock Financing

Between April 2016 and November 2018, we issued and sold an aggregate of 31,499,040 shares of our series A preferred stock at a price per share of $1.00 in cash, for an aggregate purchase price of $31.5 million. The following table sets forth the aggregate number of shares of our series A preferred stock that we issued and sold to our directors and 5% stockholders and their affiliates and the aggregate purchase price for such shares:

Purchaser(1)	Shares of Series A Preferred Stock	Aggregate Purchase Price
Entities affiliated with New Enterprise Associates 14, L.P.(2)	15,343,454	$ 15,343,454
Pfizer Ventures (US) LLC(3)	5,470,492	5,470,492
Entities affiliated with Lundbeckfond Invest A/S(4)	5,969,561	5,969,561
Entities affiliated with Bay City Capital(5)	3,282,293	3,282,293

(1) See “Principal Stockholders” for additional information about shares held by these entities.
(2) David M. Mott, the chairman of our board of directors, is a general partner of New Enterprise Associates and Sara Nayeem, M.D., a member of our board of directors, is a partner of New Enterprise Associates.
(3) Barbara J. Dalton, Ph.D., a member of our board of directors, is Vice President of Venture Capital of Pfizer Venture Investments, an affiliate of Pfizer Ventures (US) LLC.
(4) Mette Kirstine Agger, a member of our board of directors, is the Managing Partner of Lundbeckfonden Ventures.
(5) Carl Goldfischer, M.D., a member of our board of directors, is the Managing Director of Bay City Capital.

Series B Preferred Stock Financing

Between March 2019 and May 2019, we issued and sold an aggregate of 26,321,313 shares of our series B preferred stock, at a price per share of $1.7419 in cash, for an aggregate purchase price of $45.8 million. The

following table sets forth the aggregate number of shares of our series B preferred stock that we issued and sold to our directors and 5% stockholders and their affiliates and the aggregate purchase price for such shares:

Purchaser(1)	Shares of Series B Preferred Stock	Aggregate Purchase Price
New Enterprise Associates 14, L.P.(2)	3,938,148	$ 6,859,860
OrbiMed Private Investments VII, LP(3)	7,032,406	12,249,748
Arix Bioscience Holdings Limited(4)	7,032,427	12,249,785
Entities affiliated with RA Capital Healthcare Fund, L.P.(5)	3,656,851	6,369,869
Pfizer Ventures (US) LLC(6)	1,326,111	2,309,953
Lundbeckfond Invest A/S(7)	1,326,111	2,309,953
Entities affiliated with Bay City Capital(8)	602,778	1,049,979

(1) See “Principal Stockholders” for additional information about shares held by these entities.
(2) David M. Mott, the chairman of our board of directors, is a general partner of New Enterprise Associates and Sara Nayeem, M.D., a member of our board of directors, is a partner of New Enterprise Associates.
(3) David Bonita, M.D., a member of our board of directors, is a Partner of OrbiMed Advisors.
(4) Mark Chin, a member of our board of directors, is Investment Director at Arix Bioscience.
(5) RA Capital Healthcare Fund, L.P. is a 5% stockholder.
(6) Barbara J. Dalton, Ph.D., a member of our board of directors, is Vice President of Venture Capital of Pfizer Venture Investments, an affiliate of Pfizer Ventures (US) LLC.
(7) Mette Kirstine Agger, a member of our board of directors, is the Managing Partner of Lundbeckfonden Ventures.
(8) Carl Goldfischer, M.D., a member of our board of directors, is the Managing Director of Bay City Capital.

Registration Rights

We are a party to an investors’ rights agreement with the holders of our preferred stock, including our 5% stockholders and their affiliates and entities affiliated with some of our directors. This investors’ rights agreement provides these stockholders the right, subject to certain conditions, beginning 180 days following the effective date of the registration statement of which this prospectus is a part, to demand that we file a registration statement or to request that their shares be covered by a registration statement that we are otherwise filing.

See “Description of Capital Stock—Registration Rights” for additional information regarding these registration rights.

Indemnification Agreements

Our certificate of incorporation, which will become effective upon the closing of this offering, provides that we will indemnify our directors and officers to the fullest extent permitted by Delaware law. In addition, we intend to enter into new indemnification agreements with all of our directors and executive officers prior to the completion of this offering. These indemnification agreements may require us, among other things, to indemnify each such director or executive officer for some expenses, including attorneys’ fees, judgments, fines and settlement amounts incurred by him or her in any action or proceeding arising out of his or her service as one of our directors or executive officers.

Employment Arrangements

We have entered into employment agreements with certain of our executive officers. For more information regarding the agreement with Dr. Ballal, see “Executive Compensation.”

Policies and Procedures for Related Person Transactions

Our board of directors intends to adopt written policies and procedures for the review of any transaction, arrangement or relationship in which our company is a participant, the amount involved exceeds $120,000 and

one of our executive officers, directors, director nominees or 5% stockholders or their immediate family members, each of whom we refer to as a "related person," has a direct or indirect material interest.

If a related person proposes to enter into such a transaction, arrangement or relationship, which we refer to as a "related person transaction," the related person must report the proposed related person transaction to our chief financial officer. The policy calls for the proposed related person transaction to be reviewed and, if deemed appropriate, approved by our audit committee. Whenever practicable, the reporting, review and approval will occur prior to entry into the transaction. If advance review and approval is not practicable, the committee will review, and, in its discretion, may ratify the related person transaction. The policy also permits the chairman of the audit committee to review and, if deemed appropriate, approve proposed related person transactions that arise between committee meetings, subject to ratification by the committee at its next meeting. Any related person transactions that are ongoing in nature will be reviewed annually.

A related person transaction reviewed under the policy will be considered approved or ratified if it is authorized by the audit committee after full disclosure of the related person's interest in the transaction. As appropriate for the circumstances, the audit committee will review and consider:

- the related person's interest in the related person transaction;
- the approximate dollar value of the amount involved in the related person transaction;
- the approximate dollar value of the amount of the related person's interest in the transaction without regard to the amount of any profit or loss;
- whether the transaction was undertaken in the ordinary course of our business;
- whether the terms of the transaction are no less favorable to us than terms that could have been reached with an unrelated third party;
- the purpose of, and the potential benefits to us of, the transaction; and
- any other information regarding the related person transaction or the related person in the context of the proposed transaction that would be material to investors in light of the circumstances of the particular transaction.

Our audit committee may approve or ratify the transaction only if it determines that, under all of the circumstances, the transaction is in, or is not inconsistent with, our best interests. Our audit committee may impose any conditions on the related person transaction that it deems appropriate.

In addition to the transactions that are excluded by the instructions to the SEC's related person transaction disclosure rule, our board of directors has determined that the following transactions do not create a material direct or indirect interest on behalf of related persons and, therefore, are not related person transactions for purposes of this policy:

- interests arising solely from the related person's position as an executive officer of another entity, whether or not the person is also a director of the entity, that is a participant in the transaction where the related person and all other related persons own in the aggregate less than a 10% equity interest in such entity, the related person and his or her immediate family members are not involved in the negotiation of the terms of the transaction and do not receive any special benefits as a result of the transaction and the amount involved in the transaction is less than the greater of $200,000 or 5% of the annual gross revenues of the company receiving payment under the transaction; and
- a transaction that is specifically contemplated by provisions of our certificate of incorporation or bylaws.

The policy provides that transactions involving compensation of executive officers shall be reviewed and approved by our compensation committee in the manner specified in the compensation committee's charter.

We did not have a written policy regarding the review and approval of related person transactions prior to this offering. Nevertheless, with respect to such transactions, it has been the practice of our board of directors to consider the nature of and business reasons for such transactions, how the terms of such transactions compared to those which might be obtained from unaffiliated third parties and whether such transactions were otherwise fair to and in the best interests of, or not contrary to, our best interests.

PRINCIPAL STOCKHOLDERS

The following table sets forth information with respect to the beneficial ownership of our common stock as of June 30, 2019 by:

- each of our directors;
- each of our named executive officers;
- all of our directors and executive officers as a group; and
- each person, or group of affiliated persons, who is known by us to beneficially own more than 5% of our common stock.

The column entitled "Percentage of Shares Beneficially Owned—Before Offering" is based on a total of 64,958,232 shares of our common stock outstanding as of June 30, 2019, assuming the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 60,533,313 shares of our common stock upon the closing of this offering. The column entitled "Percentage of Shares Beneficially Owned—After Offering" is based on shares of our common stock to be outstanding after this offering, including the shares of our common stock that we are selling in this offering, but, except as described in the following paragraph, not including any additional shares issuable upon exercise of outstanding options.

Beneficial ownership is determined in accordance with the rules and regulations of the SEC and includes voting or investment power with respect to our common stock. Shares of our common stock that an individual has a right to acquire within 60 days after June 30, 2019 are considered outstanding and beneficially owned by the person holding such right for the purpose of calculating the percentage ownership of that person but not for the purpose of calculating the percentage ownership of any other person, except with respect to the percentage ownership of all directors and executive officers. Except as otherwise noted, the persons and entities in this table have sole voting and investing power with respect to all of the shares of our common stock beneficially owned by them, subject to community property laws, where applicable. Except as otherwise set forth below, the address of each beneficial owner is c/o IMARA Inc., 116 Huntington Avenue, 6th Floor, Boston, Massachusetts 02116.

		Percentage of Shares Beneficially Owned	
Name of Beneficial Owner	Shares Beneficially Owned	Before Offering (%)	After Offering (%)
Greater than 5% Stockholders:			
Entities affiliated with New Enterprise Associates 14, L.P.(1)	20,624,382	31.8%	
Entities affiliated with Lundbeckfond Invest A/S(2)	10,566,591	16.3%	
Entities affiliated with Pfizer Ventures (US) LLC(3)	7,275,352	11.2%	
OrbiMed Private Investments VII, LP(4)	7,032,406	10.8%	
Arix Bioscience Holdings Limited(5)	7,032,427	10.8%	
Entities affiliated with Bay City Capital(6)	4,172,321	6.4%	
Entities affiliated with RA Capital Healthcare Fund, L.P.(7)	3,656,851	5.6%	
Directors and Named Executive Officers:			
David M. Mott(1)	20,624,382	31.8%	
Sara Nayeem, M.D.(1)	20,624,382	31.8%	
Mette Kirstine Agger(2)	10,566,591	16.3%	
Barbara J. Dalton, Ph.D.(3)	7,275,352	11.2%	
David Bonita, Ph.D.(4)	7,032,406	10.8%	
Mark Chin(5)	7,032,427	10.8%	
Carl Goldfischer, M.D.(6)	4,172,321	6.4%	
James McArthur, Ph.D.(8)	2,098,056	3.2%	
Rahul D. Ballal, Ph.D.(9)	529,509	*	
All current executive officers and directors as a group (11 persons)(10)	59,331,044	88.5%	

* Less than one percent.

(1) Consists of (i) 20,604,382 shares of common stock underlying shares of preferred stock held by New Enterprise Associates 14, L.P., or NEA, and (ii) 20,000 shares of common stock underlying shares of preferred stock held by NEA Ventures 2016, L.P., or NEA Ventures. The shares held by NEA are indirectly held by NEA Partners 14, L.P., or NEA Partners, the sole general partner of NEA, NEA 14 GP, LTD, or NEA GP, the sole general partner of NEA Partners and each of the individual directors of NEA GP. The individual directors, or the Directors, of NEA GP are Peter J. Barris, Forest Baskett, Anthony A. Florence, Jr., Patrick J. Kerins, David M. Mott, Peter Sonsini and Scott Sandell. The shares held by NEA Ventures are indirectly held by Karen P. Welsh, the general partner of NEA Ventures. NEA, NEA Partners, NEA GP and the Directors share voting and dispositive power with regard to the shares directly held by NEA. With regard to the shares directly held by NEA Ventures, Mr. Mott and Dr. Nayeem have neither voting nor dispositive power, and disclaim beneficial ownership of such shares, except to the extent of their pecuniary interests therein, if any. With regard to the shares directly held by NEA, Dr. Nayeem has no voting or dispositive power over any of such shares directly held by NEA and disclaims beneficial ownership of such shares, except to the extent of her pecuniary interest therein, if any. Mr. Mott and Dr. Nayeem are also members of our board of directors. The address for NEA is 1954 Greenspring Drive, Suite 600, Timonium, MD 21093.

(2) Consists of (i) 7,275,352 shares of common stock underlying shares of preferred stock held by Lundbeckfond Invest A/S, or Lunbeckfonden, and (ii) 2,792,170 shares of common stock and 499,069 shares of common stock underlying shares of preferred stock held by H. Lundbeck A/S, or Lundbeck. Lunbeckfonden is the majority shareholder of Lundbeck. The board of directors of Lundbeckfonden consists of Jørgen Huno Rasmussen, Steffen Kragh, Lars Holmqvist, Susanne Krüger Kjær, Michael Kjær, Peter Schütze, Gunhild Waldemar, Ludovic Tranholm Otterbein, Vagn Flink Møller Pedersen, Henrik Villsen Andersen and Peter Adler Würtzen. No individual member of the Lunbeckfonden board of directors is deemed to hold any beneficial ownership or reportable pecuniary interest in the shares held by Lunbeckfonden. The board of directors of Lunbeckfonden and Lene Skole, the chief executive officer of Lunbeckfonden, may be deemed to share voting and investment authority over the shares held by Lundbeckfonden. Mette Kirstine Agger, a member of our board of directors, is a Managing Partner at Lundbeckfonden Ventures, which is an affiliate of Lundbeckfonden. The address of Lundbeckfonden and the above-mentioned persons is Scherfigsvej 7, DK-2100 Copenhagen, Denmark.

(3) Consists of (i) 6,796,603 shares of common stock underlying shares of preferred stock held by Pfizer Ventures (US) LLC, or Pfizer Ventures, and (ii) 478,749 shares of common stock underlying shares of preferred stock held by Pfizer Inc., or Pfizer. Pfizer Ventures is a controlled affiliate of Pfizer and Pfizer may be deemed to beneficially own the shares directly owned by Pfizer Ventures. The address of Pfizer and Pfizer Ventures is 235 East 42nd Street, New York, New York 10017.

(4) Consists of 7,032,406 shares of common stock underlying shares of preferred stock held by OrbiMed Private Investments VII, LP, or OPI VII. OrbiMed Capital GP VII LLC, or GP VII, is general partner of OPI VII, and OrbiMed Advisors LLC, or Advisors, is the managing member of GP VII. By virtue of such relationships, GP VII and Advisors may be deemed to have voting and investment power with respect to the shares held by OPI VII. Both GP VII and Advisors may be deemed to directly or indirectly, including by reason of their mutual affiliation, to be the beneficial owners of the shares held by OPI VII. Advisors exercises this investment and voting power through a management committee comprised of Carl L. Gordon, Sven H. Borho and Jonathan T. Silverstein, each of whom disclaims beneficial ownership of the shares held by OPI VII. Advisors has designated David Bonita, an employee of Advisors, to serve on the board of directors of IMARA Inc. The business address for OPI VII is c/o OrbiMed Advisors LLC, 601 Lexington Avenue 54th Floor, New York, NY 10022.

(5) Consists of 7,032,427 shares of common stock underlying shares of preferred stock held by Arix Bioscience Holdings Limited, or Arix. Dr. Joe Anderson, Mr. Chin, a member of our board of directors, Dr. Jonathan Tobin and Mr. Edward Rayner comprise the Investment Committee of Arix and share voting and dispositive power over the shares held by Arix. The address for Arix is 20 Berkeley Square, London, W1J 6EQ, United Kingdom.

(6) Consists of (i) 4,094,299 shares of common stock underlying shares of preferred stock held by Bay City Capital Fund V, L.P., or Bay City Capital Fund V, and (ii) 78,022 shares of common stock underlying shares of preferred stock held by Bay City Capital Fund V Co-Investment Fund, L.P., or Bay City Capital Fund V Co-Investment. Bay City Capital Management V, or GP V, is the General Partner of Bay City Capital Fund V and Bay City Capital Fund V Co-Investment, or collectively, BCC V. Bay City Capital LLC, or BCC LLC, is the Manager of GP V. BCC V has shared voting and dispositive power with respect to the shares held by BCC V. GP V has sole voting and dispositive power with respect to the shares held by BCC V. GP V disclaims beneficial ownership of these shares, except to the extent of its pecuniary interest therein. BCC LLC has sole voting and dispositive power with respect to the shares held by BCC V. BCC LLC disclaims beneficial ownership of these shares, except to the extent of its pecuniary interest therein. Carl Goldfischer and Fred Craves are managing directors of Bay City Capital LLC and have voting and dispositive power with respect to shares held by Bay City Capital Funds. Dr. Goldfischer disclaims beneficial ownership of these shares, except to the extent of its pecuniary interest therein. The address for Bay City Capital Fund V is 750 Battery Street, Suite 400, San Francisco, CA 94111.

(7) Consists of (i) 3,101,741 shares of common stock underlying shares of preferred stock held by RA Capital Healthcare Fund, L.P., or RA Capital, and (ii) 555,110 shares of common stock underlying shares of preferred stock held by a separately managed account, or the Account. Dr. Peter Kolchinsky is the managing member of RA Capital Management, LLC, the general partner of RA Capital and the investment advisor of the Account. Dr. Kolchinsky and RA Capital Management, LLC may be deemed to beneficially own the shares held by RA Capital and the Account. Dr. Kolchinsky and RA Capital Management, LLC disclaim beneficial ownership of all applicable shares except to the extent of their actual pecuniary interest therein. The address for the entities listed above is 200 Berkeley Street, 18th Floor, Boston, MA 02116.

(8) Consists of 525,483 shares of common stock, and 1,572,573 shares of common stock issuable upon the exercise of options that are exercisable as of June 30, 2019 or will become exercisable within 60 days after such date.

(9) Consists of 529,509 shares of common stock issuable upon the exercise of options that are exercisable as of June 30, 2019 or will become exercisable within 60 days after such date.
(10) Consists of 56,703,479 shares of common stock underlying shares of preferred stock, 525,483 shares of common stock and 2,102,082 shares of common stock issuable upon the exercise of options that are exercisable as of June 30, 2019 or will become exercisable within 60 days after such date.

DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock and provisions of our certificate of incorporation and bylaws are summaries and are qualified by reference to the certificate of incorporation and the bylaws that will be in effect upon the closing of this offering. We will file copies of these documents with the SEC as exhibits to our registration statement of which this prospectus is a part. The description of the capital stock reflects changes to our capital structure that will occur upon the closing of this offering.

Upon the closing of this offering, our authorized capital stock will consist of 200,000,000 shares of our common stock, par value $0.001 per share, and 10,000,000 shares of our preferred stock, par value $0.001 per share, all of which preferred stock will be undesignated.

As of June 30, 2019, we had issued and outstanding:

- 4,424,919 shares of our common stock;
- 2,712,960 shares of our series seed preferred stock;
- 31,499,040 shares of our series A preferred stock; and
- 26,321,313 shares of our series B preferred stock.

Upon the closing of this offering, all of the outstanding shares of our preferred stock will automatically convert into an aggregate of 60,533,313 shares of our common stock.

As of June 30, 2019, there were nine holders of record of our common stock and 14 holders of record of our preferred stock.

Common Stock

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. Each election of directors by our stockholders will be determined by a plurality of the votes cast by the stockholders entitled to vote on the election. Holders of common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights of outstanding preferred stock.

In the event of our liquidation or dissolution, the holders of our common stock are entitled to receive proportionately all assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the prior rights of any of our outstanding preferred stock. Holders of our common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our preferred stock that we may designate and issue in the future.

Preferred Stock

Immediately prior to the closing of this offering, all outstanding shares of convertible preferred stock will convert into shares of our common stock on a one-to-one basis. Immediately after the completion of this offering, our certificate of incorporation will be amended and restated to delete all references to such shares of convertible preferred stock. Under the terms of our certificate of incorporation that will become effective upon the closing of this offering, our board of directors is authorized to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock.

The purpose of authorizing our board of directors to issue preferred stock and determine its rights and preferences is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions, future financings and other corporate purposes, could have the effect of making it more difficult for a third party to acquire, or could discourage a third party from seeking to acquire, a majority of our outstanding voting stock. Upon the closing of this offering, there will be no shares of preferred stock outstanding, and we have no present plans to issue any shares of preferred stock.

Options and Unvested Restricted Stock

As of June 30, 2019, options to purchase an aggregate of 11,838,614 shares of our common stock were outstanding, at a weighted-average exercise price of $0.71 per share, and no shares of unvested restricted stock were outstanding.

Registration Rights

We have entered into an amended and restated investors' rights agreement dated as of March 15, 2019 with holders of our preferred stock. Beginning 180 days following the effective date of the registration statement of which this prospectus is a part, holders of a total of 60,034,244 shares of our common stock will have the right to require us to register these shares under the Securities Act, under specified circumstances. We refer to the shares with these registration rights as registrable securities. After registration pursuant to these rights, the registrable securities will become freely tradable without restriction under the Securities Act.

Delaware Anti-Takeover Law and Certain Charter and Bylaw Provisions

Delaware Law

We are subject to Section 203 of the DGCL. Subject to certain exceptions, Section 203 prevents a publicly held Delaware corporation from engaging in a "business combination" with any "interested stockholder" for three years following the date that the person became an interested stockholder, unless either the interested stockholder attained such status with the approval of our board of directors, the business combination is approved by our board of directors and stockholders in a prescribed manner or the interested stockholder acquired at least 85% of our outstanding voting stock in the transaction in which it became an interested stockholder. A "business combination" includes, among other things, a merger or consolidation involving us and the "interested stockholder" and the sale of more than 10% of our assets. In general, an "interested stockholder" is any entity or person beneficially owning 15% or more of our outstanding voting stock and any entity or person affiliated with or controlling or controlled by such entity or person. The restrictions contained in Section 203 are not applicable to any of our existing stockholders that will own 15% or more of our outstanding voting stock upon the closing of this offering.

Staggered Board; Removal of Directors

Our certificate of incorporation and our bylaws to be effective upon the closing of this offering divide our board of directors into three classes with staggered three-year terms. In addition, our certificate of incorporation and our bylaws to be effective upon the closing of this offering provide that directors may be removed only for cause and only by the affirmative vote of the holders of at least 75% of our shares of capital stock present in person or by proxy and entitled to vote. Under our certificate of incorporation and bylaws to be effective upon the closing of this offering, any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled only by vote of a majority of our directors then in office. Furthermore, our certificate of incorporation to be effective upon the closing of this offering provides that the authorized number of directors may be changed only by the resolution of our board of directors. The classification of our board of directors and the limitations on the ability of our stockholders to remove directors, change the authorized number of directors and fill vacancies could make it more difficult for a third party to acquire, or discourage a third party from seeking to acquire, control of our company.

Stockholder Action; Special Meeting of Stockholders; Advance Notice Requirements for Stockholder Proposals and Director Nominations

Our certificate of incorporation and our bylaws to be effective upon the closing of this offering provide that any action required or permitted to be taken by our stockholders at an annual meeting or special meeting of stockholders may only be taken if it is properly brought before such meeting and may not be taken by written action in lieu of a meeting. Our certificate of incorporation and our bylaws to be effective upon the closing of this offering also provide that, except as otherwise required by law, special meetings of the stockholders can only be called by our board of directors. In addition, our bylaws to be effective upon the closing of this offering establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of stockholders, including proposed nominations of candidates for election to our board of directors. Stockholders at an annual meeting may only consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of our board of directors, or by a stockholder of record on the record date for the meeting who is entitled to vote at the meeting and who has delivered timely written notice in proper form to our secretary of the stockholder's intention to bring such business before the meeting. These provisions could have the effect of delaying until the next stockholder meeting stockholder actions that are favored by the holders of a majority of our outstanding voting securities. These provisions also could discourage a third party from making a tender offer for our common stock because even if the third party acquired a majority of our outstanding voting stock, it would be able to take action as a stockholder, such as electing new directors or approving a merger, only at a duly called stockholders meeting and not by written consent.

Super-Majority Voting

The DGCL provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation or bylaws unless a corporation's certificate of incorporation or bylaws, as the case may be, requires a greater percentage. Our bylaws to be effective upon the closing of this offering may be amended or repealed by a majority vote of our board of directors or the affirmative vote of the holders of at least 75% of the votes that all our stockholders would be entitled to cast in any annual election of directors. In addition, the affirmative vote of the holders of at least 75% of the votes that all our stockholders would be entitled to cast in any election of directors is required to amend or repeal or to adopt any provisions inconsistent with any of the provisions of our certificate of incorporation described above.

Exclusive Forum Selection

Our certificate of incorporation to be effective upon the closing of this offering provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery of the State of Delaware does not have jurisdiction, the federal district court for the District of Delaware) shall be the sole and exclusive forum for the following types of proceedings under Delaware statutory or common law: (1) any derivative action or proceeding brought on behalf of our company, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers, employees or stockholders to our company or our stockholders, (3) any action asserting a claim arising pursuant to any provision of the General Corporation Law of the State of Delaware or as to which the General Corporation Law of the State of Delaware confers jurisdiction on the Court of Chancery of the State of Delaware, or (4) any action asserting a claim arising pursuant to any provision of our certificate of incorporation or bylaws (in each case, as they may be amended from time to time) or governed by the internal affairs doctrine. For the avoidance of doubt, these choice of forum provisions will not apply to suits brought to enforce a duty or liability created by the Securities Act, the Exchange Act or any other claim for which federal courts have exclusive jurisdiction. Although our certificate of incorporation contains the choice of forum provision described above, it is possible that a court could rule that such a provision is inapplicable for a particular claim or action or that such provision is unenforceable.

Demand and Form S-3 Registration Rights

Beginning 180 days after the effective date of the registration statement of which this prospectus is a part, subject to specified limitations set forth in the investors' rights agreement, at any time, the holders of a majority

of the then outstanding registrable securities may demand that we register registrable securities then outstanding under the Securities Act for purposes of a public offering having an aggregate offering price to the public, net of selling expenses, of not less than $10.0 million. We are not obligated to file a registration statement pursuant to this provision on more than two occasions.

In addition, subject to specified limitations set forth in the investors' rights agreement, at any time after we become eligible to file a registration statement on Form S-3, holders of at least 20% of the registrable securities then outstanding may request that we register their registrable securities on Form S-3 for purposes of a public offering for which the anticipated aggregate offering price to the public would exceed, net of selling expenses, $1.0 million. We are not obligated to file a registration statement pursuant to this provision on more than two occasions in any 12-month period.

Incidental Registration Rights

If, at any time after the closing of this offering, we propose to register for our own account any of our securities under the Securities Act, the holders of registrable securities will be entitled to notice of the registration and, subject to specified exceptions, have the right to require us to register all or a portion of the registrable securities then held by them in that registration.

In the event that any registration in which the holders of registrable securities participate pursuant to our investors' rights agreement is an underwritten public offering, we have agreed to enter into an underwriting agreement in usual and customary form and use our reasonable best efforts to facilitate such offering.

Expenses

Pursuant to the investors' rights agreement, we are required to pay all registration expenses, including all registration and filing fees, exchange listing fees, printing expenses, fees and expenses of one counsel selected by the selling stockholders to represent the selling stockholders, state Blue Sky fees and expenses and the expense of any special audits incident to or required by any such registration, but excluding underwriting discounts, selling commissions and the fees and expenses of the selling stockholders' own counsel (other than the counsel selected to represent all selling stockholders).

The investors' rights agreement contains customary cross-indemnification provisions, pursuant to which we are obligated to indemnify the selling stockholders in the event of material misstatements or omissions in the registration statement attributable to us or any violation or alleged violation whether by action or inaction by us under the Securities Act, the Exchange Act, any state securities or Blue Sky law or any rule or regulation promulgated under the Securities Act, the Exchange Act or any state securities or Blue Sky law in connection with such registration statement or the qualification or compliance of the offering, and they are obligated to indemnify us for material misstatements or omissions in the registration statement attributable to them.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock will be .

Nasdaq Global Market

We intend to apply to have our common stock listed on the Nasdaq Global Market under the symbol "IMRA."

SHARES ELIGIBLE FOR FUTURE SALE

Prior to this offering, there has been no public market for our common stock, and a liquid trading market for our common stock may not develop or be sustained after this offering. As described below, only a limited number of shares will be available for sale shortly after this offering due to contractual and legal restrictions on resale. Future sales of substantial amounts of our common stock in the public market, including shares issued upon exercise of outstanding options, or the anticipation of these sales, could adversely affect market prices prevailing from time to time and could impair our ability to raise capital through sales of equity securities.

Upon the closing of this offering, we will have outstanding shares of our common stock, based on the shares of our common stock that were outstanding as of , 2019 and after giving effect to (i) the issuance of shares of our common stock in this offering, assuming no exercise by the underwriters of their option to purchase additional shares of our common stock and (ii) the conversion of all outstanding shares of our preferred stock into an aggregate of 60,533,313 shares of our common stock upon the closing of this offering. Of these shares, all shares sold in this offering will be freely tradable without restriction under the Securities Act of 1933, unless purchased by our "affiliates," as that term is defined in Rule 144 under the Securities Act. The remaining shares of our common stock will be "restricted securities" under Rule 144, and we expect that substantially all of these restricted securities will be subject to the 180-day lock-up period under the lock-up agreements described below. These restricted securities may be sold in the public market upon release or waiver of any applicable lock-up agreement, which waiver may be effected with the consent of the Morgan Stanley & Co. LLC, Citigroup Global Markets Inc. and SVB Leerink LLC in their sole discretion at any time, and only if registered or pursuant to an exemption from registration, such as Rule 144 or 701 under the Securities Act.

Rule 144

In general, under Rule 144, beginning 90 days after the date of this prospectus, any person who is not our affiliate and has held their shares for at least six months, including the holding period of any prior owner other than one of our affiliates, may sell those shares without restriction, subject to the availability of current public information about us. In addition, under Rule 144, any person who is not our affiliate and has not been our affiliate at any time during the preceding three months and has held their shares for at least one year, including the holding period of any prior owner other than one of our affiliates, would be entitled to sell an unlimited number of shares immediately upon the closing of this offering without regard to whether current public information about us is available.

Beginning 90 days after the date of this prospectus, a person who is our affiliate or who was our affiliate at any time during the preceding three months and who has beneficially owned restricted securities for at least six months, including the holding period of any prior owner other than one of our affiliates, is entitled to sell a number of shares within any three-month period that does not exceed the greater of:

- 1% of the number of shares of our common stock then outstanding, which will equal approximately shares immediately after this offering; and
- the average weekly trading volume in our common stock on the Nasdaq Global Market during the four calendar weeks preceding the date of filing of a Notice of Proposed Sale of Securities Pursuant to Rule 144 with respect to the sale.

Sales under Rule 144 by our affiliates are also subject to manner of sale provisions and notice requirements and to the availability of current public information about us.

Rule 701

In general, under Rule 701 of the Securities Act, any of our employees, consultants or advisors, other than our affiliates, who purchased shares from us in connection with a qualified compensatory stock plan or other

written agreement is eligible to resell these shares 90 days after the date of this prospectus in reliance on Rule 144, but without compliance with the various restrictions, including the availability of public information about us, holding period and volume limitations, contained in Rule 144. Subject to the 180-day lock-up period described below, approximately shares of our common stock, based on shares outstanding as of , 2019 will be eligible for sale in accordance with Rule 701.

Lock-up Agreements

We and all of our directors and executive officers and the holders of substantially all of our outstanding securities have agreed that, without the prior written consent of Morgan Stanley & Co. LLC, Citigroup Global Markets Inc. and SVB Leerink LLC, on behalf of the underwriters, we and they will not, subject to limited exceptions, during the period ending 180 days after the date of this prospectus:

- offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock beneficially owned (as such term is used in Rule 13d-3 of the Securities Exchange Act of 1934, as amended) or any other securities so owned convertible into or exercisable or exchangeable for common stock, or make any public announcement of an intention to do any of the foregoing; or
- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of our common stock,

whether any transaction described above is to be settled by delivery of our common stock or such other securities, in cash or otherwise.

These agreements are subject to certain exceptions, as described in the section of this prospectus titled “Underwriters.”

Registration Rights

Upon the closing of this offering, the holders of an aggregate of 60,034,244 shares of our common stock will have rights, subject to certain conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. After registration pursuant to these rights, these shares will become freely tradable without restriction under the Securities Act. See “Description of Capital Stock—Registration Rights” for additional information regarding these registration rights.

Stock Options and Form S-8 Registration Statement

Following this offering, we intend to file one or more registration statements on Form S-8 under the Securities Act to register all of the shares of our common stock subject to outstanding awards and reserved for future issuance under the 2016 Plan, the 2019 Plan and the 2019 ESPP. See “Executive Compensation—Stock Option and Other Compensation Plans” for additional information regarding these plans. Accordingly, shares of our common stock registered under such registration statements will be available for sale in the open market, subject to Rule 144 volume limitations applicable to affiliates, and subject to any vesting restrictions and lock-up agreements applicable to these shares.

MATERIAL U.S. FEDERAL INCOME AND ESTATE TAX CONSIDERATIONS FOR NON-U.S. HOLDERS OF COMMON STOCK

The following is a discussion of material U.S. federal income and estate tax considerations relating to the ownership and disposition of shares of our common stock acquired in this offering by a non-U.S. holder. For purposes of this discussion, the term "non-U.S. holder" means a beneficial owner (other than a partnership or other pass-through entity) of our common stock that is not, for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation, or other entity treated as a corporation for U.S. federal income tax purposes, created or organized in or under the laws of the United States, any state thereof or the District of Columbia;
- an estate the income of which is subject to U.S. federal income taxation regardless of its source; or
- a trust if (1) a U.S. court is able to exercise primary supervision over the administration of the trust and one or more United States persons has authority to control all substantial decisions of the trust or (2) the trust has a valid election in effect under applicable U.S. Treasury Regulations to be treated as a United States person.

This discussion does not address the tax treatment of partnerships or other entities that are pass-through entities for U.S. federal income tax purposes or persons who hold shares of our common stock through partnerships or such other pass-through entities. The tax treatment of a partner in a partnership or other entity that is treated as a pass-through entity for U.S. federal income tax purposes generally will depend upon the status of the partner and the activities of the partnership. A partner in a partnership or other pass-through entity that will hold our common stock should consult his, her or its own tax advisor regarding the tax consequences of the ownership and disposition of our common stock through a partnership or other pass-through entity, as applicable.

This discussion is based on current provisions of the U.S. Internal Revenue Code of 1986, as amended, which we refer to as the Code, existing and proposed U.S. Treasury Regulations promulgated thereunder, current administrative rulings and judicial decisions, all as in effect as of the date of this prospectus and all of which are subject to change or to differing interpretation, possibly with retroactive effect. Any change or differing interpretation could alter the tax consequences to non-U.S. holders described in this prospectus. There can be no assurance that the Internal Revenue Service, or the IRS, will not challenge one or more of the tax consequences described in this prospectus.

This discussion addresses only non-U.S. holders that hold shares of our common stock as a capital asset (generally, property held for investment) for U.S. federal income tax purposes. This discussion does not address all aspects of U.S. federal income and estate taxation that may be relevant to a particular non-U.S. holder in light of that non-U.S. holder's individual circumstances nor does it address any aspects of U.S. state, local or non-U.S. taxes, the alternative minimum tax, or the Medicare tax on net investment income. This discussion also does not consider any specific facts or circumstances that may apply to a non-U.S. holder and does not address the special tax rules applicable to particular non-U.S. holders, such as:

- banks, investment funds or financial institutions;
- brokers, traders or dealers in securities;
- tax exempt or governmental organizations;
- tax-qualified retirement plans or pension plans;
- owners that hold our common stock as part of a straddle, hedge, conversion transaction, synthetic security or other integrated investment or who have elected to mark securities to market;
- insurance companies;
- controlled foreign corporations;

- passive foreign investment companies; and
- certain U.S. expatriates.

THIS DISCUSSION IS FOR INFORMATION ONLY AND IS NOT, AND IS NOT INTENDED TO BE, LEGAL OR TAX ADVICE. PROSPECTIVE INVESTORS SHOULD CONSULT THEIR OWN TAX ADVISORS REGARDING THE U.S. FEDERAL, STATE, LOCAL, ESTATE AND NON-U.S. INCOME AND OTHER TAX CONSIDERATIONS OF ACQUIRING, HOLDING AND DISPOSING OF OUR COMMON STOCK, INCLUDING THE CONSEQUENCES OF ANY PROPOSED CHANGES IN APPLICABLE LAWS.

Distributions

As discussed under the heading "Dividend Policy" above, we do not expect to pay cash dividends to holders of our common stock in the foreseeable future. If we make distributions in respect of our common stock, those distributions generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder's investment, up to the non-U.S. holder's tax basis in the common stock. Any remaining excess will be treated as capital gain, subject to the tax treatment described below under the heading "Gain on Sale, Exchange or Other Taxable Disposition of Our Common Stock."

Subject to the discussions discussion below regarding effectively connected income and the below under the headings "Information Reporting and Backup Withholding" and "FATCA", dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence. A non-U.S. holder of our common stock who claims the benefit of an applicable income tax treaty between the United States and such holder's country of residence generally will be required to provide a properly executed IRS Form W-8BEN or W-8BENE (or successor form) and satisfy applicable certification and other requirements. This certification must be provided to us or our paying agent before the payment of dividends and must be updated periodically. A non-U.S. holder that is eligible for a reduced rate of U.S. withholding tax under an income tax treaty may obtain a refund or credit of any excess amounts withheld by timely filing an appropriate claim with the IRS.

Dividends that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States, and, if an applicable income tax treaty so provides, that are attributable to a permanent establishment or a fixed base maintained by the non-U.S. holder within the United States, are generally exempt from the 30% withholding tax if the non-U.S. holder satisfies applicable certification and disclosure requirements (generally including provision of a properly executed IRS Form W8ECI (or applicable successor form) to us or our paying agent certifying that the dividends are effectively connected with the non-U.S. holder's conduct of a trade or business within the United States). However, such U.S. effectively connected income is taxed on a net income basis at the same U.S. federal income tax rates applicable to United States persons (as defined in the Code). Any U.S. effectively connected income received by a non-U.S. holder that is classified as a corporation for U.S. federal income tax purposes may also, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence.

Non-U.S. holders are urged to consult their own tax advisors regarding their entitlement to benefits under a relevant income tax treaty and the specific methods available to them to satisfy these requirements.

Gain on Sale, Exchange or Other Taxable Disposition of Our Common Stock

A non-U.S. holder generally will not be subject to U.S. federal income tax on gain recognized on the non-U.S. holder's sale, exchange or other disposition of our common stock unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a trade or business in the United States, and, if an applicable income tax treaty so provides, the gain is attributable to a permanent establishment or fixed base maintained by the non-U.S. holder in the United States, in which case, the non-U.S. holder generally will be taxed on a net income basis at the U.S. federal income tax rates applicable to United States persons (as defined in the Code) and, if the non-U.S. holder is a foreign corporation, an additional branch profits tax at a rate of 30% (or a lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence) may also apply;
- the non-U.S. holder is a nonresident alien present in the United States for 183 days or more in the taxable year of the disposition and certain other requirements are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence) on the net gain derived from the disposition, which may be offset by certain U.S.-source capital losses of the non-U.S. holder, if any; or
- we are, or have been, at any time during the five-year period preceding such disposition (or the non-U.S. holder's holding period, if shorter) a "U.S. real property holding corporation," unless our common stock is regularly traded on an established securities market and the non-U.S. holder held no more than 5% of our outstanding common stock, directly or indirectly, during the shorter of the five-year period ending on the date of the disposition or the period that the non-U.S. holder held our common stock. If we are determined to be a "U.S. real property holding corporation" and the foregoing exception does not apply, then the non-U.S. holder generally will be taxed on its net gain derived from the disposition at the U.S. federal income tax rates applicable to United States persons (as defined in the Code). Generally, a corporation is a "U.S. real property holding corporation" only if the fair market value of its "U.S. real property interests" (as defined in the Code and applicable regulations) equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. Although there can be no assurance, we do not believe that we are, or have been, a "U.S. real property holding corporation" for U.S. federal income tax purposes, or that we are likely to become one in the future. No assurance can be provided that our common stock will be regularly traded on an established securities market for purposes of the rule described above.

Information Reporting and Backup Withholding

We must report annually to the IRS and to each non-U.S. holder the gross amount of the distributions on our common stock paid to such holder and the tax withheld, if any, with respect to such distributions. Non-U.S. holders generally have to comply with specific certification procedures to establish that the holder is not a United States person (as defined in the Code) in order to avoid backup withholding at the applicable rate with respect to dividends on our common stock. Generally, a non-U.S. holder will comply with such procedures if it provides a properly executed IRS Form W-8BEN or W-8BEN-E (or other applicable IRS Form W-8), or otherwise meets documentary evidence requirements for establishing that it is a non-U.S. holder, or otherwise establishes an exemption.

Information reporting and backup withholding generally will apply to the proceeds of a disposition of our common stock by a non-U.S. holder effected by or through the U.S. office of any broker, U.S. or non-U.S., unless the holder certifies its status as a non-U.S. holder and satisfies certain other requirements, or otherwise establishes an exemption. Generally, information reporting and backup withholding will not apply to a payment of disposition proceeds to a non-U.S. holder where the transaction is effected outside the United States through a

non-U.S. office of a broker. However, for information reporting purposes, dispositions effected through a non-U.S. office of a broker with substantial U.S. ownership or operations generally will be treated in a manner similar to dispositions effected through a U.S. office of a broker. Non-U.S. holders should consult their own tax advisors regarding the application of the information reporting and backup withholding rules to them.

Copies of information returns may be made available to the tax authorities of the country in which the non-U.S. holder resides or is incorporated under the provisions of a specific treaty or agreement.

Backup withholding is not an additional tax. Rather, any amounts withheld under the backup withholding rules from a payment to a non-U.S. holder can be refunded or credited against the non-U.S. holder's U.S. federal income tax liability, if any, provided that an appropriate claim is timely filed with the IRS.

FATCA

Provisions of the Code commonly referred to as the Foreign Account Tax Compliance Act, or FATCA, generally impose a 30% withholding tax on dividends on, and, subject to the discussion below with respect to proposed U.S. Treasury Regulations excluding gross proceeds from such required withholding, gross proceeds from the sale or other disposition of, our common stock if paid to a foreign entity unless (i) if the foreign entity is a "foreign financial institution," the foreign entity undertakes certain due diligence, reporting, withholding and certification obligations, (ii) if the foreign entity is not a "foreign financial institution," the foreign entity identifies certain of its U.S. investors, if any, or (iii) the foreign entity is otherwise excepted under FATCA.

Withholding under FATCA generally applies to payments of dividends on our common stock. While, under current law, withholding under FATCA also applies to payments of gross proceeds from a sale or other disposition of our common stock made after December 31, 2018, under recently proposed U.S. Treasury Regulations withholding on payments of gross proceeds is not required. Although such regulations are not final, applicable withholding agents may rely on the proposed regulations until final regulations are issued.

If withholding under FATCA is required on any payment related to our common stock, investors not otherwise subject to withholding (or that otherwise would be entitled to a reduced rate of withholding) on such payment may be entitled to seek a refund or credit from the IRS. An intergovernmental agreement between the United States and an applicable foreign country may modify the requirements described in this section. Non-U.S. holders should consult their own tax advisors regarding the possible implications of FATCA on their investment in our common stock and the entities through which they hold our common stock, including, without limitation, the process and deadlines for meeting the applicable requirements to prevent the imposition of the 30% withholding tax under FATCA.

U.S. Federal Estate Tax

Shares of our common stock that are owned or treated as owned by an individual who is not a citizen or resident of the United States (as specially defined for U.S. federal estate tax purposes) at the time of such individual's death are considered U.S.-situs assets and will be included in the individual's gross estate for U.S. federal estate tax purposes. Such shares, therefore, may be subject to U.S. federal estate tax, unless an applicable estate tax or other treaty provides otherwise.

The preceding discussion of material U.S. federal tax considerations is for information only. It is not, and is not intended to be, legal or tax advice. Prospective investors should consult their own tax advisors regarding the particular U.S. federal, state, local, estate and non-U.S. income and other tax consequences of acquiring, holding and disposing of our common stock, including the consequences of any proposed changes in applicable laws.

UNDERWRITERS

Under the terms and subject to the conditions in an underwriting agreement dated the date of this prospectus, the underwriters named below, for whom Morgan Stanley & Co. LLC, Citigroup Global Markets Inc. and SVB Leerink LLC are acting as representatives, have severally agreed to purchase, and we have agreed to sell to them, severally, the number of shares indicated below:

Underwriter	Number of Shares
Morgan Stanley & Co. LLC	
Citigroup Global Markets Inc.	
SVB Leerink LLC	
Total	

The underwriters and the representatives are collectively referred to as the "underwriters" and the "representatives," respectively. The underwriters are offering the shares of common stock subject to their acceptance of the shares from us and subject to prior sale. The underwriting agreement provides that the obligations of the several underwriters to pay for and accept delivery of the shares of common stock offered by this prospectus are subject to the approval of certain legal matters by their counsel and to certain other conditions. The underwriters are obligated to take and pay for all of the shares of common stock offered by this prospectus if any such shares are taken. However, the underwriters are not required to take or pay for the shares covered by the underwriters' over-allotment option described below.

The underwriters initially propose to offer part of the shares of common stock directly to the public at the offering price listed on the cover page of this prospectus and part to certain dealers at a price that represents a concession not in excess of $ per share under the public offering price. After the initial offering of the shares of common stock, the offering price and other selling terms may from time to time be varied by the representatives.

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase up to additional shares of common stock at the public offering price listed on the cover page of this prospectus, less underwriting discounts and commissions. The underwriters may exercise this option solely for the purpose of covering over-allotments, if any, made in connection with the offering of the shares of common stock offered by this prospectus. To the extent the option is exercised, each underwriter will become obligated, subject to certain conditions, to purchase about the same percentage of the additional shares of common stock as the number listed next to the underwriter's name in the preceding table bears to the total number of shares of common stock listed next to the names of all underwriters in the preceding table.

The following table shows the per share and total public offering price, underwriting discounts and commissions and proceeds before expenses to us. These amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase up to an additional shares of common stock.

		Total	
	Per Share	No Exercise	Full Exercise
Public offering price	$	$	$
Underwriting discounts and commissions to be paid by us	$	$	$
Proceeds, before expenses, to us	$	$	$

The estimated offering expenses payable by us, exclusive of the underwriting discounts and commissions, are approximately $. We have agreed to reimburse the underwriters for expenses relating to clearance of this offering with the Financial Industry Regulatory Authority of up to $.

The underwriters have informed us that they do not intend sales to discretionary accounts to exceed 5% of the total number of shares of common stock offered by them.

We intend to apply to have our common stock listed on the Nasdaq Global Market under the symbol “IMRA.”

We and all of our directors and executive officers and the holders of substantially all of our outstanding securities have agreed that, without the prior written consent of Morgan Stanley & Co. LLC, Citigroup Global Markets Inc., and SVB Leerink LLC, on behalf of the underwriters, we and they will not, during the period ending 180 days after the date of this prospectus, or the restricted period:

- offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock beneficially owned (as such term is used in Rule 13d-3 of the Securities Exchange Act of 1934, as amended, or the Exchange Act) or any other securities so owned convertible into or exercisable or exchangeable for common stock, or make any public announcement of an intention to do any of the foregoing;
- file any registration statement with the SEC relating to the offering of any shares of our common stock or any securities convertible into or exercisable or exchangeable for common stock; or
- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the common stock,

whether any such transaction described above is to be settled by delivery of common stock or such other securities, in cash or otherwise. In addition, we and each such person have agreed that, without the prior written consent of the Morgan Stanley & Co. LLC, Citigroup Global Markets Inc., and SVB Leerink LLC, on behalf of the underwriters, we or such other person will not, during the restricted period, make any demand for, or exercise any right with respect to, the registration of any shares of common stock or any securities convertible into or exercisable or exchangeable for shares of common stock.

The restrictions described in the immediately preceding paragraph do not apply to our directors, officers and securityholders with respect to:

- transactions of shares of common stock or any other securities acquired in the offering (other than any issuer-directed shares of common stock purchased in the offering by our officers or directors) or in open market transactions after the completion of the offering, provided that no filing under Section 16(a) of the Exchange Act is required or voluntarily made in connection with subsequent sales of our common stock or other securities acquired in the offering or such open market transactions;
- transfers of shares of common stock or any security convertible into or exercisable or exchangeable for common stock (a) as a bona fide gift; (b) to a charitable organization or educational institution in a transaction not involving a disposition for value; (c) to any member of the immediate family of such person or any trust for the direct or indirect benefit of such person or the immediate family of such person in a transaction not involving a disposition for value; (d) to any corporation, partnership, limited liability company or other entity all of the beneficial ownership interests of which are held by such person; (e) by will, other testamentary document or intestate succession to the legal representative, heir, beneficiary or a member of the immediate family of such person upon the death of such person; (f) solely by operation of law pursuant to a qualified domestic order or divorce settlement; or (h) to general or limited partners, members or stockholders of such holder, its direct or indirect affiliates (as defined in Rule 405 promulgated under the Securities Act) or to an investment fund or other entity that controls or manages, or is under common control with, such holder; provided that (i) each transferee, done or distributee signs and delivers a lock-up agreement to the representatives; and (ii) no public announcement is made and no filing under Section 16(a) of the Exchange Act reporting a reduction in

beneficial ownership of shares of our common stock, is required or voluntarily made during the restricted period (other than, in the case of a transfer or other disposition pursuant to clause (c), (e) or (f), any Form 4 or Form 5 required to be filed under the Exchange Act if such person is subject to Section 16 reporting with respect to us under the Exchange Act and any such filing indicates by footnote disclosure or otherwise the nature of the transfer or disposition);

- transfers or dispositions of shares of common stock or any security convertible into or exercisable or exchangeable for common stock to us pursuant to any contractual arrangement in effect on the date such person entered into the lock-up agreement and as disclosed to the underwriters that provides for the repurchase of such person's common stock or other securities by us or in connection with the termination of such person's employment with or service to us; provided that no filing under Section 16(a) of the Exchange Act reporting a reduction in beneficial ownership of shares of our common stock is required or voluntarily made during the restricted period (other than any Form 4 or Form 5 required to be filed under the Exchange Act if such person is subject to Section 16 reporting with respect to us under the Exchange Act and any such filing indicates by footnote disclosure or otherwise the nature of the transfer or disposition);
- the conversion of shares of preferred stock outstanding as of the date of this prospectus into shares of common stock, provided that such shares received upon conversion are subject to the same restrictions;
- the exercise of stock options to purchase shares of common stock granted under any equity incentive plan described in this prospectus and any related transfer to us of shares of common stock, including by way of "net" or "cashless" exercise solely to cover withholding tax obligations and any transfer to us for payment of taxes; provided that any shares received upon exercise of such options are subject to the same restrictions, and that no filing under Section 16(a) of the Exchange Act reporting a reduction in beneficial ownership of shares of our common stock is required or voluntarily made during the restricted period (other than a filing on Form 4 that reports such disposition under the transaction code "F");
- the establishment of a trading plan pursuant to Rule 10b5-1 under the Exchange Act for the transfer of shares of common stock, provided that (a) such plan does not provide for the transfer of common stock during the restricted period and (b) to the extent a public announcement or filing under the Exchange Act, if any, is required or voluntarily made regarding the establishment of such plan, such announcement or filing shall include a statement to the effect that no transfer of common stock may be made under such plan during the restricted period; or
- (a) transfers of shares of common stock or any securities convertible into, or exercisable or exchangeable for, common stock pursuant to a bona fide third-party tender offer for shares of our capital stock made to all holders of our securities, merger, consolidation or other similar transaction approved by our board of directors the result of which is that any person (as defined in Section 13(d)(3) of the Exchange Act), or group of persons, other than us, becomes the beneficial owner (as defined in Rules 13d-3 and 13d-5 of the Exchange Act) of more than 50% of the total voting power of our voting stock and (b) entry into any lock-up, voting or similar agreement pursuant to which the undersigned may agree to transfer, sell, tender or otherwise dispose of shares of common stock or such other securities in connection with a transaction described in (a), provided that in the event that such change of control transaction is not completed, the common stock or any security convertible into or exercisable or exchangeable for common stock owned by such person will remain subject to the same restrictions.

The restrictions on transfers or other dispositions by us described above do not apply to:

- the shares to be sold in this offering;
- the issuance by us of shares of common stock or securities convertible into or exercisable for shares of common stock upon the exercise of an option or warrant or the conversion of a security outstanding on the date of this prospectus and described herein;
- facilitating the establishment of a trading plan on behalf of one of our shareholders, officers or directors pursuant to Rule 10b5-1 under the Exchange Act for the transfer of shares of common stock,

provided that such plan does not provide for the transfer of common stock during the restricted period and, to the extent a public announcement or filing under the Exchange Act is required of or voluntarily made by us regarding the establishment of such plan, such announcement or filing shall include a statement to the effect that no transfer of common stock may be made under such plan during the restricted period;

- the grant of any options to purchase shares of common stock or other awards granted under a stock incentive plan or stock purchase plan described in this prospectus, and the issuance by us of shares of common stock upon the exercise thereof, provided that each recipient of such grant executes and delivers a lock-up agreement;
- our filing of any registration statement on Form S-8 or a successor form relating to the shares of common stock granted pursuant to or reserved for issuance under a stock incentive plan or stock purchase plan described in this prospectus; or
- shares of common stock or other securities issued in connection with a transaction with an unaffiliated third party that includes a debt financing or a bona fide commercial relationship (including joint ventures, marketing or distribution arrangements, collaboration agreements, or intellectual property license agreements) or any acquisition of assets or acquisition of not less than a majority or controlling portion of the equity of another entity, provided that (1) the aggregate number of shares issued does not exceed % of the total number of outstanding shares of our common stock immediately following the closing of this offering and (2) the recipient of any such shares during the restricted period enters into a lock-up agreement.

Morgan Stanley & Co. LLC, Citigroup Global Markets Inc. and SVB Leerink LLC, in their sole discretion, may release the common stock and other securities subject to the lock-up agreements described above in whole or in part at any time.

In order to facilitate the offering of the common stock, the underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of the common stock. Specifically, the underwriters may sell more shares than they are obligated to purchase under the underwriting agreement, creating a short position. A short sale is covered if the short position is no greater than the number of shares available for purchase by the underwriters under the over-allotment option. The underwriters can close out a covered short sale by exercising the over-allotment option or purchasing shares in the open market. In determining the source of shares to close out a covered short sale, the underwriters will consider, among other things, the open market price of shares compared to the price available under the over-allotment option. The underwriters may also sell shares in excess of the over-allotment option, creating a naked short position. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the common stock in the open market after pricing that could adversely affect investors who purchase in this offering. As an additional means of facilitating this offering, the underwriters may bid for, and purchase, shares of common stock in the open market to stabilize the price of the common stock. These activities may raise or maintain the market price of the common stock above independent market levels or prevent or retard a decline in the market price of the common stock. The underwriters are not required to engage in these activities and may end any of these activities at any time.

We and the underwriters have agreed to indemnify each other against certain liabilities, including liabilities under the Securities Act.

A prospectus in electronic format may be made available on websites maintained by one or more underwriters, or selling group members, if any, participating in this offering. The representatives may agree to allocate a number of shares of common stock to underwriters for sale to their online brokerage account holders. Internet distributions will be allocated by the representatives to underwriters that may make Internet distributions on the same basis as other allocations.

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their respective affiliates have, from time to time, performed, and may in the future perform, various financial advisory and investment banking services for us, for which they received or will receive customary fees and expenses.

In addition, in the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investment and securities activities may involve our securities and instruments. The underwriters and their respective affiliates may also make investment recommendations or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long or short positions in such securities and instruments.

Pricing of the Offering

Prior to this offering, there has been no public market for our common stock. The initial public offering price was determined by negotiations between us and the representatives. Among the factors considered in determining the initial public offering price were our future prospects and those of our industry in general, our sales, earnings and certain other financial and operating information in recent periods, and the price-earnings ratios, price-sales ratios, market prices of securities and certain financial and operating information of companies engaged in activities similar to ours.

Selling Restrictions

Canada

The shares may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 *Prospectus Exemptions* or subsection 73.3(1) of the *Securities Act* (Ontario), and are permitted clients, as defined in National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations*. Any resale of the shares must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 *Underwriting Conflicts* (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Regulation, or each, a Relevant Member State, an offer to the public of any shares of our common stock may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any shares of our common stock may be made at any time under the following exemptions under the Prospectus Regulation, if they have been implemented in that Relevant Member State:

(i) to any legal entity which is a qualified investor as defined in the Prospectus Regulation;

(ii) to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Regulation), subject to obtaining the prior consent of the representatives for any such offer; or

(iii) in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of shares of our common stock shall result in a requirement for the publication by us or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Regulation.

For the purposes of this provision, the expression an "offer to the public" in relation to any shares of our common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares of our common stock to be offered so as to enable an investor to decide to purchase any shares of our common stock, and the expression "Prospectus Regulation" means Regulation (EU) 2017/1129.

United Kingdom

Each underwriter has represented and agreed that:

(i) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity within the meaning of Section 21 of the Financial Services and Markets Act 2000, or FSMA, received by it in connection with the issue or sale of the shares of our common stock in circumstances in which Section 21(1) of the FSMA does not apply to us; and

(ii) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the shares of our common stock in, from or otherwise involving the United Kingdom.

Hong Kong

Shares of our common stock may not be offered or sold by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies Ordinance (Cap.32, Laws of Hong Kong), (ii) to "professional investors" within the meaning of the Securities and Futures Ordinance (Cap.571, Laws of Hong Kong) and any rules made thereunder or (iii) in other circumstances which do not result in the document being a "prospectus" within the meaning of the Companies Ordinance (Cap.32, Laws of Hong Kong), and no advertisement, invitation or document relating to shares of our common stock may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the laws of Hong Kong) other than with respect to shares of our common stock which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" within the meaning of the Securities and Futures Ordinance (Cap.571, Laws of Hong Kong) and any rules made thereunder.

Japan

No registration pursuant to Article 4, paragraph 1 of the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948, as amended), or the FIEL has been made or will be made with respect to the solicitation of the application for the acquisition of the shares of common stock.

Accordingly, the shares of common stock have not been, directly or indirectly, offered or sold and will not be, directly or indirectly, offered or sold in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organized under the laws of Japan) or to others for re-offering or re-sale, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan except pursuant to an exemption from the registration requirements, and otherwise in compliance with, the FIEL and the other applicable laws and regulations of Japan.

For Qualified Institutional Investors, or QII

Please note that the solicitation for newly-issued or secondary securities (each as described in Paragraph 2, Article 4 of the FIEL) in relation to the shares of common stock constitutes either a “QII only private placement” or a “QII only secondary distribution” (each as described in Paragraph 1, Article 23-13 of the FIEL). Disclosure regarding any such solicitation, as is otherwise prescribed in Paragraph 1, Article 4 of the FIEL, has not been made in relation to the shares of common stock. The shares of common stock may only be transferred to QIIs.

For Non-QII Investors

Please note that the solicitation for newly-issued or secondary securities (each as described in Paragraph 2, Article 4 of the FIEL) in relation to the shares of common stock constitutes either a “small number private placement” or a “small number private secondary distribution” (each as is described in Paragraph 4, Article 23-13 of the FIEL). Disclosure regarding any such solicitation, as is otherwise prescribed in Paragraph 1, Article 4 of the FIEL, has not been made in relation to the shares of common stock. The shares of common stock may only be transferred en bloc without subdivision to a single investor.

Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of shares of our common stock may not be circulated or distributed, nor may the shares of our common stock be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore, or the SFA, (ii) to a relevant person, or any person pursuant to Section 275(1A), and in accordance with the conditions, specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where shares of our common stock are subscribed or purchased under Section 275 by a relevant person which is: (i) a corporation (which is not an accredited investor) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or (ii) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary is an accredited investor, shares, debentures and units of shares and debentures of that corporation or the beneficiaries’ rights and interest in that trust shall not be transferable for 6 months after that corporation or that trust has acquired shares of our common stock under Section 275 except: (a) to an institutional investor under Section 274 of the SFA or to a relevant person, or any person pursuant to Section 275(1A), and in accordance with the conditions, specified in Section 275 of the SFA; (b) where no consideration is given for the transfer; or (c) by operation of law.

LEGAL MATTERS

The validity of the shares of common stock offered hereby is being passed upon for us by Wilmer Cutler Pickering Hale and Dorr LLP, Boston, Massachusetts. Cooley LLP, Boston, Massachusetts, is acting as counsel for the underwriters in connection with this offering.

EXPERTS

The consolidated financial statements of IMARA Inc. at December 31, 2018 and 2017, and for each of the two years in the period ended December 31, 2018, appearing in this Prospectus and Registration Statement have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon (which contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's ability to continue as a going concern as described in Note 1 to the consolidated financial statements) appearing elsewhere herein, and are included in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the shares of common stock we are offering to sell. This prospectus, which constitutes part of the registration statement, does not include all of the information contained in the registration statement and the exhibits, schedules and amendments to the registration statement. For further information with respect to us and our common stock, we refer you to the registration statement and to the exhibits and schedules to the registration statement. Statements contained in this prospectus about the contents of any contract, agreement or other document are not necessarily complete, and, in each instance, we refer you to the copy of the contract, agreement or other document filed as an exhibit to the registration statement. Each of these statements is qualified in all respects by this reference to such contract, agreement or document.

Upon the completion of the offering, we will be subject to the informational requirements of the Exchange Act and will file annual, quarterly and current reports, proxy statements and other information with the SEC. You can read our SEC filings, including the registration statement, at the SEC's website at www.sec.gov. We also maintain a website at www.imaratx.com and upon completion of the offering, you may access, free of charge, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports, as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. The information contained on, or that can be accessed through, our website is not a part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

IMARA INC.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of IMARA Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of IMARA Inc. (the Company) as of December 31, 2017 and 2018, the related consolidated statements of operations, convertible preferred stock and stockholders' (deficit) equity, and cash flows for the years then ended, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2017 and 2018, and the results of its operations and its cash flows for the years then ended in conformity with U.S. generally accepted accounting principles.

The Company's Ability to Continue as a Going Concern

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the consolidated financial statements, the Company has suffered recurring losses from operations, has limited financial resources, and has stated that substantial doubt exists about the Company's ability to continue as a going concern. Management's evaluation of the events and conditions and management's plans regarding these matters are also described in Note 1. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2018.
Boston, Massachusetts
August 15, 2019

IMARA INC.

CONSOLIDATED BALANCE SHEETS

(in thousands, except share and per share data)

	DECEMBER 31,		JUNE 30,	PRO FORMA JUNE 30,
	2017	2018	2019	2019
			(Unaudited)	(Unaudited)
ASSETS				
Current assets:				
Cash and cash equivalents	$ 9,671	$ 7,382	$ 45,233	$ 45,233
Prepaid expenses and other current assets	552	323	437	437
Total current assets	10,223	7,705	45,670	45,670
Property and equipment, net	—	—	81	81
Other assets	—	—	143	143
Total assets	$ 10,223	$ 7,705	$ 45,894	$ 45,894
LIABILITIES, CONVERTIBLE PREFERRED STOCK & STOCKHOLDERS' (DEFICIT) EQUITY				
Current liabilities:				
Accounts payable	$ 431	$ 908	$ 1,672	$ 1,672
Accrued expenses and other current liabilities	395	924	2,041	2,041
Total current liabilities	826	1,832	3,713	3,713
Deferred rent	—	—	32	32
Preferred stock tranche obligation	660	—	—	—
Total liabilities	1,486	1,832	3,745	3,745
Commitments and contingencies (Note 6)				
Series Seed convertible preferred stock, par value of $0.001 per share; 3,000,000 shares authorized as of December 31, 2017 and 2018 and 2,712,960 shares authorized as of June 30, 2019 (unaudited); 2,712,960 shares issued and outstanding as of December 31, 2017 and 2018 and June 30, 2019 (unaudited); liquidation value of $2,713 as of December 31, 2018 and June 30, 2019 (unaudited); no shares authorized, issued or outstanding, pro forma as of June 30, 2019 (unaudited)	1,460	1,460	1,460	—
Series A convertible preferred stock, par value of $0.001 per share; 31,000,000, 31,499,069, and 31,499,040 shares authorized as of December 31, 2017 and 2018 and June 30, 2019 (unaudited), respectively; 24,999,971, 31,499,040 and 31,499,040 shares issued and outstanding as of December 31, 2017 and 2018 and June 30, 2019 (unaudited), respectively; liquidation value of $31,499 as of December 31, 2018 and June 30, 2019 (unaudited); no shares authorized, issued or outstanding, pro forma as of June 30, 2019 (unaudited)	22,811	30,729	30,729	—
Series B convertible preferred stock, par value of $0.001 per share; no shares authorized, issued or outstanding as of December 31, 2017 and 2018; 36,166,661 shares authorized and 26,321,313 shares issued and outstanding as of June 30, 2019 (unaudited); liquidation value of $45,849 as of June 30, 2019 (unaudited); no shares authorized, issued or outstanding, pro forma as of June 30, 2019 (unaudited)	—	—	45,575	—
Stockholders' (deficit) equity:				
Common stock, par value of $0.001 per share; 43,758,565, 46,181,399 and 100,000,000 shares authorized as of December 31, 2017 and 2018 and June 30, 2019 (unaudited), respectively; 4,424,919 shares issued and outstanding as of December 31, 2017 and 2018 and June 30, 2019 (unaudited), respectively; 64,958,232 shares issued and outstanding, pro forma as of June 30, 2019 (unaudited)	4	4	4	65
Additional paid-in capital	4,415	4,970	5,262	82,965
Accumulated deficit	(19,953)	(31,290)	(40,881)	(40,881)
Total stockholders' (deficit) equity	(15,534)	(26,316)	(35,615)	42,149
Total liabilities, convertible preferred stock and stockholders' (deficit) equity	$ 10,223	$ 7,705	$ 45,894	$ 45,894

The accompanying notes are an integral part of these consolidated financial statements.

IMARA INC.

CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands, except share and per share data)

	YEAR ENDED DECEMBER 31,		SIX MONTHS ENDED JUNE 30,	
	2017	2018	2018 (Unaudited)	2019 (Unaudited)
Operating expenses:				
Research and development	$ 7,918	$ 8,239	$ 4,137	$ 7,926
General and administrative	987	2,438	942	1,825
Total operating expenses	8,905	10,677	5,079	9,751
Loss from operations	(8,905)	(10,677)	(5,079)	(9,751)
Total other income (expense):				
Interest income	—	—	—	160
Other income (expense), net	9,126	(660)	(300)	—
Total other income (expense), net	9,126	(660)	(300)	160
Net income (loss)	$ 221	$ (11,337)	$ (5,379)	$ (9,591)
Net income attributable to Series A preferred stock—basic	$ 221	$ —	$ —	$ —
Net loss attributable to common stockholders—basic and diluted	$ —	$ (11,337)	$ (5,379)	$ (9,591)
Weighted-average common shares outstanding—basic and diluted	3,779,695	4,424,919	4,424,919	4,424,919
Net loss per share attributable to common stockholders—basic and diluted	$ —	$ (2.56)	$ (1.22)	$ (2.17)
Pro forma net loss per share attributable to common stockholders—basic and diluted (unaudited)		$ (0.35)		$ (0.18)
Pro forma weighted-average common stock outstanding—basic and diluted (unaudited)		32,707,631		53,926,162

The accompanying notes are an integral part of these consolidated financial statements.

IMARA INC.

CONSOLIDATED STATEMENTS OF CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' (DEFICIT) EQUITY

(in thousands, except share and per share data)

	CONVERTIBLE PREFERRED STOCK						COMMON STOCK $0.001 PAR VALUE		ADDITIONAL PAID-IN CAPITAL	ACCUMULATED DEFICIT	TOTAL STOCKHOLDERS' (DEFICIT) EQUITY
	SERIES SEED $0.001 PAR VALUE		SERIES A $0.001 PAR VALUE		SERIES B $0.001 PAR VALUE						
	SHARES	AMOUNT	SHARES	AMOUNT	SHARES	AMOUNT	SHARES	AMOUNT			
Balance at December 31, 2016	2,712,960	$ 1,460	13,999,971	$ 12,531	—	$ —	3,426,976	$ 3	$ 3,537	$ (20,176)	$ (16,636)
Issuance of Series A convertible preferred stock, net of issuance costs of $0	—	—	11,000,000	10,280	—	—	—	—	—	—	—
Issuance of common stock for antidilution obligation	—	—	—	—	—	—	936,955	1	572	—	573
Vesting of restricted stock	—	—	—	—	—	—	60,988	—	—	—	—
Stock-based compensation expense	—	—	—	—	—	—	—	—	308	—	308
Adoption of ASU 2018-07	—	—	—	—	—	—	—	—	(2)	2	—
Net income	—	—	—	—	—	—	—	—	—	221	221
Balance at December 31, 2017	2,712,960	$ 1,460	24,999,971	$ 22,811	—	$ —	4,424,919	$ 4	$ 4,415	$ (19,953)	$ (15,534)
Issuance of Series A convertible preferred stock, net of issuance costs of $11	—	—	6,499,069	7,918	—	—	—	—	—	—	—
Stock-based compensation expense	—	—	—	—	—	—	—	—	555	—	555
Net loss	—	—	—	—	—	—	—	—	—	(11,337)	(11,337)
Balance at December 31, 2018	2,712,960	$ 1,460	31,499,040	$ 30,729	—	$ —	4,424,919	$ 4	$ 4,970	$ (31,290)	$ (26,316)
Issuance of Series B convertible preferred stock, net of issuance costs of $274 (unaudited)	—	—	—	—	26,321,313	45,575	—	—	—	—	—
Stock-based compensation expense (unaudited)	—	—	—	—	—	—	—	—	292	—	292
Net loss (unaudited)	—	—	—	—	—	—	—	—	—	(9,591)	(9,591)
Balance at June 30, 2019 (unaudited)	2,712,960	$ 1,460	31,499,040	$ 30,729	26,321,313	$ 45,575	4,424,919	$ 4	$ 5,262	$ (40,881)	$ (35,615)
Conversion of convertible preferred stock into common stock (unaudited)	(2,712,960)	(1,460)	(31,499,040)	(30,729)	(26,321,313)	(45,575)	60,533,313	61	77,703	—	77,764
Pro forma balance at June 30, 2019 (unaudited)	—	$ —	—	$ —	—	$ —	64,958,232	$ 65	$ 82,965	$ (40,881)	$ 42,149

The accompanying notes are an integral part of these consolidated financial statements.

IMARA INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)

	YEAR ENDED DECEMBER 31,		SIX MONTHS ENDED JUNE 30,	
	2017	2018	2018 (Unaudited)	2019 (Unaudited)
Cash flows from operating activities:				
Net income (loss)	$ 221	$(11,337)	$ (5,379)	$ (9,591)
Adjustments to reconcile net income (loss) to net cash used in operating activities:				
Stock-based compensation expense	308	555	389	292
Change in fair value of the preferred stock tranche liability	(9,060)	660	300	—
Change in fair value of the antidilution liability	(66)	—	—	—
Non-cash research and development expense	—	110	—	—
Changes in operating assets and liabilities:				
Prepaid expenses and other current assets	131	229	421	(114)
Accounts payable	(666)	477	279	764
Accrued expenses and other current liabilities	347	529	(187)	1,062
Deferred rent	—	—	—	32
Net cash used in operating activities	(8,785)	(8,777)	(4,177)	(7,555)
Cash flows from investing activities:				
Purchases of property and equipment	—	—	—	(81)
Net cash used in investing activities	—	—	—	(81)
Cash flows from financing activities:				
Proceeds from issuance of Series A convertible preferred stock, net of issuance costs	11,000	6,488	—	—
Proceeds from issuance of Series B convertible preferred stock, net of issuance costs	—	—	—	45,575
Net cash provided by financing activities	11,000	6,488	—	45,575
Net increase (decrease) in cash, cash equivalents and restricted cash	$ 2,215	$ (2,289)	$ (4,177)	$ 37,939
Cash, cash equivalents and restricted cash, beginning of period	$ 7,456	$ 9,671	$ 9,671	$ 7,382
Cash, cash equivalents and restricted cash, end of period	$ 9,671	$ 7,382	$ 5,494	$ 45,321
Supplemental disclosure of non-cash financing activities:				
Settlement of the preferred stock tranche obligation upon issuance of Series A convertible preferred stock	$ (720)	$ 1,320	$ —	$ —
Issuance of common stock in settlement of the antidilution liability	$ 573	$ —	$ —	$ —
Deferred offering costs included in accrued expenses	$ —	$ —	$ —	$ 55

The following table provides a reconciliation of the cash, cash equivalents, and restricted cash balances as of each of the periods shown above:

	YEAR ENDED DECEMBER 31,		SIX MONTHS ENDED JUNE 30,	
	2017	2018	2018 (Unaudited)	2019 (Unaudited)
Cash and cash equivalents	$ 9,671	$ 7,382	$ 5,494	$ 45,233
Restricted cash (included in other assets)	—	—	—	88
Total cash, cash equivalents and restricted cash	$ 9,671	$ 7,382	$ 5,494	$ 45,321

The accompanying notes are an integral part of these consolidated financial statements.

IMARA INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(INFORMATION AS OF JUNE 30, 2019 AND FOR THE SIX MONTHS ENDED JUNE 30, 2018 AND JUNE 30, 2019 IS UNAUDITED)

1. Nature of the Business

IMARA Inc. ("IMARA" or the "Company") is a clinical-stage biopharmaceutical company dedicated to developing and commercializing novel therapeutics to treat rare inherited genetic disorders of hemoglobin, known as hemoglobinopathies, which have significant unmet medical need. The Company was incorporated in January 2016 under the laws of the State of Delaware, and its principal offices are in Boston, Massachusetts.

The Company is subject to risks and uncertainties common to early-stage companies in the biotechnology industry, including but not limited to, risks associated with completing preclinical studies and clinical trials, receiving regulatory approvals for product candidates, development by competitors of new biopharmaceutical products, dependence on key personnel, protection of proprietary technology, compliance with government regulations and the ability to secure additional capital to fund operations. The Company's sole product candidate currently under development, IMR-687, as well as any other product candidates the Company may develop, will require significant additional research and development efforts, including preclinical and clinical testing and regulatory approval, prior to commercialization. These efforts require significant amounts of additional capital, adequate personnel and infrastructure and extensive compliance-reporting capabilities. Even if the Company's product development efforts are successful, it is uncertain when, if ever, the Company will realize revenue from product sales.

The Company has funded its operations primarily with proceeds from the sale of Series Seed convertible preferred stock ("Series Seed Preferred Stock"), Series A convertible preferred stock ("Series A Preferred Stock") and Series B convertible preferred stock ("Series B Preferred Stock"), collectively referred to as "Preferred Stock."

Going Concern

In accordance with the Financial Accounting Standards Board ("FASB") Accounting Standards Update ("ASU") 2014-15, *Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern (Subtopic 205-40)*, the Company has evaluated whether there are conditions and events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern within one year after the date that the consolidated financial statements are issued.

The Company has incurred recurring negative cash flows since inception and has funded its operations primarily with proceeds from the sale of Preferred Stock. The Company had an accumulated deficit of $20.0 million and $31.3 million as of December 31, 2017 and 2018, respectively, and $40.9 million as of June 30, 2019. The Company had net income of $0.2 million for the year ended December 31, 2017, primarily related to changes in fair value of the Company's preferred stock tranche obligation, and had a net loss of $11.3 million for the year ended December 31, 2018. The Company had net losses of $5.4 million and $9.6 million for the six months ended June 30, 2018 and June 30, 2019, respectively. The Company expects to continue to incur significant expenses and operating losses for the foreseeable future.

As of August 15, 2019, the issuance date of these consolidated financial statements, the Company expects that its cash as of December 31, 2018 of $7.4 million, together with the $45.8 million of gross proceeds received from the closing of the first tranche of the Series B Preferred Stock financing in March 2019 (see Note 7) and the additional early participation from an investor for the second tranche, will not be sufficient to fund the operating

expenses and capital expenditure requirements necessary to advance its research efforts and clinical trials through August 15, 2020, and the Company will need to obtain additional funding. The future viability of the Company beyond that point is dependent on its ability to raise additional capital to finance its operations. The Company intends to pursue a public offering of its common stock to fund future operations. If the Company is unable to complete a public offering for a sufficient amount in a timely manner, it would need to pursue other financing alternatives such as private financing of debt or equity or collaboration agreements. There can be no assurances, however, that the current operating plan will be achieved or that additional funding will be available on terms acceptable to the Company, or at all.

Based on the Company's recurring losses since December 31, 2018 and negative cash flows from operations since inception, expectation of continuing operating losses and negative cash flows from operations for the foreseeable future, and the need to raise additional capital to finance its future operations, management concluded that there is substantial doubt about the Company's ability to continue as a going concern within one year after the issuance date of the consolidated financial statements.

The accompanying consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty. Accordingly, the consolidated financial statements have been prepared on a basis that assumes the Company will continue as a going concern, realize assets and satisfy liabilities and commitments in the ordinary course of business.

2. Summary of Significant Accounting Policies

Basis of presentation

The accompanying consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP"). Any reference in these notes to applicable guidance is meant to refer to the authoritative GAAP as found in the Accounting Standards Codification ("ASC") and as amended by Accounting Standards Updates of the Financial Accounting Standards Board ("FASB").

Principles of Consolidation

The accompanying consolidated financial statements of the Company include the accounts of its wholly owned subsidiary, IMARA E.U. Limited. All intercompany transactions and balances have been eliminated in consolidation.

Use of Estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of expenses during the reporting periods. Significant estimates and assumptions reflected in these consolidated financial statements include, but are not limited to, accrued research and development expenses, stock-based compensation expense, the fair value of the common stock and Preferred Stock and income taxes. Actual results could differ materially from those estimates.

Unaudited Interim Financial Information

The accompanying consolidated balance sheet as of June 30, 2019, the consolidated statements of operations and statements of cash flows for the six months ended June 30, 2018 and 2019 and the consolidated statements of convertible preferred stock and stockholders' (deficit) equity for the six months ended June 30, 2019 are unaudited. The unaudited interim financial statements have been prepared on the same basis as the

audited annual financial statements, and in the opinion of management reflect all adjustments, which include only normal recurring adjustments necessary for the fair statement of the Company's financial position as of June 30, 2019 and the results of its operations and its cash flows for the six months ended June 30, 2018 and 2019. The financial data and other information disclosed in these notes related to the six months ended June 30, 2018 and 2019 are also unaudited. The results for the six months ended June 30, 2019 are not necessarily indicative of results to be expected for the year ended December 31, 2019, any other interim periods, or any future year or period.

Unaudited Pro Forma Financial Information

The accompanying unaudited pro forma consolidated balance sheet as of June 30, 2019 has been prepared to give effect, upon the closing of a qualified initial public offering, to the automatic conversion of all outstanding Preferred Stock into 60,533,313 shares of common stock.

The unaudited pro forma basic and diluted weighted-average common shares outstanding used in the calculation of unaudited pro forma basic and diluted net loss per share attributable to common stockholders for the year ended December 31, 2018 and the six months ended June 30, 2019 have been prepared to give effect, upon a qualified initial public offering, to the automatic conversion of all outstanding shares of Preferred Stock into common stock as if the proposed initial public offering ("IPO") had occurred on the later of the beginning of each period or the issuance date of the Preferred Stock.

Segments

Operating segments are defined as components of an enterprise for which separate and discrete information is available for evaluation by the chief operating decision-maker in deciding how to allocate resources and assess performance. The Company has one operating segment. The Company's chief operating decision maker, its Chief Executive Officer, manages the Company's operations on a consolidated basis for the purpose of allocating resources. All of the Company's long-lived assets are held in the United States.

Cash and Cash Equivalents

The Company considers all highly liquid investments that are readily convertible into cash with original maturities of three months or less from the date of purchase to be cash equivalents. Cash and cash equivalents include cash held in banks and amounts held in money market funds. Cash equivalents are stated at cost, which approximates market value. The Company had no cash equivalents as of December 31, 2017 and 2018.

Restricted Cash

Restricted cash as of June 30, 2019 represents a letter of credit held as collateral in support of the Company's facility lease. Restricted cash is included as a component of other assets on the Company's consolidated balance sheets. The Company had no restricted cash as of December 31, 2017 and 2018.

Deferred Offering Costs

The Company capitalizes certain legal, professional, accounting and other third-party fees that are directly associated with in-process equity issuances as deferred offering costs until such equity issuances are consummated. After consummation of the equity issuance, these costs are recorded as a reduction in the capitalized amount associated with the equity issuance. Should the equity issuance be abandoned, the deferred offering costs will be expensed immediately as a charge to operating expenses in the consolidated statement of operations. Deferred offering costs as of June 30, 2019 were $0.1 million. No deferred offering costs were capitalized as of December 31, 2017 and 2018. Such costs are classified in other assets in the accompanying consolidated balance sheets.

Concentrations of Credit Risk and Off-Balance Sheet Risk

Financial instruments that potentially expose the Company to concentrations of credit risk consist primarily of cash and cash equivalents. Periodically, the Company maintains deposits in accredited financial institutions in excess of federally insured limits. The Company deposits its cash in financial institutions that it believes have high credit quality and have not experienced any losses on such accounts and does not believe it is exposed to any unusual credit risk beyond the normal credit risk associated with commercial banking relationships. Such deposits have and will continue to exceed federally insured limits. The Company has not experienced any losses on its cash deposits.

As of December 31, 2017 and 2018 and June 30, 2019, the Company had no off-balance sheet risk such as foreign exchange contracts, option contracts, or other hedging arrangements.

Comprehensive Income (Loss)

Comprehensive income (loss) includes net income (loss) and certain changes in stockholders' (deficit) equity that are excluded from net income (loss). The Company's comprehensive income (loss) was equal to net income (loss) for the years ended December 31, 2017 and 2018 and the six months ended June 30, 2018 and 2019.

Fair Value Measurements

Certain assets and liabilities of the Company are carried at fair value under GAAP. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. Financial assets and liabilities carried at fair value are to be classified and disclosed in one of the following three levels of the fair value hierarchy, of which the first two are considered observable and the last is considered unobservable:

- Level 1—Quoted prices in active markets for identical assets or liabilities.
- Level 2—Observable inputs (other than Level 1 quoted prices), such as quoted prices in active markets for similar assets or liabilities, quoted prices in markets that are not active for identical or similar assets or liabilities, or other inputs that are observable or can be corroborated by observable market data.
- Level 3—Unobservable inputs that are supported by little or no market activity that are significant to determining the fair value of the assets or liabilities, including pricing models, discounted cash flow methodologies and similar techniques.

To the extent that the valuation is based on models or inputs that are less observable or unobservable in the market, the determination of fair value requires more judgment. Accordingly, the degree of judgment exercised by the Company in determining fair value is greatest for instruments categorized in Level 3. A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement.

An entity may choose to measure many financial instruments and certain other items at fair value at specified election dates. Subsequent unrealized gains and losses on items for which the fair value option has been elected will be reported in earnings.

The carrying amounts reflected in the consolidated balance sheets for prepaid expenses and other current assets, accounts payable and accrued expenses approximate their fair values due to their short-term nature of these assets and liabilities.

Property and Equipment, Net

Property and equipment is stated at cost, net of accumulated depreciation. Depreciation is calculated using the straight-line method over the estimated useful lives of the assets, which are as follows:

	Estimated Useful Life
Computer equipment and software	3 years
Furniture and fixtures	5 years
Laboratory equipment	5 years
Leasehold improvements	Shorter of useful life or remaining lease term

Purchased assets that are not yet in service are recorded to construction-in-process and no depreciation expense is recorded. Once they are placed in service they are reclassified to the appropriate asset class. Upon the retirement or sale of an asset, the related cost and accumulated depreciation is removed from the accounts and any resulting gain or loss is recorded to other income (expense), net. Expenditures for maintenance and repairs are expensed as incurred.

As of June 30, 2019, the Company only had furniture and fixtures that have not been placed into service, accordingly, no depreciation expense has been incurred in the six months ended June 30, 2019.

Research and Development Expenses

Research and development costs are expensed as incurred. Research and development expenses consist of costs incurred in performing research and development activities, including salaries, stock-based compensation and benefits, facilities costs, depreciation, third-party license fees, and external costs of outside vendors engaged to conduct preclinical development activities and clinical trials as well as to manufacture research and development materials. Non-refundable prepayments for goods or services that will be used or rendered for future research and development activities are deferred and capitalized. Such amounts are expensed as the goods are delivered or the related services are performed or until it is no longer expected that the goods will be delivered, or the services rendered.

Costs incurred in obtaining technology licenses are recognized as research and development expense as incurred if the technology licensed has not reached technological feasibility and has no alternative future uses.

Accrued Research and Development Expenses

The Company has entered into various research and development related contracts with parties both inside and outside of the United States, including contracts with third-party contract research organizations and contract manufacturing organizations. These agreements are cancelable, and related payments are recognized as research and development expenses as incurred. The Company records accrued liabilities for estimated ongoing research costs. When evaluating the adequacy of the accrued liabilities, the Company analyzes the progress of the studies or clinical trials, including the phase or completion of events, invoices received and contracted costs. Significant judgments and estimates are made in determining the accrued balances at the end of any reporting period. Actual results could differ from the Company’s estimates. The Company’s historical accrual estimates have not been materially different from the actual costs.

Patent Costs

All patent-related costs incurred in connection with filing and prosecuting patent applications are expensed as incurred due to the uncertainty about the recovery of the expenditure and are classified as general and administrative expenses.

Stock-Based Compensation

The Company accounts for all stock-based awards granted to employees and non-employees as stock-based compensation expense at fair value. For stock-based awards issued to employees and members of the Company's board of directors (the "Board") for their services as a member of the Board, the Company measures the estimated fair value of the stock-based award on the date of grant.

The Company determines the fair value of the underlying common stock based on input from management and approved by the Board, which utilizes the valuation of the Company's enterprise value determined utilizing various methods including the back-solve method, the option-pricing method ("OPM") or a hybrid of the probability-weighted expected return method ("PWERM") and the OPM. The total enterprise value is then allocated to the various outstanding equity instruments, including the underlying common stock, utilizing the option-pricing model.

For employee awards, the Company recognizes compensation expense over the requisite service period, which is generally the vesting period of the respective award. For non-employee awards, compensation expense is recognized as the services are provided, which is generally ratably over the vesting period. Prior to the adoption of ASU No. 2018-07, "*(Topic 718) Compensation—Stock Compensation, Improvements to Non-employee Share-Based Payment Accounting*," ("ASU 2018-07") on January 1, 2017, as discussed under "Recently Adopted Accounting Pronouncements," the measurement date for non-employee awards was the date of commencement of services, resulting in adjustments to stock-based compensation for changes in the fair value of the awards at each financial reporting period. After the adoption of ASU 2018-07, the measurement date for non-employee awards is the later of the adoption date of ASU 2018-07 or the date of grant, and the awards are no longer remeasured at each reporting period. The adoption did not have a material impact on the Company's consolidated financial statements. For awards that include performance-based vesting conditions expense is recognized using the accelerated attribution method when the performance condition is deemed to be probable. The Company accounts for forfeitures as they occur. The Company determines the fair value of restricted stock awards in reference to the fair value of its common stock less any applicable purchase price.

The fair value of each stock option grant is estimated on the date of grant using the Black-Scholes option-pricing model, which requires inputs based on certain subjective assumptions, including the expected stock price volatility, the expected term of the option, the risk-free interest rate for a period that approximates the expected term of the option and the Company's expected dividend yield. The fair value of each restricted stock award is estimated on the date of grant based on the fair value of the Company's common stock on that same date. As there is no public market for its common stock, the Company determines the volatility for awards granted based on an analysis of reported data for a group of guideline companies that issued options with substantially similar terms. The expected volatility has been determined using a weighted-average of the historical volatility measures of this group of guideline companies. The Company expects to continue to do so until such time as it has adequate historical data regarding the volatility of its own traded stock price. The expected term of the Company's stock options granted to employees has been determined utilizing the "simplified" method for awards that qualify as "plain-vanilla" options. Prior to the adoption of ASU 2018-07, the expected term for stock options granted to non-employees was equal to the contractual term of the options. After the adoption of ASU 2018-07, the Company elected to apply the nonpublic entity practical expedient for calculating the expected term of non-employee awards, using the midpoint between the vesting date and the contractual term, which is consistent with the method used for employee awards. The risk-free interest rate is determined by reference to the U.S. Treasury yield curve in effect at the time of grant of the award for time periods approximately equal to the expected term of the award. The Company has not paid, and does not anticipate paying, cash dividends on its common stock; therefore, the expected dividend yield is assumed to be zero.

The Company classifies stock-based compensation expense in its consolidated statements of operations in the same manner in which the award recipient's cash compensation costs are classified.

Income Taxes

The Company accounts for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the financial statements or the Company's tax returns. Under this method, deferred tax assets and liabilities are determined based on the differences between the consolidated financial statements and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. Changes in deferred tax assets and liabilities are recorded in the provision for income taxes. The Company assesses the likelihood that its deferred tax assets will be recovered from future taxable income and, to the extent it believes, based upon the weight of available evidence, that it is more likely than not that all or a portion of the deferred tax assets will not be realized, a valuation allowance is established.

The Company accounts for uncertain tax positions recognized in the consolidated financial statements by prescribing a more-likely-than-not threshold for financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. The provision for income taxes includes the effects of any resulting tax reserves, or unrecognized tax benefits, that are considered appropriate as well as the related net interest and penalties.

Net Income (Loss) per Share

Basic net income (loss) per share is computed by dividing net income (loss) by the weighted-average number of common shares outstanding during the period. Diluted net income (loss) per share is computed using the weighted-average number of common shares outstanding during the period and, if dilutive, the weighted-average number of potential shares of common stock. Net income (loss) per share attributable to common stockholders is calculated using the two-class method, which is an earnings allocation formula that determines net income (loss) per share for the holders of the Company's common shares and participating securities. The Company's Preferred Stock contains participation rights in any dividend paid by the Company and is deemed to be a participating security. Net income (loss) attributable to common stockholders and participating preferred shares are allocated to each share on an as-converted basis as if all of the earnings for the period had been distributed. The participating securities do not include a contractual obligation to share in losses of the Company and are not included in the calculation of net income (loss) per share in the periods in which a net loss is recorded.

Diluted net income (loss) per share is computed using the more dilutive of (a) the two-class method or (b) the if-converted method. The Company allocates earnings first to preferred stockholders based on dividend rights and then to common and preferred stockholders based on ownership interests. The weighted-average number of common shares included in the computation of diluted net income (loss) gives effect to all potentially dilutive common equivalent shares, including outstanding stock options and Preferred Stock. Common stock equivalent shares are excluded from the computation of diluted net income (loss) per share if their effect is antidilutive. In periods in which the Company reports a net income (loss) attributable to common stockholders, diluted net loss per share attributable to common stockholders is generally the same as basic net loss per share attributable to common stockholders since dilutive common shares are not assumed to have been issued if their effect is anti-dilutive.

Recently Adopted Accounting Pronouncements

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)* ("ASU 2014-09"), which modifies how all entities recognize revenue, and consolidates into one ASC (ASC Topic 606, Revenue from Contracts with Customers) the current guidance found in ASC Topic 605, and various other revenue accounting standards for specialized transactions and industries. ASU 2014-09 outlines a comprehensive five-step revenue recognition model based on the principle that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the

consideration to which the entity expects to be entitled in exchange for those goods or services. ASU 2014-09 may be applied using either a full retrospective approach, under which all years included in the consolidated financial statements will be presented under the revised guidance, or a modified retrospective approach, under which consolidated financial statements will be prepared under the revised guidance for the year of adoption, but not for prior years. The Company adopted this pronouncement as of January 1, 2017. The adoption of ASU 2014-09 had no impact on its consolidated financial statements.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments* ("ASU 2016-15"), to address diversity in practice in how certain cash receipts and cash payments are presented and classified in the consolidated statement of cash flows. For public entities, the standard is effective for annual periods beginning after December 15, 2017, including interim periods within those fiscal years. For all other entities, the standard is effective for fiscal years beginning after December 15, 2018, and interim periods within fiscal years beginning after December 15, 2019. The Company adopted ASU 2016-15 as of January 1, 2018. The adoption of ASU 2016-15 had no impact on its consolidated financial statements.

In November 2016, FASB issued ASU 2016-18, *Statements of Cash Flows (Topic 230): Restricted Cash* ("ASU 2016-18). The Amendments in this ASU require that a statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Therefore, amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of period total amounts shown on the statement of cash flows. The Company elected to early adopt ASU 2016-18 as of January 1, 2018. The adoption of ASU 2016-18 did not have a material impact on its consolidated financial statements.

In January 2017, the FASB issued ASU No. 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business* ("ASU 2017-01"). The amendments in this update clarify the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions or disposals of assets or businesses. The definition of a business affects many areas of accounting including acquisitions, disposals, goodwill and consolidation. For public entities, the standard is effective for annual periods beginning after December 15, 2017, including interim periods within those fiscal years. For all other entities, the standard is effective for annual periods beginning after December 15, 2018, including interim periods within annual periods beginning after December 15, 2019. The Company adopted ASU 2017-01 as of January 1, 2016. The adoption of ASU 2017-01 had no material impact on its consolidated financial statements.

In May 2017, the FASB issued ASU No. 2017-09, *Compensation—Stock Compensation (Topic 718): Scope of Modification Accounting* ("ASU 2017-09"), which clarifies when to account for a change to the terms or conditions of a share-based payment award as a modification. Under the new guidance, modification accounting is required only if the fair value, the vesting conditions, or the classification of the award (as equity or liability) changes as a result of the change in terms or conditions. The standard is effective for annual periods beginning after December 15, 2017. Early adoption is permitted, including adoption in any interim period, for (1) public business entities for reporting periods for which financial statements have not yet been issued and (2) all other entities for reporting periods for which financial statements have not yet been made available for issuance. The Company adopted ASU 2017-09 as of January 1, 2017. The adoption of ASU 2017-09 had no impact on its consolidated financial statements.

In June 2018, the FASB issued ASU 2018-07, *Compensation—Stock Compensation (Topic 718): Improvements to Non-employee Share-Based Payment Accounting* ("ASU 2018-07"), which aligns the measurement and classification guidance for share-based payments to non-employees with that for employees, with certain exceptions. It expands the scope of ASC 718 to include share-based payments granted to non-employees in exchange for goods or services used or consumed in the entity's own operations and

supersedes the guidance in ASC 505-50. The ASU retains the existing cost attribution guidance, which requires entities to recognize compensation cost for non-employee awards in the same period and in the same manner (i.e., capitalize or expense) they would if they paid cash for the goods or services, but it moves the guidance to ASC 718. The guidance also allows nonpublic entities to account for non-employee awards using certain practical expedients that are already available for employee awards, but the same accounting policies must be used for awards to both employees and non-employees. ASU 2018-07 is effective for fiscal years beginning after December 15, 2018, and interim periods within those fiscal years. Early adoption is permitted. The Company elected to early adopt ASU 2018-07 as of January 1, 2017. The adoption of ASU 2018-07 did not have a material impact on the Company's consolidated financial statements.

In November 2018, a release from the U.S. Securities and Exchange Commission (the "SEC"), entitled Disclosure Update and Simplification, became effective. The included amendments are intended to simplify and update the SEC's disclosure requirements and eliminate duplicative disclosures between the SEC rules and GAAP. The amendments included new interim financial statement disclosures to reconcile the beginning balance to the ending balance in convertible preferred stock and stockholders' (deficit) equity for each period for which an income statement is required to filed. Accordingly, the reconciliation of the beginning balance to the ending balance in convertible preferred stock and stockholders' deficit for the six months ended June 30, 2018 is as follows (in thousands, except share and per share data):

	CONVERTIBLE PREFERRED STOCK				COMMON STOCK				
	SERIES SEED $0.001 PAR VALUE		SERIES A $0.001 PAR VALUE		$0.001 PAR VALUE		ADDITIONAL PAID-IN CAPITAL	ACCUMULATED DEFICIT	TOTAL STOCKHOLDERS' DEFICIT
	SHARES	AMOUNT	SHARES	AMOUNT	SHARES	AMOUNT			
Balance at December 31, 2017	2,712,960	$ 1,460	24,999,971	$ 22,811	4,424,919	$ 4	$ 4,415	$ (19,953)	$ (15,534)
Stock-based compensation expense (unaudited)	—	—	—	—	—	—	389	—	389
Net loss (unaudited)	—	—	—	—	—	—	—	(5,379)	(5,379)
Balance at June 30, 2018 (unaudited)	2,712,960	$ 1,460	24,999,971	$ 22,811	4,424,919	$ 4	$ 4,804	$ (25,332)	$ (20,524)

Recently Issued Accounting Pronouncements

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)* ("ASU 2016-02"), which sets out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract (i.e., lessees and lessors). The new standard requires lessees to apply a dual approach, classifying leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine whether lease expense is recognized based on an effective interest method or on a straight-line basis over the term of the lease, respectively. A lessee is also required to record a right-of-use asset and a lease liability for all leases with a term of greater than 12 months regardless of their classification. Leases with a term of 12 months or less will be accounted for similar to existing guidance for operating leases today. ASU 2016-02 supersedes the previous leases standard, ASC 840, *Leases*. For public entities, not-for-profit entities and an employee benefit plan that files financial statements with the SEC, the standard is effective for public entities for annual periods beginning after December 15, 2018 including interim periods within those fiscal years. For all other entities, the standard is effective for fiscal years beginning after December 15, 2019, and interim periods within fiscal years beginning after December 15, 2020. Early adoption is permitted. The Company anticipates that the adoption of this standard will have an impact on its balance sheet due to the recognition of right-of-use assets and lease liabilities; however, the Company is still evaluating the impact that the adoption of ASU 2016-02 will have on its consolidated financial statements.

In July 2017, the FASB issued ASU 2017-11, *Earnings Per Share (Topic 260), Distinguishing Liabilities from Equity (Topic 480), Derivatives and Hedging (Topic 815) I. Accounting for Certain Financial Instruments with Down Round Features II. Replacement of the Indefinite Deferral for Mandatorily Redeemable Financial Instruments of Certain Nonpublic Entities and Certain Mandatorily Redeemable Noncontrolling Interests with a Scope Exception* ("ASU 2017-11"). Part I applies to entities that issue financial instruments such as warrants, convertible debt or convertible preferred stock that contain down-round features. Part II replaces the indefinite deferral for certain mandatorily redeemable noncontrolling interests and mandatorily redeemable financial instruments of nonpublic entities contained within ASC Topic 480 with a scope exception and does not impact the accounting for these mandatorily redeemable instruments. For public entities, the amendments in Part I of this update are effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018. For all other entities, the amendments in Part I of this update are effective for fiscal years beginning after December 15, 2019, and interim periods within fiscal years beginning after December 15, 2020. Early adoption is permitted for all entities, including adoption in an interim period. The Company is currently evaluating the impact that the adoption of ASU 2017-11 will have on its consolidated financial statements.

3. Fair Value of Financial Assets and Liabilities

During the year ended December 31, 2018, the Company had Level 3 financial liabilities that were measured at fair value on a recurring basis that were no longer outstanding as of December 31, 2018. As of June 30, 2019 the Company's cash equivalents consisted of money market funds, classified as Level 1 financial assets, as these assets are valued using quoted market prices in active markets without any valuation adjustment. The following table presents information about the Company's financial assets and liabilities measured at fair value on a recurring basis and indicates the level of the fair value hierarchy utilized to determine such fair values as of December 31, 2017 and June 30, 2019 (in thousands):

Description	December 31, 2017	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Observable Inputs (Level 3)
Liability				
Preferred stock tranche obligation	$ 660	$ —	$ —	$ 660
Total financial liabilities	$ 660	$ —	$ —	$ 660

Description	June 30, 2019 (Unaudited)	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Observable Inputs (Level 3)
Assets—Cash equivalents				
Money market funds	$ 40,051	$ 40,051	$ —	$ —
Total financial assets	$ 40,051	$ 40,051	$ —	$ —

During the years ended December 31, 2017 and 2018 and the six months ended June 30, 2018 and 2019, there were no transfers between fair value measure levels. The Company's Preferred Stock Tranche Obligation (defined below) and Antidilution Obligation (defined in Note 5) are carried at fair value determined according to Level 3 inputs in the fair value hierarchy as described below. In November 2018, in connection with the Company's issuance and sale of Series A Preferred Stock at the fourth tranche closing of its Series A Preferred Stock financing, the Company fully satisfied its Preferred Stock Tranche Obligation (see Note 7). In August 2017, in connection with the Company's issuance and sale of the third tranche of the Series A Preferred Stock, the Company satisfied its Antidilution Obligation under the Lundbeck Agreement (defined in Note 5). The carrying values of other current assets, accounts payable and accrued expenses approximate their fair values due to the short-term nature of these assets and liabilities.

Preferred Stock Tranche Obligation

The Company determined that its obligation to issue, and the Company's investors' obligation to purchase, additional shares of Series A Preferred Stock at a fixed price (i.e. the issuance price) in subsequent tranches following the initial closing of the Series A Preferred Stock financing represented a freestanding financial instrument (the "Preferred Stock Tranche Obligation"). The freestanding financial instrument was classified as an asset or liability on the Company's consolidated balance sheets and initially recorded at fair value, with changes in fair value for each reporting period recognized in other income (expense), net in the consolidated statements of operations (see Note 7). The obligation was fully satisfied in November 2018.

The initial fair value of the Preferred Stock Tranche Obligation recognized in connection with the Company's Series A Preferred Stock financing in April 2016 (see Note 7) was determined based on significant inputs not observable in the market, which represents a Level 3 measurement within the fair value hierarchy. The initial fair value of the obligation was estimated based on results of a third-party valuation performed in connection with the April 2016 Series A Preferred Stock financing. This obligation is remeasured prior to the issuance of subsequent tranches, and at each subsequent reporting period.

Each tranche obligation is valued as a forward contract. The values are determined using a probability-weighted present value calculation. In determining the fair values of the tranche obligations, estimates and assumptions impacting fair value included the estimated future values of the Company's Series A Preferred Stock, discount rates, estimated time to liquidity, and probability of each tranche closing. The Company determined the per share future value of the Series A preferred shares by back-solving to the initial proceeds of the Series A financing. The Company remeasured each tranche obligation at each reporting period and prior to settlement. The following reflects the significant quantitative inputs used in the valuation of the tranche obligations:

	August 31, 2017	December 31, 2017	November 30, 2018
Estimated future value of Series A Preferred Stock	$ 1.22	$ 1.22	$ 1.22
Discount rate	16.68%	16.52%	16.82%
Time to liquidity (years)	0.00-1.00	0.84	0.00
Probability of tranche closing	90%-100%	60%	100%

A change in the assumptions related to the valuation of the Preferred Stock Tranche Obligation could have a significant impact on the value of the obligation. The purchase price of the Series A Preferred Stock at initial issuance, and all subsequent issuances was higher than the fair value of the Company's common stock.

Antidilution Obligation

The Antidilution Obligation for the issuance of common stock to H. Lundbeck A/S ("Lundbeck"), pursuant to a license agreement (see Note 5), represented a freestanding financial instrument that required the Company to transfer equity instruments upon future equity closings for no consideration. The freestanding financial instrument was classified as a liability on the Company's consolidated balance sheet and initially recorded at fair value, with changes in fair value for each reporting period recognized in other income (expense), net in the consolidated statements of operations. The Company fully satisfied the obligation to issue antidilution shares in August 2017. A change in the assumptions related to the valuation of the Antidilution Obligation could have a significant impact on the value of the obligation.

The fair value of the Antidilution Obligation was determined using the fair value of the common stock to be issued pursuant to the instrument with assumptions for the expected number of shares to be issued and probability of issuing the shares. These are significant inputs not observable in the market, which represents a Level 3 measurement within the fair value hierarchy. The fair value of the Company's common stock was the most significant input, which was determined using valuations prepared by a third-party valuation expert (see

Note 5). Changes to the fair value of the Antidilution Obligation were based on changes in the fair value of the Company's common stock at each settlement and reporting date. The common stock values used in the calculation to determine the fair value of the Antidilution Obligation were $0.30, $0.68 and $0.61, at April 13, 2016, November 11, 2016 and August 31, 2017, respectively.

The following table sets forth a summary of changes in the fair value of the Company's Preferred Stock Tranche Obligation and Antidilution Obligation for which fair value is determined by Level 3 inputs (in thousands):

	Antidilution Obligation	Preferred Stock Tranche Obligation
Balance as of December 31, 2016	$ 639	$ 9,000
Change in fair value	(66)	(9,060)
Settlement of obligation	(573)	720
Balance as of December 31, 2017	—	660
Change in fair value	—	660
Settlement of obligation	—	(1,320)
Balance as of December 31, 2018	$ —	$ —

Fluctuations in the fair value of the Company's Series A Preferred Stock is the primary cause for the significant changes in fair value of the Preferred Stock Tranche Obligation. In 2016, the enterprise value of the Company was determined using PWERM, which included a long-term liquidity scenario and a near-term liquidity scenario each with an assigned probability. The long-term liquidity scenario used a probability-weighted present value calculation to estimate the future value of the Series A Preferred Stock upon each tranche closing. The near-term liquidity scenario used market indicators to estimate the value of the Company. The near-term liquidity scenario results in significant value allocated to the Series A Preferred Stock as the holders receive immediate liquidity, are entitled to their liquidation preference and participation in the sale proceeds. During 2017, the Company made the strategic decision to pursue longer-term liquidity options including a potential IPO, which caused a decrease in the value of the underlying Preferred Stock and the Preferred Stock Tranche Obligation. During 2018, the value of the Preferred Stock Tranche Obligation increased based on the Company's progress in clinical trials and the Company progression towards liquidity events such as equity financings and a potential initial public offering. The Preferred Stock Tranche Obligation was fully satisfied in November 2018 with the closing of the fourth tranche of the Series A Preferred Stock financing.

4. Accrued Expenses

Accrued expenses consisted of the following (in thousands):

	December 31, 2017	December 31, 2018	June 30, 2019 (Unaudited)
Accrued compensation and benefits	$ 199	$ 137	$ 402
Accrued research and development expenses	146	700	1,421
Accrued professional services	50	87	114
Accrued other	—	—	104
Total accrued expenses	$ 395	$ 924	$ 2,041

5. License Agreements

Agreement with Lundbeck

In April 2016, the Company entered into a license agreement with Lundbeck (the "Lundbeck Agreement") pursuant to which Lundbeck granted the Company the following licenses within the field of prevention, treatment or diagnosis of hemoglobinopathy disorders and/or other diseases or disorders, including those directly or indirectly related to hemoglobinopathies: (1) an exclusive, royalty-bearing license to certain patent rights and certain know-how owned or otherwise controlled by Lundbeck ("Licensed Technology") to research, develop, make, use, sell, and commercialize products ("Licensed Products") from PDE9 inhibitors, which included IMR-687 ("Licensed Compounds"); (2) a non-exclusive license to the Licensed Technology to make, research, develop, and use such Licensed Technology to enable research and development, with certain restrictions; and (3) a sublicensing right that allows the Company to grant sublicenses to third parties to use the Licensed Technology subject to the certain terms detailed in the Lundbeck Agreement. Under the Lundbeck Agreement, the Company is subject to certain achievement dates for development milestones as defined in the agreement. The regulatory milestones due under the Lundbeck Agreement depend on the products being developed. Development milestones due under the Lundbeck Agreement with respect to the Licensed Compounds total up to $23.5 million, and, for any products that contain PDE9 inhibitors other than Licensed Compounds, total up to $11.8 million. The Company also agreed to pay tiered royalties based on net sales of all products licensed under the agreement in the low single-digit percentages.

To date, pursuant to the license agreement, the Company has made cash payments to Lundbeck of $1.8 million consisting of an upfront payment and ongoing milestone payments, which are recorded as research and development expense. The remainder of the payments were made in 2016. No payments were made during the six months ended June 30, 2019. As partial consideration for the license, the Company issued 1,055,231 shares of common stock to Lundbeck, which represented 8.0% of the Company's then outstanding equity pursuant to a restricted stock agreement. The shares were fully vested on the date of issuance.

The Lundbeck Agreement contains a provision requiring the Company to make additional equity issuances to Lundbeck if its fully diluted ownership is reduced below 8% up until the Company raises an aggregate of $25.0 million in equity financings (the "Antidilution Obligation"). The Antidilution Obligation represented a freestanding financial instrument that was recorded as a liability and measured at fair value, with changes in fair value recognized in other income (expense), net in the consolidated statements of operations. The initial fair value of the Antidilution Obligation of $0.5 million was recorded as research and development expense for the year ended December 31, 2016. In December 2016 and August 2017, the Company issued an additional 799,984 and 936,955 shares of common stock, respectively, in connection with the Antidilution Obligation. The Antidilution Obligation was fully satisfied in August 2017. The Company also allowed Lundbeck to participate in the fourth tranche of the Series A Preferred Stock financing (see Note 7) in November 2018 at $1.00 per share, the same price as other investors, which was less than the fair value of the Series A Preferred Stock. The difference between the purchase price and the fair value was recognized as research and development expense in the Company's consolidated statements of operations with a corresponding credit to Preferred Stock.

The Lundbeck Agreement can be terminated by the Company at any time with 180 days' written notice. The Company or Lundbeck may terminate the agreement by written notice within a specified period of time in the event of a material breach.

6. Commitments and Contingencies

Lease Agreements

In 2016, the Company entered into an agreement for office space located in Cambridge, Massachusetts, which is a month-to-month lease, with a related party (see Note 12). The Company recorded rent expense of less than $0.1 million during the years ended December 31, 2017 and 2018 and for the six months ended June 30, 2018 and 2019.

In May 2019, the Company entered into a new operating lease agreement for office space totaling 4,210 square feet, located in Boston, Massachusetts with a 62-month term. The lease includes a rent escalation clause which results in cash rental payments of approximately $0.3 million annually. Rent expense is being recognized on a straight-line basis over the lease term. In addition to the base rent, the Company is also responsible for its share of operating expenses, electricity and real estate taxes, in accordance with the terms of the Lease Agreement. The Company provided a security deposit of approximately $0.1 million during the six months ended June 30, 2019, which is included as a component of other assets on the Company's consolidated balance sheets. As of the date these consolidated financial statements were available to be issued, the Company has not occupied the space. The Company expects to occupy the space in August 2019.

The following table summarizes the future minimum lease payments due under the Company's operating leases as of June 30, 2019 (in thousands):

	June 30, 2019 (Unaudited)
2019	$ 44
2020	267
2021	273
2022	278
2023	284
Thereafter	216
	$ 1,362

Legal Proceedings

The Company may from time to time be party to litigation arising in the ordinary course of business. The Company was not subject to any material legal proceedings during the years ended December 31, 2017 and 2018 or the six months ended June 30, 2018 and 2019, and no material legal proceedings are currently pending or, to the best of its knowledge, threatened.

Indemnification Agreements

The Company enters into standard indemnification agreements in the ordinary course of business. Pursuant to the indemnification agreements, the Company agrees to indemnify, hold harmless, and to reimburse the indemnified party for losses suffered or incurred by the indemnified party, generally the Company's business partners, in connection with any U.S. patent or any copyright or other intellectual property infringement claim by any third-party with respect to the Company's products. The term of these indemnification agreements is generally perpetual any time after execution of the agreement. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is unlimited. The Company has never incurred costs to defend lawsuits or settle claims related to these indemnification agreements.

7. Convertible Preferred Stock

As of December 31, 2017 and 2018, the authorized capital stock of the Company included 34,000,000 shares and 34,499,069 shares of $0.001 par value Preferred Stock, respectively, of which 3,000,000 shares have been designated as Series Seed Preferred Stock and the remainder have been designated as Series A Preferred Stock. In March 2019, the Company issued Series B Preferred Stock and, in connection with such issuance, restated its certificate of incorporation (the "Second Amended and Restated Certificate of Incorporation" or "Second A&R COI") such that as of June 30, 2019, the authorized capital stock of the Company included 70,378,661 shares of $0.001 par value Preferred Stock, of which 36,166,661 are designated as Series B Preferred Stock, 31,499,040 have been designated as Series A Preferred Stock, and 2,712,960 have been designated as Series Seed Preferred Stock.

In 2016, the Company issued Series Seed Preferred Stock to Cydan Development, Inc. ("Cydan") as consideration for the contribution of certain intellectual property assets and for services provided pursuant to a business service agreement (the "Business Service Agreement") (see Note 12).

In April 2016, the Company issued and sold 6,000,000 shares of Series A Preferred Stock at a price of $1.00 per share, for proceeds of $5.9 million, net of issuance costs of $0.1 million. The terms included the obligation of the investors to purchase, and the Company to sell, up to 25,000,000 additional shares of Series A Preferred Stock at $1.00 per share contingent upon the achievement of certain specified milestones. The Company concluded that the obligation and right to make future issuances of Series A Preferred Stock met the definition of a freestanding financial instrument, as the rights were legally detachable from the Series A Preferred Stock (see Note 3).

In November 2016, the Company issued and sold 7,999,971 shares of Series A Preferred Stock at a price of $1.00 per share, for gross proceeds of $8.0 million, which represents the second tranche of the Series A Preferred Stock financing.

In August 2017, the Company issued and sold 11,000,000 shares of Series A Preferred Stock at a price of $1.00 per share, for gross proceeds of $11.0 million, which represents the third tranche of the Series A Preferred Stock financing.

In November 2018, the Company issued and sold 6,499,069 shares of Series A Preferred Stock at a price of $1.00 per share, for proceeds of $6.5 million, which are net of issuance costs of $11,215, which represents the fourth tranche of the Series A Preferred Stock financing.

The carrying value of the Series A Preferred Stock is based on the proceeds received at initial issuance net of the fair value of the Preferred Stock Tranche Obligation. At each subsequent closing, the carrying value of the Series A Preferred Stock reflects proceeds received adjusted for the fair value of the Preferred Stock Tranche Obligation that was satisfied by the issuances of Series A Preferred Stock (see Note 3), net of issuance costs. At initial issuance and each subsequent closing, the Company concluded that no beneficial conversion features were present.

In March 2019, the Company issued and sold 25,316,663 shares of Series B Preferred Stock, at a price of $1.7419 per share. The terms of the Series B Preferred Stock Purchase Agreement included the obligation of the investors to purchase, and the Company to sell, 10,849,998 additional shares of Series B Preferred Stock at a purchase price of $1.7419 per share, contingent upon the achievement of a specified pre-designated milestone event. The milestone tranche closing may take place within 18 months of the initial closing if the milestone conditions are met or waived by the holders of a majority of the shares purchased at the initial closing. In addition, any Series B Preferred Stock investor has an option to purchase all or some of its milestone shares prior to the satisfaction or waiver of the milestone conditions. In May 2019, one of the investors exercised this option to purchase 1,004,650 of its milestone shares prior to the milestone closing, at a purchase price of $1.7419 per share. At initial issuance and subsequent closing, the Company concluded that no beneficial conversion features were present.

As of December 31, 2017 and 2018 and June 30, 2019, Preferred Stock consisted of the following (in thousands, except share data):

	December 31, 2017				
	Preferred Stock Authorized	Preferred Stock Issued and Outstanding	Carrying Value	Liquidation Value	Common Stock Issuable Upon Conversion
Series Seed Preferred Stock	3,000,000	2,712,960	$ 1,460	$ 2,713	2,712,960
Series A Preferred Stock	31,000,000	24,999,971	22,811	25,000	24,999,971
	34,000,000	27,712,931	$ 24,271	$ 27,713	27,712,931

	December 31, 2018				
	Preferred Stock Authorized	Preferred Stock Issued and Outstanding	Carrying Value	Liquidation Value	Common Stock Issuable Upon Conversion
Series Seed Preferred Stock	3,000,000	2,712,960	$ 1,460	$ 2,713	2,712,960
Series A Preferred Stock	31,499,069	31,499,040	30,729	31,499	31,499,040
	34,499,069	34,212,000	$ 32,189	$ 34,212	34,212,000

	June 30, 2019 (Unaudited)				
	Preferred Stock Authorized	Preferred Stock Issued and Outstanding	Carrying Value	Liquidation Value	Common stock Issuable Upon Conversion(1)
Series Seed Preferred Stock	3,000,000	2,712,960	$ 1,460	$ 2,713	2,712,960
Series A Preferred Stock	31,499,069	31,499,040	30,729	31,499	31,499,040
Series B Preferred Stock	36,166,661	26,321,313	45,575	45,849	26,321,313
	70,665,730	60,533,313	$ 77,764	$ 80,061	60,533,313

(1) Reflects conversion upon a qualifying IPO pursuant to the Second A&R COI.

Pursuant to the Second A&R COI, the holders of the Preferred Stock have the following rights and preferences:

Voting Rights

The holders of Preferred Stock are entitled to vote, together with the holders of common stock, on all matters submitted to the stockholders for a vote and are entitled to the number of votes equal to the number of whole shares of common stock into which the shares of Preferred Stock held by such holders could convert on the record date for determination of stockholders entitled to vote. Except for the actions requiring the approval or consent of a specified percentage of the holders of Preferred Stock, the holders of Preferred Stock shall vote together with the holders of common stock and vote as a single class. The holders of Series B Preferred Stock are entitled to elect two directors. The holders of Series A Preferred Stock are entitled to elect five directors prior to the occurrence of certain triggering events, including the consummation of an initial public offering, after which such number of directors shall decrease to three.

Dividends

The holders of the Series B Preferred Stock are entitled to receive, prior and in preference to any dividends on any other class or series of capital stock of the Company that ranks junior to the Series B Preferred Stock (including the Series A Preferred Stock and the Series Seed Preferred Stock), noncumulative dividends of 8% per annum of the Series B issuance price only when and if declared by the Board.

The holders of the Series A Preferred Stock are entitled to receive, prior and in preference to any dividends on Series Seed Preferred Stock, noncumulative dividends of 8% per annum of the Series B issuance price only when and if declared by the Board

Liquidation Rights

In the event of any voluntary or involuntary liquidation event, dissolution, winding up of the Company or upon the occurrence of certain other deemed liquidation events described in the Company's charter, each holder of the then outstanding Series B Preferred Stock will be entitled to receive, prior and in preference to any

distributions to the holders of Series A Preferred Stock, Series Seed Preferred Stock and common stock, an amount equal to $1.7419 per share (adjusted in the event of any stock dividend, stock split, combination or other similar recapitalization) plus any declared but unpaid dividends thereon.

After the payment of all preferential amounts to the holders of Series B Preferred Stock, each holder of the then outstanding Series A Preferred Stock will be entitled to receive, prior and in preference to any distributions to the holders of Series Seed Preferred Stock and common stock, an amount equal to $1.00 per share (adjusted in the event of any stock dividend, stock split, combination or other similar recapitalization) plus any declared but unpaid dividends thereon.

After the payment of all preferential amounts to the holders of Series A Preferred Stock, each holder of the then outstanding Series Seed Preferred Stock will be entitled to receive, prior and in preference to any distributions to the holders of common stock, an amount equal to $1.00 per share (adjusted in the event of any stock dividend, stock split, combination or other similar recapitalization) plus any declared but unpaid dividends thereon.

After payments have been made in full to the holders of the Preferred Stock, then, to the extent available, the remaining amounts will be distributed among the holders of the shares of common stock, Series A Preferred Stock and Series B Preferred Stock, pro rata based on the number of shares held by each holder (determined on an as-converted basis).

Conversion

As of December 31, 2018, prior to the filing of the Second A&R COI, all Preferred Stock was convertible into common stock on a one-to-one basis.

Pursuant to the Second A&R COI, each share of Preferred Stock is convertible into common stock, at any time, at the option of the holder, and without the payment of additional consideration, at the applicable conversion ratio then in effect for each series of Preferred Stock. In addition, each share of Preferred Stock will be automatically converted into common stock at the applicable conversion ratio then in effect for each series of Preferred Stock upon either (i) the closing of a firm commitment underwritten public offering of its common stock at a price per share of at least $2.6129 per share (subject to adjustment for any stock split, combination or similar recapitalization) resulting in $60.0 million or more of gross offering proceeds to the Company, or (ii) the date and time, or the occurrence of an event, specified by vote or written consent of the requisite holders of Preferred Stock.

Optional Conversion. In the case of conversion at the option of the holder, the applicable conversion ratio of each series of Preferred Stock is determined by dividing the Series Seed Preferred Stock original issue price (initially $1.00 per share), the Series A Preferred Stock original issue price (initially $1.00 per share) or Series B Preferred Stock original issue price (initially $1.7419 per share), as applicable, by:

(a) at all times on or prior to the earlier to occur of the milestone closing (as defined in the Series B Purchase Agreement), and the milestone closing outside expiration date (as defined in the Series B Purchase Agreement), (i) $5.00 with respect to shares of Series Seed Preferred Stock, (ii) $5.00 with respect to shares of Series A Preferred Stock and (iii) $8.7095 with respect to shares of Series B Preferred Stock (each such amount referred to as the “Pre-Milestone Conversion Price”); and

(b) following the earlier to occur of the milestone closing and the milestone closing outside expiration date, (i) $1.00 with respect to the shares of Series Seed Preferred Stock, (ii) $1.00 with respect to the shares of Series A Preferred Stock and (iii) $1.7419 with respect to the shares of Series B Preferred Stock (each such amount referred to as the “Conversion Price”).

As of June 30, 2019, the applicable conversion price for the optional conversion of the Preferred Stock is $5.00 for the Series Seed Preferred Stock, $5.00 for the Series A Preferred Stock and $8.7054 for the Series B Preferred Stock.

Automatic Conversion. The applicable conversion ratio for the automatic conversion of all outstanding shares of Preferred Stock pursuant to a qualifying IPO shall be pursuant to clause (b) above.

As of June 30, 2019, the applicable conversion price for the automatic conversion of the Preferred Stock is $1.00 for the Series Seed Preferred Stock, $1.00 for the Series A Preferred Stock and $1.7419 for the Series B Preferred Stock.

The Series Seed Preferred Stock original issue price, the Series A Preferred Stock original issue price and Series B Preferred Stock original issue price, the Pre-Milestone Conversion Price and the Conversion Price are each subject to appropriate adjustment in the event of any stock split, combination or other similar recapitalization with respect to the common stock. In addition, the Conversion Price is subject to further adjustment for certain dilutive issuances.

Redemption

Upon certain change in control events that are outside of the Company's control, including liquidation, sale or transfer of control of the Company, holders of the Preferred Stock can cause redemption of the Preferred Stock. Shares of Preferred Stock must be redeemed by the Company in an amount equal to the liquidation preference for each series of Preferred Stock. The Company classifies its Preferred Stock outside of stockholders' deficit as certain change in control events are outside the Company's control. As there is no date certain redemption date and the redemption feature can only be triggered in the event of a liquidation, sale, or transfer of control of the Company or similar event, the Company has concluded that it is not probable that the Preferred Stock will become redeemable and as such does not accrete the Preferred Stock to their redemption value.

8. Common Stock

As of December 31, 2017, December 31, 2018 and June 30, 2019 the authorized capital stock of the Company included 43,758,565, 46,181,399 and 100,000,000 shares of common stock, $0.001 par value, respectively.

Each share of common stock entitles the holder to one vote, together with the holders of Preferred Stock, on all matters submitted to the stockholders for a vote. The holders of common stock are entitled to elect one director until December 31, 2019.

Common stockholders are entitled to receive dividends, as may be declared by the Board, if any, subject to the preferential dividend rights of convertible Preferred Stock. Through June 30, 2019, no cash dividends have been declared or paid.

At December 31, 2017 and 2018 and June 30, 2019, the Company has reserved the following shares of common stock for the potential conversion of outstanding Preferred Stock and exercise of stock options:

	December 31,		June 30,
	2017	2018	2019
			(Unaudited)
Preferred stock	27,712,931	34,212,000	60,533,313
Options to purchase common stock	2,782,846	4,222,846	12,177,327
Total	30,495,777	38,434,846	72,710,640

9. Stock-Based Compensation

2016 Stock Incentive Plan

The Company's 2016 Stock Incentive Plan, (the "2016 Plan") provides for the Company to issue restricted stock, restricted stock units, stock appreciation rights, incentive stock options, non-statutory stock options and other stock-based awards to employees, officers, members of the Board, consultants and advisors of the Company.

As of December 31, 2018, the number of shares of common stock authorized to be issued under the 2016 Plan was 4,222,846, of which 144,395 shares remained available for future grant. The Company authorized an increase to the number of shares of common stock available for issuance under the 2016 Plan to 10,411,048 in March 2019, and again to 12,177,327 in June 2019, of which 338,713 shares remained available for future grants as of June 30, 2019.

Shares that expire, are terminated, surrendered or canceled under the 2016 Plan without having been fully exercised are available for future awards. In addition, shares of common stock that are tendered to the Company by a participant to exercise an award are added to the number of shares of common stock available for future awards. The 2016 Plan is administered by the Board.

During the years ended December 31, 2017 and 2018 and six months ended June 30, 2018 and 2019, the Company granted options to purchase 275,000, 2,147,133, 105,000 and 7,772,163 shares, respectively, of common stock. During the years ended December 31, 2017 and 2018 and the six months ended June 30, 2018 and 2019, the Company did not grant any shares of restricted stock. During the years ended December 31, 2017 and 2018 and the six months ended June 30, 2018 and 2019 stock-based compensation expense for options and restricted stock was $0.3 million, $0.6 million, $0.4 million and $0.3 million, respectively.

In April 2018, the Company modified one of its options granted in 2016 to a non-employee, which was exercisable into 2,187,928 shares of common stock. In conjunction with this modification, 478,610 options were forfeited, and the remaining 1,709,318 options will vest over a modified vesting schedule. The Company accounted for this modification using the accelerated attribution method, as the modification contained a performance-based vesting condition, which was subsequently satisfied. As a result of the modification, the Company recognized $0.2 million of expense in the six months ended June 30, 2018 and the year ended December 31, 2018, recorded in general and administrative expense.

Stock Option Valuation

The assumptions that the Company used to determine the grant date fair value of stock options granted to employees, non-employees and members of the Board were as follows, presented on a weighted-average basis:

	Year Ended December 31,		Six Months Ended June 30,	
	2017	2018	2018	2019
			(Unaudited)	
Expected term (in years)	6.06	6.06	6.06	6.11
Expected volatility	72.1%	72.1%	72.1%	69.7%
Expected dividend yield	0.00%	0.00%	0.00%	0.00%
Risk-free interest rate	1.81%	2.96%	2.74%	2.19%
Exercise price	$ 0.61	$ 0.51	$ 0.61	$ 0.78
Fair value of common stock	$ 0.61	$ 0.51	$ 0.61	$ 0.83

The following table summarizes the Company's stock option activity:

	Number of Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding as of December 31, 2017	2,416,053	$ 0.67	9.02	$ —
Granted	2,147,133	0.51		
Exercised	—	—		
Forfeited	(484,735)	0.68		
Outstanding as of December 31, 2018	4,078,451	$ 0.58	8.96	$ 122
Granted	7,772,163	$ 0.78		
Exercised	—	—		
Forfeited	(12,000)	0.50		
Outstanding as of June 30, 2019 (unaudited)	11,838,614	$ 0.71	9.40	$ 1,387
Options vested and exercisable as of December 31, 2018	1,514,896	$ 0.67	8.07	$ 296
Options vested and exercisable as of June 30, 2019 (unaudited)	2,114,371	$ 0.64	7.93	$ 407

The aggregate intrinsic value of options is calculated as the difference between the exercise price of the stock options and the fair value of the Company's common stock for those stock options that had exercise prices lower than the fair value of the common stock as of the end of the period.

The weighted-average grant date fair value of the Company's stock options granted during the years ended December 31, 2017 and 2018 and for the six months ended June 30, 2018 and 2019 was $0.39 and $0.33, respectively, and $0.40 and $0.54, respectively.

Stock-Based Compensation

Stock-based compensation expense was allocated as follows (in thousands):

	Year Ended December 31,		Six Months Ended June 30,	
	2017	2018	2018	2019
			(Unaudited)	
Research and development	$ 10	$ 24	$ 11	$ 73
General and administrative	298	531	378	219
Total stock-based compensation expense	$ 308	$ 555	$ 389	$ 292

As of June 30, 2019, total unrecognized compensation cost related to the unvested stock-based awards was $3.9 million, to be recognized over a weighted-average period of 3.63 years. As of December 31, 2018, total unrecognized compensation cost related to the unvested stock-based awards was $0.7 million, to be recognized over a weighted-average period of 3.19 years.

10. Income Taxes

For the years ended December 31, 2017 and 2018 and the six months ended June 30, 2018 and 2019, the Company did not record a current or deferred income tax expense or benefit due to current and historical losses incurred by the Company. The Company's losses before income taxes consist solely of losses from domestic operations.

The enactment of the Tax Cuts and Jobs Act ("TCJA") in December 2017, as further described below, resulted in a remeasurement of the Company's net deferred tax asset due to the reduction in corporate tax rates from 34% to 21%. A reconciliation of income tax expense (benefit) computed at the statutory federal income tax rate to income taxes as reflected in the consolidated financial statements is as follows:

	2017	2018
Income taxes at U.S. statutory rate	34%	21%
State income taxes	(213)	6
Series A Preferred Stock Tranche Obligation	(1,396)	(1)
Impact of tax reform	1,046	—
Other	(11)	—
Change in valuation allowance	540	(26)
Total provision for income taxes	0%	0%

Deferred taxes are recognized for temporary differences between the basis of assets and liabilities for financial statement and income tax purposes. The significant components of the Company's deferred tax assets and liabilities as of December 31, 2017 and 2018 are comprised of the following (in thousands):

	Year Ended December 31,	
	2017	2018
Deferred tax assets		
Net operating loss carryforwards	$ 4,709	$ 7,052
Research and development credits	311	343
Stock-based compensation	77	213
Amortization	445	672
Accruals	74	240
Total deferred tax assets	5,616	8,520
Valuation allowance	(5,616)	(8,520)
Net deferred tax assets	$ —	$ —

The Company has evaluated the positive and negative evidence bearing upon its ability to realize its deferred tax assets, which are comprised primarily of net operating loss carryforwards and research and development credits. Management has considered the Company's history of cumulative net losses in the United States, estimated future taxable income and prudent and feasible tax planning strategies and has concluded that it is more likely than not that the Company will not realize the benefits of its U.S. federal and state deferred tax assets. Accordingly, a full valuation allowance has been established against these net deferred tax assets as of December 31, 2017 and 2018, respectively. The Company reevaluates the positive and negative evidence at each reporting period. The Company's valuation allowance increased during 2018 by approximately $2.9 million primarily due to the generation of net operating loss and research and development credit carryforwards.

As of December 31, 2017 and 2018, the Company had U.S. federal net operating loss carryforwards of $17.1 million and $25.7 million, respectively, which may be available to offset future income tax liabilities. The TCJA will generally allow losses incurred after 2017 to be carried over indefinitely but will generally limit the net operating loss deduction to the lesser of the net operating loss carryover or 80% of a corporation's taxable income (subject to Section 382 and 383 of the Internal Revenue Code of 1986, as amended). Also, there will be no carryback for losses incurred after 2017. Losses incurred prior to 2018 will generally be deductible to the extent of the lesser of a corporation's net operating loss carryover or 100% of a corporation's taxable income and be available for twenty years from the period the loss was generated.

As of December 31, 2017 and 2018, the Company also had U.S. state net operating loss carryforwards of $17.5 million and $26.2 million, respectively, which may be available to offset future income tax liabilities and expire at various dates through 2037.

As of December 31, 2017 and 2018, the Company had federal research and development tax credit carryforwards of approximately $0.3 million and $0.3 million, respectively, available to reduce future tax liabilities which expire at various dates through 2038. As of December 31, 2017 and 2018, the Company had de minimis state research and development tax credit carryforwards available to reduce future tax liabilities which expire at various dates through 2033.

Utilization of the U.S. federal and state net operating loss and research and development credit carryforwards may be subject to a substantial annual limitation under Section 382 and Section 383 of the Internal Revenue Code of 1986, as amended, and corresponding provisions of state law, due to ownership changes that have occurred previously or that could occur in the future. These ownership changes may limit the amount of net operating loss and research and development credit carryforwards that can be utilized annually to offset future taxable income and tax liabilities, respectively. The Company has not completed a study to assess whether a change of ownership has occurred, or whether there have been multiple ownership changes since its formation, due to the significant cost and complexity associated with such a study. Any limitation may result in expiration of a portion of the net operating loss carryforwards or research and development credit carryforwards before utilization. Further, until a study is completed by the Company and any limitation is known, no amounts are being presented as an uncertain tax position.

The Company has not, as of yet, conducted a study of research and development credit carryforwards. Such a study, once undertaken by the Company, may result in an adjustment to our research and development credit carryforwards; however, until a study is completed and any adjustment is known, no amounts are being presented as an uncertain tax position. A full valuation allowance has been provided against the Company’s research and development credits and, if an adjustment is required, this adjustment would be offset by an adjustment to the valuation allowance. Thus, there would be no impact to the balance sheet or statement of operations if an adjustment is required.

The Company files tax returns in the United States and Massachusetts. The Company is subject to U.S. federal and state tax examinations by tax authorities for years 2016 through present. As of December 31, 2017 and 2018, the Company has recorded no liability for unrecognized tax benefits, interest, or penalties related to federal and state income tax matters and there currently no pending tax examinations. The Company will recognize interest and penalties related to uncertain tax positions in income tax expense.

11. Net Income (Loss) Per Share and Unaudited Pro Forma Net Loss Per Share

The following table sets forth the computation of the Company's basic and diluted net income (loss) per share for the years ended December 31, 2017 and 2018 and the six months ended June 30, 2018 and 2019 and the unaudited pro forma basic and diluted net loss per share for the year ended December 31, 2019 and six months ended June 30, 2019 (in thousands, except share and per share amounts):

	Year Ended December 31,		Six Months Ended June 30,	
	2017	2018	2018	2019
			(Unaudited)	
Numerator:				
Net income (loss)	$ 221	$ (11,337)	$ (5,379)	$ (9,591)
Net income attributable to participating Series A Preferred Stock	221	—	—	—
Net loss attributable to common stockholders—basic and diluted	$ —	$ (11,337)	$ (5,379)	$ (9,591)
Denominator:				
Weighted-average number of common shares used in net loss per share—basic and diluted	3,779,695	4,424,919	4,424,919	4,424,919
Net loss per share—basic and diluted	$ —	$ (2.56)	$ (1.22)	$ (2.17)
Pro forma net loss per share attributable to common stockholders—basic and diluted (unaudited)		$ (0.35)		$ (0.18)
Pro forma weighted-average common stock outstanding—basic and diluted (unaudited)		32,707,631		53,926,162

As of December 31, 2017 and 2018 and June 30, 2018 and 2019, the Company's potentially dilutive securities were Preferred Stock and stock options, which have been excluded from the computation of diluted net loss per share attributable to common stockholders for the year ended December 31, 2018 and six months ended June 30, 2019, as the effect would be to reduce the net loss per share. All the Company's restricted stock was vested as of December 31, 2018. Therefore, the weighted-average number of common shares outstanding used to calculate both basic and diluted net loss per share attributable to common stockholders was the same for the year ended December 31, 2018 and June 30, 2019. Based on the amounts outstanding at December 31, 2017 and 2018 and June 30, 2018 and 2019, the Company excluded the following potential common shares from the computation of diluted net loss per share attributable to common stockholders because including them would have had an anti-dilutive effect:

	As of December 31,		As of June 30,	
	2017	2018	2018	2019
			(Unaudited)	
Series Seed Preferred Stock	2,712,960	2,712,960	2,712,960	2,712,960
Series A Preferred Stock	24,999,971	31,499,040	24,999,971	31,499,040
Series B Preferred Stock	—	—	—	26,321,313
Options to purchase common stock	2,416,053	4,078,451	2,039,318	11,838,614

12. Related Party Transactions

Lundbeck

Lundbeckfond Invest A/S is one of the Company's Preferred Stock investors and participated in all tranches of the Series A Preferred Stock issuance and the Series B Preferred Stock issuance in 2019. Lundbeckfond Invest

A/S owned 4,411,687, 5,470,492 and 5,470,492 shares of Series A Preferred Stock as of December 31, 2017 and 2018 and June 30, 2019, respectively, and 478,749 shares of Series Seed Preferred Stock as of December 31, 2017 and 2018 and June 30, 2019. Lundbeckfond Invest A/S owned 1,326,111 shares of Series B Preferred Stock as of June 30, 2019. This reflects a 13.4%, 13.9% and 9.5% ownership interest on a fully diluted basis as of December 31, 2017 and 2018 and June 30, 2019, respectively.

Lundbeck, an affiliate of Lundbeckfond Invest A/S, is also one of the Company's Preferred Stock investors and participated in the fourth tranche of the Series A Preferred Stock financing. Lundbeck owned 499,069 shares of Series A Preferred Stock as of December 31, 2018, as well as 2,792,170 shares of common stock issued in conjunction with the Lundbeck Agreement (See Note 5). This reflected a 7.7% ownership interest on a fully diluted basis as of December 31, 2017 and 2018. Lundbeck did not participate in the Series B Preferred Stock issuance.

To date, pursuant to the license agreement, the Company has made cash payments to Lundbeck of $1.8 million consisting of an upfront payment and ongoing milestone payments which are recorded as research and development expense (see Note 5).

Cydan Development, Inc.

Cydan Development was the Company's principal stockholder upon formation in January 2016. As of December 31, 2017 and 2018 and June 30, 2019, Cydan no longer held any of the Company's equity, however given the Company and Cydan have common board members, Cydan is considered a related party. Cydan continues to provide office space, personnel assistance, and other business services as needed to the Company pursuant to the Business Service Agreement. The Company paid Cydan $1.0 million and $0.7 million in 2017 and 2018, respectively, and $0.5 million and $0.2 million in the six months ended June 30, 2018 and 2019, respectively, related to these services, all of which was recorded as research and development expense. Amounts due to Cydan were $0.4 million and $0.1 million as of December 31, 2017 and 2018, respectively, and $0.1 million and $0.1 million, as of June 30, 2018 and 2019, respectively.

13. Benefit Plans

The Company established a defined contribution savings plan under Section 401(k) of the Internal Revenue Code effective as of January 2019. This plan covers substantially all employees who meet minimum age and service requirements and allows participants to defer a portion of their annual compensation on a pre-tax basis. Matching contributions to the plan may be made at the discretion of the Board. The Company has made no contributions to the plan to date.

Shares

Common Stock

Preliminary Prospectus

MORGAN STANLEY

CITIGROUP

SVB LEERINK

, 2019

Until , 2019 (25 days after the date of this prospectus), all dealers that effect transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to the dealers' obligation to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution.

The following table sets forth the expenses to be incurred in connection with the offering described in this registration statement, other than underwriting discounts and commissions, all of which will be paid by the registrant. All amounts are estimates except the Securities and Exchange Commission, or SEC, registration fee, the Financial Industry Regulatory Authority, Inc., filing fee and the Nasdaq Global Market initial listing fee.

	Amount
Securities and Exchange Commission registration fee	$ *
Financial Industry Regulatory Authority, Inc. filing fee	*
Nasdaq Global Market initial listing fee	*
Accountants' fees and expenses	*
Legal fees and expenses	*
Blue Sky fees and expenses	*
Transfer agent's fees and expenses	*
Printing and engraving expenses	*
Miscellaneous	*
Total expenses	$ *

* To be filed by amendment.

Item 14. Indemnification of Directors and Officers.

Section 102 of the Delaware General Corporation Law, or the DGCL, permits a corporation to eliminate the personal liability of its directors or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his or her duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. Our certificate of incorporation that will be effective upon the closing of this offering provides that no director shall be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty as a director, notwithstanding any provision of law imposing such liability, except to the extent that the DGCL prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty.

Section 145 of the DGCL provides that a corporation has the power to indemnify a director, officer, employee or agent of the corporation and certain other persons serving at the request of the corporation in related capacities against expenses (including attorneys' fees), judgments, fines and amounts paid in settlements actually and reasonably incurred by the person in connection with an action, suit or proceeding to which he or she is or is threatened to be made a party by reason of such position, if such person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, in any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful, except that, in the case of actions brought by or in the right of the corporation, no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or other adjudicating court determines that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnification for such expenses which the Court of Chancery or such other court shall deem proper.

Our certificate of incorporation that will be effective upon the closing of this offering provides that we will indemnify each person who was or is a party or threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action

by or in the right of us), by reason of the fact that he or she is or was, or has agreed to become, our director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise (all such persons being referred to as an Indemnitee), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees), liabilities, losses, judgments, fines (including excise taxes and penalties arising under the Employee Retirement Income Security Act of 1974) and amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding and any appeal therefrom if such Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, and, with respect to any criminal action or proceeding, he or she had no reasonable cause to believe his or her conduct was unlawful.

Our certificate of incorporation that will be effective upon the closing of this offering also provides that we will indemnify any Indemnitee who was or is a party or threatened to be made a party to any threatened, pending or completed action or suit by or in the right of us to procure a judgment in our favor by reason of the fact that the Indemnitee is or was, or has agreed to become, our director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise (including any employee benefit plan), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees) and, to the extent permitted by law, amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding and any appeal therefrom, if the Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, except that no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to us, unless, and only to the extent that the Court of Chancery of Delaware or the court in which such action or suit was brought determines that, despite such adjudication but in view of all of the circumstances, he or she is fairly and reasonably entitled to indemnification of such expenses (including attorney's fees). Notwithstanding the foregoing, to the extent that any Indemnitee has been successful, on the merits or otherwise, he or she will be indemnified by us against all expenses (including attorneys' fees) actually and reasonably incurred by him or her or on his or her behalf in connection therewith. If we do not assume the defense, expenses must be advanced to an Indemnitee under certain circumstances.

In addition, we intend to enter into new indemnification agreements with all of our directors and executive officers prior to the completion of this offering. In general, these agreements provide that we will indemnify the executive officer or director to the fullest extent permitted by law for claims arising in his or her capacity as an executive officer or director of our company or in connection with his or her service at our request for another corporation or entity. The indemnification agreements also provide for procedures that will apply in the event that an executive officer or director makes a claim for indemnification and establish certain presumptions that are favorable to the executive officer or director.

We maintain a general liability insurance policy that covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers.

The underwriting agreement we will enter into in connection with the offering of common stock being registered hereby provides that the underwriters will indemnify, under certain conditions, our directors and officers (as well as certain other persons) against certain liabilities arising in connection with such offering.

Insofar as the foregoing provisions permit indemnification of directors, executive officers or persons controlling us for liability arising under the Securities Act of 1933, as amended, or the Securities Act, we have been informed that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Item 15. Recent Sales of Unregistered Securities.

Set forth below is information regarding shares of our common stock, shares of our preferred stock and stock options granted by us within the past three years that were not registered under the Securities Act. Also included is the consideration, if any, received by us for such shares and options and information relating to the section of the Securities Act, or rule of the SEC, under which exemption from registration was claimed.

(a) Issuances of Preferred Stock

On January 26, 2016 and April 12, 2016, we issued to Cydan Development, Inc., or Cydan, as consideration for certain rights under a Contribution Agreement and Business Services Agreement between us and Cydan, an aggregate of 2,712,960 shares of our Series Seed preferred stock.

On April 13, 2016, November 30, 2016, August 31, 2017 and November 30, 2018, we issued and sold an aggregate of 31,499,040 shares of our Series A preferred stock to eight investors for cash at a price per share of $1.00 for an aggregate purchase price of $31.5 million.

On March 15, 2019 and May 29, 2019, we issued and sold an aggregate of 26,321,313 shares of our Series B preferred stock to eleven investors for cash at a price per share of $1.7419 for an aggregate purchase price of $45.8 million.

No underwriters were involved in the foregoing issuances of securities. The securities described in this section (a) of Item 15 were issued to investors in reliance upon the exemption from the registration requirements of the Securities Act, as set forth in Section 4(a)(2) under the Securities Act and, in certain cases, Regulation D thereunder, relative to transactions by an issuer not involving any public offering, to the extent an exemption from such registration was required.

(b) Issuances of Common Stock

On January 26, 2016, we issued an aggregate of 1,834,565 shares of restricted special common stock for cash with a purchase price of $0.001 per share to our founders and directors. Those shares of restricted special common stock converted into 1,839,188 shares of restricted stock upon the sale and issuance of our series A preferred stock on April 12, 2016 pursuant to a mandatory conversion provision in our certificate of incorporation.

Between August 1, 2016 and August 15, 2019, we have issued an aggregate of 2,792,170 shares of restricted stock. Specifically, on April 11, 2016, we issued 1,055,231 shares of our restricted stock to H. Lundbeck A/S, or Lundbeck, as partial consideration under our Exclusive License Agreement with Lundbeck, dated April 11, 2016, or the License Agreement. On December 7, 2016 and August 31, 2017, we issued 799,984 and 936,955 shares of restricted stock to Lundbeck, respectively, pursuant to antidilution provisions in the License Agreement.

No underwriters were involved in the foregoing issuances of securities. The issuances of shares of common stock described in this section (b) of Item 15 were issued pursuant to written compensatory plans or arrangements with our employees and consultants, in reliance on the exemption provided by Rule 701 promulgated under the Securities Act or pursuant to Section 4(a)(2) under the Securities Act, relative to transactions by an issuer not involving any public offering, to the extent an exemption from such registration was required.

(c) Stock Option Grants and Option Exercises

Between August 1, 2016 and August 15, 2019, we granted options to purchase an aggregate of 12,382,224 shares of common stock, with exercise prices ranging from $0.50 to $0.78 per share, to our employees, advisors and consultants pursuant to our 2016 Stock Incentive Plan. None of our options have been exercised as of the date of this prospectus.

No underwriters were involved in the foregoing issuances of securities. The stock options described in this section (c) of Item 15 were issued pursuant to written compensatory plans or arrangements with our employees, advisors and consultants, in reliance on the exemption provided by Rule 701 promulgated under the Securities Act or pursuant to Section 4(a)(2) under the Securities Act, relative to transactions by an issuer not involving any public offering, to the extent an exemption from such registration was required.

Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits.

Exhibit Number	Description of Exhibit
1.1*	Form of Underwriting Agreement
3.1	Second Amended and Restated Certificate of Incorporation, as amended, of the Registrant
3.2	Bylaws of the Registrant
3.3*	Form of Restated Certificate of Incorporation of the Registrant (to be effective upon the closing of this offering)
3.4*	Form of Amended and Restated Bylaws of the Registrant (to be effective upon the closing of this offering)
4.1*	Specimen stock certificate evidencing the shares of common stock
4.2	Amended and Restated Investors' Rights Agreement, dated as of March 15, 2019, by and among the Registrant and the other parties thereto
5.1*	Opinion of Wilmer Cutler Pickering Hale and Dorr LLP
10.1	2016 Stock Incentive Plan, as amended
10.2	Form of Incentive Stock Option Agreement under the 2016 Stock Incentive Plan
10.3	Form of Nonstatutory Stock Option Agreement under the 2016 Stock Incentive Plan
10.4*	2019 Equity Incentive Plan
10.5*	Form of Stock Option Agreement under the 2019 Equity Incentive Plan
10.6*	2019 Employee Stock Purchase Plan
10.7†	Exclusive License Agreement, dated as of April 11, 2016, by and between H. Lundbeck A/S and the Registrant, as amended
10.8	Amended and Restated Letter Agreement, dated as of August 12, 2019, by and between the Registrant and Rahul D. Ballal, Ph.D.
10.9	Amended and Restated Letter Agreement, dated as of June 27, 2019, by and between the Registrant and Willem H. Scheele, M.D.
10.10	Amended and Restated Letter Agreement, dated as of June 27, 2019, by and between the Registrant and Michael P. Gray
10.11	Form of Indemnification Agreement with directors and executive officers
10.12*	Form of Indemnification Agreement to be entered into between the Registrant and each of its directors and executive officers (to be effective immediately prior to the effectiveness of this registration statement)
10.13	Office Lease Agreement, dated as of May 20, 2019, by and between Columbia REIT – 116 Huntington, LLC and the Registrant
21.1	List of Subsidiaries of the Registrant

Exhibit Number	Description of Exhibit
23.1*	Consent of Ernst & Young LLP, independent registered public accounting firm
23.2*	Consent of Wilmer Cutler Pickering Hale and Dorr LLP (included in Exhibit 5.1)
24.1*	Power of Attorney (included on signature page)

* To be filed by amendment.
† Portions of this exhibit have been omitted pursuant to Item 601(b)(10)(iv) of Regulation S-K.

(b) Financial Statement Schedules.

No financial statement schedules are provided because the information called for is not required or is shown either in the financial statements or notes.

Item 17. Undertakings.

(a) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

(b) The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Boston, Commonwealth of Massachusetts, on this day of , 2019.

IMARA INC.

By: _____
Rahul D. Ballal, Ph.D.
President and Chief Executive Officer

SIGNATURES AND POWER OF ATTORNEY

We, the undersigned officers and directors of IMARA Inc., hereby severally constitute and appoint Rahul D. Ballal and Michael P. Gray, and each of them singly (with full power to each of them to act alone), our true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution in each of them for her or him and in her or his name, place and stead, and in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement, and any other registration statement for the same offering pursuant to Rule 462(b) under the Securities Act of 1933, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as full to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or their or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities held on the dates indicated.

Signature	Title	Date
_____ Rahul D. Ballal, Ph.D.	President and Chief Executive Officer, Director (Principal Executive Officer)	, 2019
_____ Michael P. Gray	Chief Financial Officer and Chief Operating Officer (Principal Financial and Accounting Officer)	, 2019
_____ David M. Mott	Chairman of the Board	, 2019
_____ Mette Kirstine Agger	Director	, 2019
_____ David Bonita, M.D.	Director	, 2019
_____ Mark Chin	Director	, 2019
_____ Carl Goldfischer, M.D.	Director	, 2019

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Signature	Title	Date
Barbara J. Dalton, Ph.D.	Director	, 2019
James McArthur, Ph.D.	Director	, 2019
Sara Nayeem, M.D.	Director	, 2019

SECOND AMENDED AND RESTATED CERTIFICATE OF INCORPORATION OF IMARA INC.

(Pursuant to Sections 242 and 245 of the
General Corporation Law of the State of Delaware)

IMARA Inc., a corporation organized and existing under and by virtue of the provisions of the General Corporation Law of the State of Delaware (the "**General Corporation Law**"),

DOES HEREBY CERTIFY:

1. That the name of this corporation is IMARA Inc., and that this corporation was originally incorporated pursuant to the General Corporation Law on January 26, 2016 under the name IMARA Inc.

2. That the corporation previously amended and restated the Certificate of Incorporation, as filed with the Secretary of State of the State of Delaware on April 13, 2016 (the "**Amended and Restated Certificate**") and amended the Amended and Restated Certificate, as filed with the Secretary of State of the State of Delaware on November 29, 2018 (as amended, the "**Restated Certificate**").

3. That the board of directors of the corporation (the "**Board of Directors**") duly adopted resolutions proposing to amend and restate the Restated Certificate, declaring said amendment and restatement to be advisable and in the best interests of this corporation and its stockholders, and authorizing the appropriate officers of this corporation to solicit the consent of the stockholders therefor, which resolution setting forth the proposed amendment and restatement is as follows:

RESOLVED, that the Restated Certificate be amended and restated in its entirety to read as follows:

FIRST: The name of this corporation is IMARA Inc. (the "**Corporation**").

SECOND: The address of the registered office of the Corporation in the State of Delaware is Corporation Trust Center, 1209 Orange Street, in the City of Wilmington, County of New Castle, 19801. The name of its registered agent at such address is The Corporation Trust Company.

THIRD: The nature of the business or purposes to be conducted or promoted is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law.

FOURTH: The total number of shares of all classes of stock which the Corporation shall have authority to issue is (i) 100,000,000 shares of Class A Common Stock, $0.001 par value per share ("**Common Stock**") and (ii) 70,378,661 shares of Preferred Stock, $0.001 par value per share ("**Preferred Stock**"). 2,712,960 shares of the authorized Preferred Stock are hereby designated "**Series Seed Preferred Stock**", 31,499,040 shares of the authorized Preferred Stock are hereby designated "**Series A Preferred Stock**" and 36,166,661 shares of the authorized Preferred Stock are hereby designated "**Series B Preferred Stock**".

The following is a statement of the designations and the powers, privileges and rights, and the qualifications, limitations or restrictions thereof in respect of each class of capital stock of the Corporation.

A. COMMON STOCK

1. General. The voting, dividend and liquidation rights of the holders of the Common Stock are subject to and qualified by the rights, powers and preferences of the holders of the Preferred Stock set forth herein.

2. Voting. The holders of the Common Stock are entitled to one (1) vote for each share of Common Stock held at all meetings of stockholders (and written actions in lieu of meetings); provided, however, that, except as otherwise required by law, holders of Common Stock, as such, shall not be entitled to vote on any amendment to this Second Amended and Restated Certificate of Incorporation (this "**Second Amended and Restated Certificate**") that relates solely to the terms of one or more outstanding series of Preferred Stock if the holders of such affected series of Preferred Stock are entitled, either separately or together with the holders of one or more other such series, to vote thereon pursuant to this Second Amended and Restated Certificate or pursuant to the General Corporation Law. There shall be no cumulative voting. The number of authorized shares of Common Stock may be increased or decreased (but not below the number of shares thereof then outstanding) by (in addition to any vote of the holders of one or more series of Preferred Stock that may be required by the terms of this Second Amended and Restated Certificate) the affirmative vote of the holders of shares of capital stock of the Corporation representing a majority of the votes represented by all outstanding shares of capital stock of the Corporation entitled to vote, irrespective of the provisions of Section 242(b)(2) of the General Corporation Law.

B. PREFERRED STOCK

The following rights, powers and privileges, and restrictions, qualifications and limitations, shall apply to the Preferred Stock. Unless otherwise indicated, references to "sections" of this Part B of this Article Fourth refer to sections of Part B of this Article Fourth.

1. Dividends.

1.1 Non-Cumulative Preferred Stock Dividend Preference. From and after the date of issuance of any shares of Series B Preferred Stock, the holders of such shares of Series B Preferred Stock shall be entitled to receive, prior and in preference to any dividends on any other class or series of capital stock of the Corporation (including the Series A Preferred Stock), non-cumulative dividends at the rate of eight percent (8%) of the Series B Original Issue Price (as defined below) per annum on such shares of Series B Preferred Stock (the "**Series B Preferred Dividends**") when, as, and if declared by the Board of Directors. From and after the date of issuance of any shares of Series A Preferred Stock, the holders of such shares of Series A Preferred Stock shall be entitled to receive, prior and in preference to any dividends on any class or series of capital stock ranking junior to the Series A Preferred Stock in respect of dividend

payments (including the Common Stock and the Series Seed Preferred Stock), non-cumulative dividends at the rate of eight percent (8%) of the Series A Original Issue Price (as defined below) per annum on such shares of Series A Preferred Stock (the "**Series A Preferred Dividends**" and together with the Series B Preferred Dividends, the "**Preferred Dividends**") when, as, and if declared by the Board of Directors.

The Corporation shall not declare, pay or set aside any dividends on shares of any other class or series of capital stock of the Corporation (other than dividends on shares of Common Stock payable in shares of Common Stock) in any calendar year unless (in addition to obtaining any consents required elsewhere in this Second Amended and Restated Certificate) (i) the holders of shares of the Series B Preferred Stock then outstanding shall first receive, prior and in preference to holders of shares of any other class or series of capital stock of the Corporation (including the Series A Preferred Stock, the Series Seed Preferred Stock and the Common Stock), out of funds legally available therefor, a dividend on each outstanding share of Series B Preferred Stock in an amount at least equal to the sum of (i) any accrued but unpaid Series B Preferred Dividends attributable to such share of Series B Preferred Stock and (ii) the greater of (A) in the case of a dividend on the Common Stock or any class or series that is convertible into Common Stock, that dividend per share of Series B Preferred Stock as would equal the product of (1) the dividend payable on each share of such class or series determined, if applicable, as if all shares of such class or series had been converted into Common Stock and (2) the number of shares of Common Stock issuable upon conversion of a share of Series B Preferred Stock, in each case calculated on the record date for determination of holders entitled to receive such dividend or (B) in the case of a dividend on any class or series that is not convertible into Common Stock, at a rate per share of Series B Preferred Stock determined by (x) dividing the amount of the dividend payable on each share of such class or series of capital stock by the original issuance price of such class or series of capital stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to such class or series) and (y) multiplying such fraction by an amount equal to the Series B Original Issue Price; provided that, if the Corporation declares, pays or sets aside, on the same date, a dividend on shares of more than one class or series of capital stock of the Corporation, the dividend payable to the holders of Series B Preferred Stock pursuant to clause (ii) of this paragraph of Section 1.1 shall be calculated based upon the dividend on the class or series of capital stock that would result in the highest Series B Preferred Stock dividend. The "**Series B Original Issue Price**" shall mean $1.7419 per share, subject to appropriate adjustment in the event of any stock split, combination or other similar recapitalization with respect to the Series B Preferred Stock.

The Corporation shall not declare, pay or set aside any dividends on shares of any other class or series of capital stock of the Corporation (other than dividends on shares of Common Stock payable in shares of Common Stock or preferential dividends payable in respect of the Series B Preferred Stock as provided in this Section 1.1) in any calendar year unless (in addition to obtaining any consents required elsewhere in this Second Amended and Restated Certificate) (i) the holders of shares of the Series A Preferred Stock then outstanding shall first receive, prior and in preference to holders of shares of any other class or series of capital stock of the Corporation ranking junior to the Series A Preferred Stock as to dividend payments (including the Series Seed Preferred Stock and the Common Stock), out of funds legally available therefor, a dividend on each outstanding share of Series A Preferred Stock in an amount at least equal to the sum of (i) any accrued but unpaid Series A Preferred Dividends attributable to such share of Series A Preferred Stock and (ii)

the greater of (A) in the case of a dividend on the Common Stock or any class or series that is convertible into Common Stock, that dividend per share of Series A Preferred Stock as would equal the product of (1) the dividend payable on each share of such class or series determined, if applicable, as if all shares of such class or series had been converted into Common Stock and (2) the number of shares of Common Stock issuable upon conversion of a share of Series A Preferred Stock, in each case calculated on the record date for determination of holders entitled to receive such dividend or (B) in the case of a dividend on any class or series that is not convertible into Common Stock, at a rate per share of Series A Preferred Stock determined by (x) dividing the amount of the dividend payable on each share of such class or series of capital stock by the original issuance price of such class or series of capital stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to such class or series) and (y) multiplying such fraction by an amount equal to the Series A Original Issue Price; provided that, if the Corporation declares, pays or sets aside, on the same date, a dividend on shares of more than one class or series of capital stock of the Corporation, the dividend payable to the holders of Series A Preferred Stock pursuant to clause (ii) of this paragraph of Section 1.1 shall be calculated based upon the dividend on the class or series of capital stock that would result in the highest Series A Preferred Stock dividend. The "**Series A Original Issue Price**" shall mean $1.00 per share, subject to appropriate adjustment in the event of any stock split, combination or other similar recapitalization with respect to the Series A Preferred Stock.

1.2 Dividends on the Common Stock and Series Seed Preferred Stock. The Corporation shall declare all dividends (other than dividends on shares of Common Stock payable in shares of Common Stock) pro rata on the Common Stock and Series Seed Preferred Stock on a *pari passu* basis according to the number of shares of Common Stock held by such holders. For this purpose, each holder of shares of Series Seed Preferred Stock will be treated as holding the greatest whole number of shares of Common Stock then issuable upon conversion of all shares of Series Seed Preferred Stock held by such holder pursuant to Section 4. The "**Series Seed Original Issue Price**" shall mean $1.00 per share, subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Series Seed Preferred Stock.

2. Liquidation, Dissolution or Winding Up; Certain Mergers, Consolidations and Asset Sales.

2.1 Preferential Payments to Holders of Series B Preferred Stock. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event (as defined below), the holders of shares of Series B Preferred Stock then outstanding shall be entitled to be paid out of the assets of the Corporation available for distribution to its stockholders before any payment shall be made to the holders of Series A Preferred Stock, Series Seed Preferred Stock and Common Stock by reason of their ownership thereof, an amount per share equal to the Series B Original Issue Price, plus any dividends declared but unpaid thereon. If upon any such liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event, the assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the holders of shares of Series B Preferred Stock the full amount to which they shall be entitled under this Section 2.1, the holders of shares of Series B Preferred Stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares of Series B Preferred Stock held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full.

2.2 Preferential Payments to Holders of Series A Preferred Stock. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event, after payment of all preferential amounts required to be paid to the holders of shares of Series B Preferred Stock, the holders of shares of Series A Preferred Stock then outstanding shall be entitled to be paid out of the assets of the Corporation available for distribution to its stockholders before any payment shall be made to the holders of Series Seed Preferred Stock or Common Stock by reason of their ownership thereof, an amount per share equal to the Series A Original Issue Price, plus any dividends declared but unpaid thereon. If upon any such liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event, the assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the holders of shares of Series A Preferred Stock the full amount to which they shall be entitled under this Section 2.2, the holders of shares of Series A Preferred Stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares of Series A Preferred Stock held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full.

2.3 Preferential Payments to Holders of Series Seed Preferred Stock. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event, after payment of all preferential amounts required to be paid to the holders of shares of Series B Preferred Stock and Series A Preferred Stock, the holders of shares of Series Seed Preferred Stock then outstanding shall be entitled to be paid out of the assets of the Corporation available for distribution to its stockholders before any payment shall be made to the holders of Common Stock by reason of their ownership thereof, an amount per share equal to the Series Seed Original Issue Price, plus any dividends declared but unpaid thereon. If upon any such liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event, the assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the holders of shares of Series Seed Preferred Stock the full amount to which they shall be entitled under this Section 2.3, the holders of shares of Series Seed Preferred Stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares of Series Seed Preferred Stock held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full. The aggregate amount which a holder of a share of Series Seed Preferred Stock is entitled to receive under Section 2.3 is hereinafter referred to as the "**Series Seed Liquidation Amount**".

2.4 Distribution of Remaining Assets. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event, after the payment of all preferential amounts required to be paid to the holders of shares of Preferred Stock pursuant to Sections 2.1, 2.2 and 2.3, the remaining assets of the Corporation available for distribution to its stockholders shall be distributed among the holders of the shares of Series B Preferred Stock, Series A Preferred Stock and Common Stock, pro rata based on the number of shares held by each such holder, treating for this purpose all such securities as if they had been converted to Common Stock pursuant to Section 4.1.1(b) of this Second Amended and Restated Certificate immediately prior to such liquidation, dissolution or winding up or Deemed Liquidation Event. The aggregate amount which a holder of a share of Series B Preferred Stock

is entitled to receive under Sections 2.1 and 2.4 is hereinafter referred to as the "**Series B Liquidation Amount**". The aggregate amount which a holder of a share of Series A Preferred Stock is entitled to receive under Sections 2.2 and 2.4 is hereinafter referred to as the "**Series A Liquidation Amount**".

2.5 Deemed Liquidation Events.

2.5.1 Definition. Each of the following events shall be considered a "**Deemed Liquidation Event**" unless the holders of at least sixty percent (60%) of the outstanding shares of Preferred Stock, voting together as a single class on an as-converted to Common Stock basis in accordance with Section 4.1.1(b) of this Second Amended and Restated Certificate (and which must include (i) New Enterprise Associates 14, Limited Partnership (for so long as it or its affiliates hold any shares of Preferred Stock) and (ii) either Arix Bioscience Holdings Limited or OrbiMed Private Investments VII, LP (for so long as Arix Bioscience Holdings Limited or its affiliates or OrbiMed Private Investments VII, LP or its affiliates, as applicable, hold any shares of Preferred Stock))(the "**Requisite Preferred Holders**"), elect otherwise by written notice sent to the Corporation at least ten (10) days prior to the effective date of any such event:

(a) a merger or consolidation in which

(i) the Corporation is a constituent party or

(ii) a subsidiary of the Corporation is a constituent party and the Corporation issues shares of its capital stock pursuant to such merger or consolidation,

except any such merger or consolidation involving the Corporation or a subsidiary in which the shares of capital stock of the Corporation outstanding immediately prior to such merger or consolidation continue to represent, or are converted into or exchanged for shares of capital stock that represent, immediately following such merger or consolidation, at least a majority, by voting power, of the capital stock of (1) the surviving or resulting corporation; or (2) if the surviving or resulting corporation is a wholly owned subsidiary of another corporation immediately following such merger or consolidation, the parent corporation of such surviving or resulting corporation; or

(b) the sale, lease, transfer, exclusive license or other disposition, in a single transaction or series of related transactions, by the Corporation or any subsidiary of the Corporation of all or substantially all the assets of the Corporation and its subsidiaries taken as a whole, or the sale or disposition (whether by merger, consolidation or otherwise) of one or more subsidiaries of the Corporation if substantially all of the assets of the Corporation and its subsidiaries taken as a whole are held by such subsidiary or subsidiaries, except where such sale, lease, transfer, exclusive license or other disposition is to a wholly owned subsidiary of the Corporation.

2.5.2 Effecting a Deemed Liquidation Event.

(a) The Corporation shall not have the power to effect a Deemed Liquidation Event referred to in Section 2.5.1(a)(i) unless the agreement or plan of merger

or consolidation for such transaction (the "**Merger Agreement**") provides that the consideration payable to the stockholders of the Corporation shall be allocated among the holders of capital stock of the Corporation in accordance with Sections 2.1, 2.3, 2.4 and 2.4.

(b) In the event of a Deemed Liquidation Event referred to in Section 2.5.1(a)(ii) or 2.5.1(b) if the Corporation does not effect a dissolution of the Corporation under the General Corporation Law within ninety (90) days after such Deemed Liquidation Event, then (i) the Corporation shall send a written notice to each holder of Preferred Stock no later than the ninetieth (90th) day after the Deemed Liquidation Event advising such holders of their right (and the requirements to be met to secure such right) pursuant to the terms of the following clause; (ii) to require the redemption of such shares of Preferred Stock; and (iii) if the Requisite Preferred Holders, so request in a written instrument delivered to the Corporation not later than one hundred twenty (120) days after such Deemed Liquidation Event, the Corporation shall use the consideration received by the Corporation or its subsidiaries from such Deemed Liquidation Event (net of any retained liabilities associated with the assets sold or technology licensed, as determined in good faith by the Board of Directors), together with any other assets of the Corporation available for distribution to its stockholders, all to the extent permitted by Delaware law governing distributions to stockholders (the "**Available Proceeds**"), on the one hundred fiftieth (150th) day after such Deemed Liquidation Event, to (x) redeem all outstanding shares of Series B Preferred Stock at a price per share equal to the Series B Liquidation Amount prior to redeeming any shares of the Series A Preferred Stock, the Series Seed Preferred Stock or the Common Stock, (y) redeem (after redemption in full of the Series B Preferred Stock) all outstanding shares of the Series A Preferred Stock at a price per share equal to the Series A Liquidation Amount prior to redeeming any shares of the Series Seed Preferred Stock or Common Stock and (z) redeem (after redemption in full of each of the Series B Preferred Stock and the Series A Preferred Stock) all outstanding shares of the Series Seed Preferred Stock at a price per share equal to the Series Seed Liquidation Amount. Notwithstanding the foregoing, in the event of a redemption pursuant to the preceding sentence, if the Available Proceeds are not sufficient to redeem all outstanding shares of Preferred Stock, the Corporation shall (A) ratably redeem each holder's shares of Series B Preferred Stock to the fullest extent of such Available Proceeds, and shall redeem the remaining shares as soon as it may lawfully do so under Delaware law governing distributions to stockholders prior to redeeming any shares of the Series A Preferred Stock and the Series Seed Preferred Stock, (B) ratably redeem (after redemption in full of the Series B Preferred Stock) each holder's shares of Series A Preferred Stock to the fullest extent of such Available Proceeds, and shall redeem the remaining shares as soon as it may lawfully do so under Delaware law governing distributions to stockholders prior to redeeming any shares of the Series Seed Preferred Stock and (C) subject to the foregoing clauses (A) and (B), ratably redeem each holder's shares of Series Seed Preferred Stock to the fullest extent of such Available Proceeds, and shall redeem the remaining shares as soon as it may lawfully do so under Delaware law governing distributions to stockholders. Prior to the distribution or redemption provided for in this Section 2.5.2(b), the Corporation shall not expend or dissipate the consideration received from such Deemed Liquidation Event, except to discharge expenses incurred in connection with such Deemed Liquidation Event or in the ordinary course of business. Any redemption notice sent to each holder of Preferred Stock pursuant to this Section shall state:

(i) the number of shares of Preferred Stock held by such holder that the Corporation shall redeem;

(ii) the redemption date and the redemption price;

(iii) the date upon which such holder's right to convert such shares terminates (as determined in accordance with Section 4.1); and

(iv) that such holder is to surrender to the Corporation, in the manner and at the place designated, his, her or its certificate or certificates representing the shares of Preferred Stock to be redeemed.

On or before the redemption date, each holder of shares of Preferred Stock to be redeemed on such redemption date, unless such holder has exercised his, her or its right to convert such shares as provided in Section 4, shall surrender the certificate or certificates representing such shares (or, if such registered holder alleges that such certificate has been lost, stolen or destroyed, a lost certificate affidavit and agreement reasonably acceptable to the Corporation to indemnify the Corporation against any claim that may be made against the Corporation on account of the alleged loss, theft or destruction of such certificate) to the Corporation, and thereupon the redemption price for such shares shall be payable to the order of the person whose name appears on such certificate or certificates as the owner thereof. If on the applicable redemption date the redemption price payable upon redemption of the shares of Preferred Stock to be redeemed on such redemption date is paid or tendered for payment or deposited with an independent payment agent so as to be available therefor, then notwithstanding that the certificates evidencing any of the shares of Preferred Stock so called for redemption shall not have been surrendered, dividends with respect to such shares of Preferred Stock shall cease to accrue after such redemption date and all rights with respect to such shares shall forthwith after the redemption date terminate, except only the right of the holders to receive the redemption price without interest upon surrender of their certificate or certificates therefor.

2.5.3 Amount Deemed Paid or Distributed. The amount deemed paid or distributed to the holders of capital stock of the Corporation upon any such merger, consolidation, sale, transfer, exclusive license, other disposition or redemption shall be the cash or the value of the property, rights or securities paid or distributed to such holders by the Corporation or the acquiring person, firm or other entity. The value of such property or rights shall be determined in good faith by the Board of Directors. Any securities shall be valued as follows:

(a) Securities not subject to investment letter or other similar restrictions on free marketability covered by Section 2.5.3(b) below:

(i) If traded on a securities exchange, the value shall be based on the formula specified in the definitive agreements for the Deemed Liquidation Event or, if no such formula exists, then the value of such securities shall be based on a formula approved by the Board of Directors acting in good faith and derived from the closing prices of the securities on such exchange over a specified period of time;

(ii) If actively traded over-the-counter, the value shall be based on the formula specified in the definitive agreements for the Deemed Liquidation Event or, if no such formula exists, then the value of such securities shall be based on a formula

approved by the Board of Directors acting in good faith and derived from the closing bid or sales prices (whichever is applicable) of such securities over a specified time period; and

(iii) If there is no active public market, the value shall be the fair market value thereof, as determined in good faith by the Board of Directors.

(b) The method of valuation of securities subject to investment letter or other restrictions on free marketability (other than restrictions arising solely by virtue of a stockholder's status as an affiliate or former affiliate) shall be to make an appropriate discount from the market value determined as specified above in Section 2.5.3(a) to reflect the approximate fair market value thereof, as determined in good faith by the Board of Directors.

2.5.4 Allocation of Escrow and Contingent Consideration. In the event of a Deemed Liquidation Event pursuant to Section 2.5.1(a)(i), if any portion of the consideration payable to the stockholders of the Corporation is payable only upon satisfaction of contingencies (the "**Additional Consideration**"), the Merger Agreement shall provide that (a) the portion of such consideration that is not Additional Consideration (such portion, the "**Initial Consideration**") shall be allocated among the holders of capital stock of the Corporation in accordance with Sections 2.1, 2.3, 2.4 and 2.4 as if the Initial Consideration were the only consideration payable in connection with such Deemed Liquidation Event; and (b) any Additional Consideration which becomes payable to the stockholders of the Corporation upon satisfaction of such contingencies shall be allocated among the holders of capital stock of the Corporation in accordance with Sections 2.1, 2.3, 2.4 and 2.4 after taking into account the previous payment of the Initial Consideration as part of the same transaction. For the purposes of this Section 2.5.4, consideration placed into escrow or retained as holdback to be available for satisfaction of indemnification or similar obligations in connection with such Deemed Liquidation Event shall be deemed to be Additional Consideration.

3. Voting.

3.1 General. On any matter presented to the stockholders of the Corporation for their action or consideration at any meeting of stockholders of the Corporation (or by written consent of stockholders in lieu of meeting), each holder of outstanding shares of Preferred Stock shall be entitled to cast the number of votes equal to the number of whole shares of Common Stock into which the shares of Preferred Stock held by such holder are convertible as of the record date for determining stockholders entitled to vote on such matter. Except as provided by law or by the other provisions of this Second Amended and Restated Certificate, holders of Preferred Stock shall vote together with the holders of Common Stock as a single class.

3.2 Election of Directors. The holders of record of the shares of Series B Preferred Stock, exclusively and as a separate class, shall be entitled to elect two (2) directors of the Corporation (the "**Series B Directors**"). The holders of record of the shares of Series A Preferred Stock, exclusively and as a separate class, shall be entitled to elect five (5) directors of the Corporation (the "**Series A Directors**") until the earliest to occur of (x) December 31, 2020, (y) the consummation of the sale of shares of Common Stock to the public in a firm-commitment underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended, and (z) the consummation of the next equity financing of the Corporation

pursuant to which the Corporation raises gross proceeds of at least Twenty Million Dollars ($20,000,000)(each of (x), (y) and (z), a "**Series A Trigger Event**") and, after the occurrence of a Series A Trigger Event, the number of Series A Directors shall be reduced to three (3) Series A Directors. The holders of record of the shares of Common Stock, exclusively and as a separate class, shall be entitled to elect one (1) director of the Corporation until December 31, 2019. Any director elected as provided in the preceding sentences may be removed without cause by, and only by, the affirmative vote of the holders of the shares of the class or series of capital stock entitled to elect such director or directors for so long as such class or series of capital stock is entitled to elect such director or directors, given either at a special meeting of such stockholders duly called for that purpose or pursuant to a written consent of stockholders. If the holders of shares of Series B Preferred Stock, Series A Preferred Stock or Common Stock, as the case may be, fail to elect a sufficient number of directors to fill all directorships for which they are entitled to elect directors, voting exclusively and as a separate class, pursuant to the first three (3) sentences of this Section 3.2, then any directorship not so filled shall remain vacant until such time as the holders of the Series B Preferred Stock, Series A Preferred Stock or Common Stock, as the case may be, elect a person to fill such directorship by vote or written consent in lieu of a meeting; and no such directorship may be filled by stockholders of the Corporation other than by the stockholders of the Corporation that are entitled to elect a person to fill such directorship, voting exclusively and as a separate class. The holders of record of the shares of Common Stock and of any other class or series of voting stock (including the Preferred Stock), exclusively and voting together as a single class on an as-converted to Common Stock basis in accordance with Section 4.1.1(b), shall be entitled to elect the balance of the total number of directors of the Corporation. At any meeting held for the purpose of electing a director, the presence in person or by proxy of the holders of a majority of the outstanding shares of the class or series entitled to elect such director shall constitute a quorum for the purpose of electing such director. Except as otherwise provided in this Section 3.2, a vacancy in any directorship filled by the holders of any class or series shall be filled only by vote or written consent in lieu of a meeting of the holders of such class or series or by any remaining director or directors elected by the holders of such class or series pursuant to this Section 3.2.

3.3 Preferred Stock Protective Provisions. At any time when any shares of Preferred Stock are outstanding, the Corporation shall not, either directly or indirectly by amendment, merger, consolidation or otherwise, do any of the following without (in addition to any other vote required by law or this Second Amended and Restated Certificate) the written consent or affirmative vote of the Requisite Preferred Holders, and any such act or transaction entered into without such consent or vote shall be null and void *ab initio*, and of no force or effect:

3.3.1 liquidate, dissolve or wind-up the business and affairs of the Corporation, effect any merger or consolidation or any other Deemed Liquidation Event, or consent to any of the foregoing;

3.3.2 amend, alter or repeal any provision of this Second Amended and Restated Certificate or the amended and restated bylaws of the Corporation (the "**Bylaws**");

3.3.3 create, or authorize the creation of, or issue or obligate itself to issue shares of, whether by reclassification or otherwise, any new class or series of capital stock unless the same ranks junior to the Series B Preferred Stock with respect to the distribution of

assets on the liquidation, dissolution or winding up of the Corporation (including in connection with a Deemed Liquidation Event), the payment of dividends and rights of redemption;

3.3.4 (i) reclassify, alter or amend any existing security of the Corporation that is *pari passu* with the Series B Preferred Stock or the Series A Preferred Stock in respect of the distribution of assets on the liquidation, dissolution or winding up of the Corporation (including in connection with a Deemed Liquidation Event), the payment of dividends or rights of redemption, if such reclassification, alteration or amendment would render such other security senior to the Series B Preferred Stock or the Series A Preferred Stock in respect of any such right, preference, or privilege or (ii) reclassify, alter or amend any existing security of the Corporation that is junior to the Series B Preferred Stock or the Series A Preferred Stock in respect of the distribution of assets on the liquidation, dissolution or winding up of the Corporation (including in connection with a Deemed Liquidation Event), the payment of dividends or rights of redemption, if such reclassification, alteration or amendment would render such other security senior to or *pari passu* with the Series B Preferred Stock or the Series A Preferred Stock in respect of any such right, preference or privilege;

3.3.5 increase the authorized number of shares of Common Stock or Preferred Stock (including any increase in the authorized number of shares of any series of Preferred Stock);

3.3.6 purchase or redeem (or permit any subsidiary to purchase or redeem) or pay or declare any dividend or make any distribution on, any shares of capital stock of the Corporation other than (i) redemptions of or dividends or distributions on the Preferred Stock as expressly authorized herein, (ii) dividends or other distributions payable on the Common Stock solely in the form of additional shares of Common Stock, (iii) repurchases of Common Stock from former employees, officers, directors, consultants or other persons who performed services for the Corporation or any subsidiary pursuant to a written benefit plan, employment, consulting or similar agreement approved by the Board of Directors, or (iv) the repurchase of shares of Common Stock in connection with the Corporation's right of first offer with respect to such securities contained in any written agreement with the Corporation (which repurchase has been approved by the Board of Directors, including at least one of the Series A Directors and one of the Series B Directors);

3.3.7 increase or decrease the authorized number of directors constituting the Board of Directors;

3.3.8 enter into any agreement regarding a material asset transfer of the Corporation or any of its subsidiaries, exclusive license of intellectual property of the Corporation or any of its subsidiaries out of the ordinary course of business or any acquisition by the Corporation of another entity or its assets;

3.3.9 create, or authorize the creation of, or issue, or authorize the issuance of any debt security, or enter into any loan or guarantee agreement, if the aggregate indebtedness of the Corporation and its subsidiaries for borrowed money following such action would exceed $500,000, unless such debt security, loan or guarantee agreement has received the prior approval of the Board of Directors (including at least one of the Series A Directors and one of the Series B Directors); or

3.3.10 enter into any interested party transaction with any officer, director or employee of the Corporation, or member of their immediate family, or any holder of capital stock of the Corporation, other than expense advances or reimbursements in the ordinary course of business, unless approved by the Board of Directors (including a disinterested majority of the Board of Directors).

3.4 Series B Preferred Stock Protective Provisions. At any time when shares of Series B Preferred Stock are outstanding, the Corporation shall not, either directly or indirectly by amendment, merger, consolidation or otherwise, do any of the following without (in addition to any other vote required by law or the Second Amended and Restated Certificate) the written consent or affirmative vote of holders of a majority of the Series B Preferred Stock outstanding, given in writing or by vote at a meeting, consenting or voting (as the case may be) separately as a class:

3.4.1 amend, alter or repeal any provision of the Second Amended and Restated Certificate or Bylaws in a manner that disproportionately and adversely affects the voting or other powers, preferences or other special rights or restrictions of the Series B Preferred Stock;

3.4.2 increase or decrease the authorized number of shares of Series B Preferred Stock;

3.4.3 purchase or redeem any shares of Series A Preferred Stock or Series Seed Preferred Stock; or

3.4.4 agree to any of the foregoing.

3.5 Series A Preferred Stock Protective Provisions. At any time when shares of Series A Preferred Stock are outstanding, the Corporation shall not, either directly or indirectly by amendment, merger, consolidation or otherwise, do any of the following without (in addition to any other vote required by law or the Second Amended and Restated Certificate) the written consent or affirmative vote of holders of a majority of the Series A Preferred Stock outstanding, given in writing or by vote at a meeting, consenting or voting (as the case may be) separately as a class:

3.5.1 amend, alter or repeal any provision of the Second Amended and Restated Certificate or Bylaws in a manner that disproportionately and adversely affects the voting or other powers, preferences or other special rights or restrictions of the Series A Preferred Stock;

3.5.2 increase or decrease the authorized number of shares of Series A Preferred Stock;

3.5.3 purchase or redeem any shares of Series Seed Preferred Stock; or

3.5.4 agree to any of the foregoing.

3.6 Series Seed Preferred Stock Protective Provisions. At any time when shares of Series Seed Preferred Stock are outstanding, the Corporation shall not, either directly or indirectly by amendment, merger, consolidation or otherwise, do any of the following without (in addition to any other vote required by law or the Second Amended and Restated Certificate) the written consent or affirmative vote of holders of a majority of the Series Seed Preferred Stock outstanding, given in writing or by vote at a meeting, consenting or voting (as the case may be) separately as a class:

3.6.1 amend, alter or repeal any provision of the Second Amended and Restated Certificate or Bylaws in a manner that disproportionately and adversely affects the voting or other powers, preferences or other special rights or restrictions of the Series Seed Preferred Stock;

3.6.2 increase or decrease the authorized number of shares of Series Seed Preferred Stock; or

3.6.3 agree to any of the foregoing.

4. Optional Conversion.

The holders of Preferred Stock shall have conversion rights as follows in this Section 4 (the "**Conversion Rights**"):

4.1 Right to Convert.

4.1.1 Conversion Ratio. Each share of Preferred Stock shall be convertible, at the option of the holder thereof, at any time and from time to time, and without the payment of additional consideration by the holder thereof, into such number of fully paid and non-assessable shares of Common Stock as is determined by dividing the Series B Original Issue Price, the Series A Original Issue Price or the Series Seed Original Issue Price, as applicable, by: (a) at all times on or prior to the earlier to occur of the Milestone Closing (as such term is defined in that certain Series B Preferred Stock Purchase Agreement, entered into on or around the date of filing of this Second Amended and Restated Certificate (the "**Series B Purchase Agreement**"), by and among the Corporation and the investors party thereto) and the Milestone Closing Outside Expiration Date (as such term is defined in the Series B Purchase Agreement), (i) $5.00 with respect to shares of Series Seed Preferred Stock, (ii) $5.00 with respect to shares of Series A Preferred Stock and (iii) $8.7095 with respect to shares of Series B Preferred Stock (each of the amounts in the foregoing clauses (i), (ii) and (iii) of this Section 4.1.1, the "**Pre-Milestone Conversion Price**", which Pre-Milestone Conversion Price shall be subject to appropriate adjustment in the event of any stock split, combination or other similar recapitalization with respect to the Common Stock); provided, that, the automatic conversion of all outstanding shares of Preferred Stock pursuant to Section 5 shall be pursuant to clause (b) of this Section 4.1.1, and (b) following the earlier to occur of the Milestone Closing and the Milestone Closing Outside Expiration Date, the Conversion Price. The "**Conversion Price**" shall initially be equal to (i) $1.00 with respect to the shares of Series Seed Preferred Stock, (ii) $1.00 with respect to the shares of Series A Preferred Stock and (iii) $1.7419 with respect to the shares of Series B Preferred Stock. The Conversion Price, and the rate at which shares of Preferred Stock may be converted into shares

of Common Stock, shall be subject to adjustment as provided below. No adjustments shall be made on the Pre-Milestone Conversion Price (other than in respect of any stock split, combination or other similar recapitalization with respect to the Common Stock).

4.1.2 Termination of Conversion Rights. In the event of a notice of redemption of any shares of Preferred Stock pursuant to Subsection 2.5.2(b), the Conversion Rights of the shares designated for redemption shall terminate at the close of business on the last full day preceding the date fixed for redemption, unless the redemption price is not fully paid on such redemption date, in which case the Conversion Rights for such shares shall continue until such price is paid in full. In the event of a liquidation, dissolution or winding up of the Corporation or a Deemed Liquidation Event, the Conversion Rights shall terminate at the close of business on the last full day preceding the date fixed for the payment of any such amounts distributable on such event to the holders of Preferred Stock.

4.2 Fractional Shares. No fractional shares of Common Stock shall be issued upon conversion of the Preferred Stock. In lieu of any fractional shares to which the holder would otherwise be entitled, the Corporation shall pay cash equal to such fraction multiplied by the fair market value of a share of Common Stock as determined in good faith by the Board of Directors. Whether or not fractional shares would be issuable upon such conversion shall be determined on the basis of the total number of shares of Preferred Stock the holder is at the time converting into Common Stock and the aggregate number of shares of Common Stock issuable upon such conversion.

4.3 Mechanics of Conversion.

4.3.1 Notice of Conversion. In order for a holder of Preferred Stock to voluntarily convert shares of Preferred Stock into shares of Common Stock, such holder shall (a) provide written notice to the Corporation's transfer agent at the office of the transfer agent for the Preferred Stock (or at the principal office of the Corporation if the Corporation serves as its own transfer agent) that such holder elects to convert all or any number of such holder's shares of Preferred Stock and, if applicable, any event on which such conversion is contingent and, (b) if such holder's shares are certificated, surrender the certificate or certificates for such shares of Preferred Stock (or, if such registered holder alleges that such certificate has been lost, stolen or destroyed, a lost certificate affidavit and agreement reasonably acceptable to the Corporation to indemnify the Corporation against any claim that may be made against the Corporation on account of the alleged loss, theft or destruction of such certificate), at the office of the transfer agent for the Preferred Stock (or at the principal office of the Corporation if the Corporation serves as its own transfer agent), unless such requirement to surrender the certificates is waived by the Corporation. Such notice shall state such holder's name or the names of the nominees in which such holder wishes the shares of Common Stock to be issued. If required by the Corporation, any certificates surrendered for conversion shall be endorsed or accompanied by a written instrument or instruments of transfer, in form satisfactory to the Corporation, duly executed by the registered holder or his, her or its attorney duly authorized in writing. The close of business on the date of receipt by the transfer agent (or by the Corporation if the Corporation serves as its own transfer agent) of such notice and, if applicable, certificates (or lost certificate affidavit and agreement) shall be the time of conversion, unless the conversion is contingent upon an event that is later in time, in which case the time of conversion shall be at the time of event upon which the conversion

is contingent (the "**Conversion Time**"), and the shares of Common Stock issuable upon conversion of the specified shares shall be deemed to be outstanding of record as of such date. The Corporation shall, as soon as practicable after the Conversion Time (i) issue and deliver to such holder of Preferred Stock, or to his, her or its nominees, a certificate or certificates for the number of full shares of Common Stock issuable upon such conversion in accordance with the provisions hereof and a certificate for the number (if any) of the shares of Preferred Stock represented by the surrendered certificate that were not converted into Common Stock, (ii) pay in cash such amount as provided in Section 4.2 in lieu of any fraction of a share of Common Stock otherwise issuable upon such conversion and (iii) pay all declared but unpaid dividends on the shares of Preferred Stock converted.

4.3.2 Reservation of Shares. The Corporation shall at all times when the Preferred Stock shall be outstanding, reserve and keep available out of its authorized but unissued capital stock, for the purpose of effecting the conversion of Preferred Stock, such number of its duly authorized shares of Common Stock as shall from time to time be sufficient to effect the conversion of all outstanding Preferred Stock pursuant to Section 4; and if at any time the number of authorized but unissued shares of Common Stock shall not be sufficient to effect the conversion of all then outstanding shares of the Preferred Stock under any provision of this Second Amended and Restated Certificate, the Corporation shall take such corporate action as may be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purposes, including, without limitation, engaging in best efforts to obtain the requisite stockholder approval of any necessary amendment to this Second Amended and Restated Certificate. Before taking any action which would cause an adjustment reducing the Conversion Price below the then par value of the shares of Common Stock issuable upon conversion of any series of Preferred Stock, the Corporation will take any corporate action which may, in the opinion of its counsel, be necessary in order that the Corporation may validly and legally issue fully paid and non-assessable shares of Common Stock at such adjusted Conversion Price.

4.3.3 Effect of Conversion. All shares of Preferred Stock which shall have been surrendered for conversion as herein provided shall no longer be deemed to be outstanding and all rights with respect to such shares shall immediately cease and terminate at the Conversion Time, except only the right of the holders thereof to receive shares of Common Stock in exchange therefor, to receive payment in lieu of any fraction of a share otherwise issuable upon such conversion as provided in Section 4.2 and to receive payment of any dividends declared but unpaid thereon. Any shares of Preferred Stock so converted shall be retired and cancelled and may not be reissued as shares of such series, and the Corporation may thereafter take such appropriate action (without the need for stockholder action) as may be necessary to reduce the authorized number of shares of Preferred Stock accordingly.

4.3.4 No Further Adjustment. Upon any such conversion, no adjustment to the Conversion Price shall be made for any declared but unpaid dividends on the Preferred Stock surrendered for conversion or on the Common Stock delivered upon conversion.

4.3.5 Taxes. The Corporation shall pay any and all issue and other similar taxes that may be payable in respect of any issuance or delivery of shares of Common Stock upon conversion of shares of Preferred Stock pursuant to this Section 4. The Corporation

shall not, however, be required to pay any tax which may be payable in respect of any transfer involved in the issuance and delivery of shares of Common Stock in a name other than that in which the shares of Preferred Stock so converted were registered, and no such issuance or delivery shall be made unless and until the person or entity requesting such issuance has paid to the Corporation the amount of any such tax or has established, to the satisfaction of the Corporation, that such tax has been paid.

4.4 Adjustments to Conversion Price for Diluting Issues.

4.4.1 Special Definitions. For purposes of this Article Fourth, the following definitions shall apply:

(a) "***Option***" shall mean rights, options or warrants to subscribe for, purchase or otherwise acquire Common Stock or Convertible Securities.

(b) "***Original Issue Date***" shall mean the date on which the first share of Series B Preferred Stock was issued.

(c) "***Convertible Securities***" shall mean any evidences of indebtedness, shares or other securities directly or indirectly convertible into or exchangeable for Common Stock, but excluding Options.

(d) "***Additional Shares of Common Stock***" shall mean all shares of Common Stock issued (or, pursuant to Section 4.4.3 below, deemed to be issued) by the Corporation after the Original Issue Date, other than (1) the following shares of Common Stock and (2) shares of Common Stock deemed issued pursuant to the following Options and Convertible Securities (clauses (1) and (2), collectively, "**Exempted Securities**"):

(i) shares of Common Stock, Options or Convertible Securities issued as a dividend or distribution on Preferred Stock;

(ii) shares of Common Stock, Options or Convertible Securities issued by reason of a dividend, stock split, split-up or other distribution on shares of Common Stock that is covered by Sections 4.5, 4.6, 4.7 or 4.8;

(iii) shares of Common Stock or Options issued to employees or directors of, or consultants or advisors to, the Corporation or any of its subsidiaries pursuant to a plan, agreement or arrangement approved by the Board of Directors, including at least one (1) Series B Director and one (1) Series A Director;

(iv) shares of Common Stock or Convertible Securities actually issued upon the exercise of Options or shares of Common Stock actually issued upon the conversion or exchange of Convertible Securities, in each case provided such issuance is pursuant to the terms of such Option or Convertible Security;

(v) shares of Common Stock, Options or Convertible Securities issued to banks, equipment lessors or other financial institutions, or to real property lessors, pursuant to a debt financing, equipment leasing or real property leasing

transaction approved by the Board of Directors, including at least one (1) Series B Director and one (1) Series A Director;

(vi) shares of Common Stock issued in connection with a Qualified IPO;

(vii) shares of Common Stock, Options or Convertible Securities issued in connection with joint ventures, development projects, acquisitions, or other strategic transactions, in each case approved by the Board of Directors, including at least one (1) Series B Director and one (1) Series A Director;

(viii) shares of Common Stock issued prior to the initial date of issuance of the Series B Preferred Stock pursuant to that certain Exclusive License Agreement, dated as of April 13, 2016, by and between the Corporation and H. Lundbeck A/S; or

(ix) shares of Common Stock issued upon the conversion of Series B Preferred Stock issued pursuant to the Purchase Agreement.

4.4.2 No Adjustment of Conversion Price. No adjustment in the Conversion Price shall be made as the result of the issuance or deemed issuance of Additional Shares of Common Stock if the Corporation receives written notice from the Requisite Preferred Holders, agreeing that no such adjustment shall be made as the result of the issuance or deemed issuance of such Additional Shares of Common Stock; provided, that, any waiver of an adjustment to the Conversion Price of the Series B Preferred Stock shall also require the consent or vote of holders owning sixty percent (60%) of the outstanding Series B Preferred Stock.

4.4.3 Deemed Issue of Additional Shares of Common Stock.

(a) If the Corporation at any time or from time to time after the Original Issue Date shall issue any Options or Convertible Securities (excluding Options or Convertible Securities which are themselves Exempted Securities) or shall fix a record date for the determination of holders of any class of securities entitled to receive any such Options or Convertible Securities, then the maximum number of shares of Common Stock (as set forth in the instrument relating thereto, assuming the satisfaction of any conditions to exercisability, convertibility or exchangeability but without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or, in the case of Convertible Securities and Options therefor, the conversion or exchange of such Convertible Securities, shall be deemed to be Additional Shares of Common Stock issued as of the time of such issue or, in case such a record date shall have been fixed, as of the close of business on such record date.

(b) If the terms of any Option or Convertible Security, the issuance of which resulted in an adjustment to the Conversion Price pursuant to the terms of Section 4.4.4, are revised as a result of an amendment to such terms or any other adjustment pursuant to the provisions of such Option or Convertible Security (but excluding automatic adjustments to such terms pursuant to anti-dilution or similar provisions of such Option or Convertible Security) to provide for either (1) any increase or decrease in the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any such Option or

Convertible Security or (2) any increase or decrease in the consideration payable to the Corporation upon such exercise, conversion and/or exchange, then, effective upon such increase or decrease becoming effective, the Conversion Price computed upon the original issue of such Option or Convertible Security (or upon the occurrence of a record date with respect thereto) shall be readjusted to such Conversion Price as would have obtained had such revised terms been in effect upon the original date of issuance of such Option or Convertible Security. Notwithstanding the foregoing, no readjustment pursuant to this clause (b) shall have the effect of increasing the Conversion Price to an amount which exceeds the lower of (i) the Conversion Price in effect immediately prior to the original adjustment made as a result of the issuance of such Option or Convertible Security, or (ii) the Conversion Price that would have resulted from any issuances of Additional Shares of Common Stock (other than deemed issuances of Additional Shares of Common Stock as a result of the issuance of such Option or Convertible Security) between the original adjustment date and such readjustment date.

(c) If the terms of any Option or Convertible Security (excluding Options or Convertible Securities which are themselves Exempted Securities), the issuance of which did not result in an adjustment to the Conversion Price pursuant to the terms of Section 4.4.4 (either because the consideration per share (determined pursuant to Section 4.4.5) of the Additional Shares of Common Stock subject thereto was equal to or greater than the Conversion Price then in effect, or because such Option or Convertible Security was issued before the Original Issue Date), are revised after the Original Issue Date as a result of an amendment to such terms or any other adjustment pursuant to the provisions of such Option or Convertible Security (but excluding automatic adjustments to such terms pursuant to antidilution or similar provisions of such Option or Convertible Security) to provide for either (1) any increase in the number of shares of Common Stock issuable upon the exercise, conversion or exchange of any such Option or Convertible Security or (2) any decrease in the consideration payable to the Corporation upon such exercise, conversion or exchange, then such Option or Convertible Security, as so amended or adjusted, and the Additional Shares of Common Stock subject thereto (determined in the manner provided in Section 4.4.3(a) shall be deemed to have been issued effective upon such increase or decrease becoming effective.

(d) Upon the expiration or termination of any unexercised Option or unconverted or unexchanged Convertible Security (or portion thereof) which resulted (either upon its original issuance or upon a revision of its terms) in an adjustment to the Conversion Price pursuant to the terms of Section 4.4.4, the Conversion Price shall be readjusted to such Conversion Price as would have been obtained had such Option or Convertible Security (or portion thereof) never been issued.

(e) If the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any Option or Convertible Security, or the consideration payable to the Corporation upon such exercise, conversion and/or exchange, is calculable at the time such Option or Convertible Security is issued or amended but is subject to adjustment based upon subsequent events, any adjustment to the Conversion Price provided for in this Section 4.4.3 shall be effected at the time of such issuance or amendment based on such number of shares or amount of consideration without regard to any provisions for subsequent adjustments (and any subsequent adjustments shall be treated as provided in clauses (b) and (c) of this Section 4.4.3). If the number of shares of Common Stock issuable upon the exercise,

conversion and/or exchange of any Option or Convertible Security, or the consideration payable to the Corporation upon such exercise, conversion and/or exchange, cannot be calculated at all at the time such Option or Convertible Security is issued or amended, any adjustment to the Conversion Price that would result under the terms of this Section 4.4.3 at the time of such issuance or amendment shall instead be effected at the time such number of shares and/or amount of consideration is first calculable (even if subject to subsequent adjustments), assuming for purposes of calculating such adjustment to the Conversion Price that such issuance or amendment took place at the time such calculation can first be made.

4.4.4 Adjustment of Conversion Price Upon Issuance of Additional Shares of Common Stock. In the event the Corporation shall at any time after the Original Issue Date issue Additional Shares of Common Stock (including Additional Shares of Common Stock deemed to be issued pursuant to Section 4.4.3), without consideration or for a consideration per share less than the applicable Conversion Price in effect immediately prior to such issue, then the Conversion Price shall be reduced, concurrently with such issue, to a price (calculated to the nearest one-hundredth of a cent) determined in accordance with the following formula:

$$CP_2 = CP_1 * (A + B) \div (A + C).$$

For purposes of the foregoing formula, the following definitions shall apply:

(a) "***CP_2***" shall mean the Conversion Price applicable to such series of Preferred Stock in effect immediately after such issue of Additional Shares of Common Stock;

(b) "***CP_1***" shall mean the Conversion Price applicable to such series of Preferred Stock in effect immediately prior to such issue of Additional Shares of Common Stock;

(c) "***A***" shall mean the number of shares of Common Stock outstanding immediately prior to such issue of Additional Shares of Common Stock (treating for this purpose as outstanding all shares of Common Stock issuable upon exercise of Options outstanding immediately prior to such issue or upon conversion or exchange of Convertible Securities (including Preferred Stock) outstanding (assuming exercise of any outstanding Options therefor) immediately prior to such issue);

(d) "***B***" shall mean the number of shares of Common Stock that would have been issued if such Additional Shares of Common Stock had been issued at a price per share equal to CP1 (determined by dividing the aggregate consideration received by the Corporation in respect of such issue by CP_1); and

(e) "***C***" shall mean the number of such Additional Shares of Common Stock issued in such transaction.

4.4.5 Determination of Consideration. For purposes of this Section 4.4, the consideration received by the Corporation for the issue of any Additional Shares of Common Stock shall be computed as follows:

(a) Cash and Property: Such consideration shall:

(i) insofar as it consists of cash, be computed at the aggregate amount of cash received by the Corporation, excluding amounts paid or payable for accrued interest;

(ii) insofar as it consists of property other than cash, be computed at the fair market value thereof at the time of such issue, as determined in good faith by the Board of Directors; and

(iii) in the event Additional Shares of Common Stock are issued together with other shares or securities or other assets of the Corporation for consideration which covers both, be the proportion of such consideration so received, computed as provided in clauses (i) and (ii) above, as determined in good faith by the Board of Directors.

(b) Options and Convertible Securities. The consideration per share received by the Corporation for Additional Shares of Common Stock deemed to have been issued pursuant to Section 4.4.3, relating to Options and Convertible Securities, shall be determined by dividing:

(i) The total amount, if any, received or receivable by the Corporation as consideration for the issue of such Options or Convertible Securities, plus the minimum aggregate amount of additional consideration (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such consideration) payable to the Corporation upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities, by

(ii) the maximum number of shares of Common Stock (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities.

4.4.6 Multiple Closing Dates. In the event the Corporation shall issue on more than one date Additional Shares of Common Stock that are a part of one transaction or a series of related transactions and that would result in an adjustment to the Conversion Price pursuant to the terms of Section 4.4.4, and such issuance dates occur within a period of no more than ninety (90) days from the first such issuance to the final such issuance, then, upon the final such issuance, the Conversion Price shall be readjusted to give effect to all such issuances as if they occurred on the date of the first such issuance (and without giving effect to any additional adjustments as a result of any such subsequent issuances within such period).

4.5 Adjustment for Stock Splits and Combinations. If the Corporation shall at any time or from time to time after the Original Issue Date effect a subdivision of the outstanding Common Stock, the Conversion Price in effect immediately before that subdivision

shall be proportionately decreased so that the number of shares of Common Stock issuable on conversion of each share of such series shall be increased in proportion to such increase in the aggregate number of shares of Common Stock outstanding. If the Corporation shall at any time or from time to time after the Original Issue Date combine the outstanding shares of Common Stock, the Conversion Price in effect immediately before the combination shall be proportionately increased so that the number of shares of Common Stock issuable on conversion of each share of such series shall be decreased in proportion to such decrease in the aggregate number of shares of Common Stock outstanding. Any adjustment under this Section shall become effective at the close of business on the date the subdivision or combination becomes effective.

4.6 Adjustment for Certain Dividends and Distributions. In the event the Corporation at any time or from time to time after the Original Issue Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable on the Common Stock in additional shares of Common Stock, then and in each such event the Conversion Price in effect immediately before such event shall be decreased as of the time of such issuance or, in the event such a record date shall have been fixed, as of the close of business on such record date, by multiplying the Conversion Price then in effect by a fraction:

(1) the numerator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date, and

(2) the denominator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date plus the number of shares of Common Stock issuable in payment of such dividend or distribution.

Notwithstanding the foregoing, (a) if such record date shall have been fixed and such dividend is not fully paid or if such distribution is not fully made on the date fixed therefor, the Conversion Price shall be recomputed accordingly as of the close of business on such record date and thereafter the Conversion Price shall be adjusted pursuant to this Section as of the time of actual payment of such dividends or distributions; and (b) that no such adjustment shall be made if the holders of Preferred Stock simultaneously receive a dividend or other distribution of shares of Common Stock in a number equal to the number of shares of Common Stock as they would have received if all outstanding shares of Preferred Stock had been converted into Common Stock on the date of such event.

4.7 Adjustments for Other Dividends and Distributions. In the event the Corporation at any time or from time to time after the Original Issue Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in securities of the Corporation (other than a distribution of shares of Common Stock in respect of outstanding shares of Common Stock) or in other property and the provisions of Section 1 do not apply to such dividend or distribution, then and in each such event the holders of Preferred Stock shall receive, simultaneously with the distribution to the holders of Common Stock, a dividend or other distribution of such securities or other property in an amount equal to the amount of such securities or other property as they would have received if all outstanding shares of Preferred Stock had been converted into Common Stock on the date of such event.

4.8 Adjustment for Merger or Reorganization, etc. Subject to the provisions of Section 2.5, if there shall occur any reorganization, recapitalization, reclassification, consolidation or merger involving the Corporation in which the Common Stock (but not the Preferred Stock) is converted into or exchanged for securities, cash or other property (other than a transaction covered by Sections 4.4, 4.6 or 4.7), then, following any such reorganization, recapitalization, reclassification, consolidation or merger, each share of a series of Preferred Stock shall thereafter be convertible in lieu of the Common Stock into which it was convertible prior to such event into the kind and amount of securities, cash or other property which a holder of the number of shares of Common Stock of the Corporation issuable upon conversion of one share of such series of Preferred Stock immediately prior to such reorganization, recapitalization, reclassification, consolidation or merger would have been entitled to receive pursuant to such transaction; and, in such case, appropriate adjustment (as determined in good faith by the Board of Directors) shall be made in the application of the provisions in this Section 4 with respect to the rights and interests thereafter of the holders of the Preferred Stock, to the end that the provisions set forth in this Section 4 (including provisions with respect to changes in and other adjustments of the Conversion Price) shall thereafter be applicable, as nearly as reasonably may be, in relation to any securities or other property thereafter deliverable upon the conversion of the Preferred Stock. For the avoidance of doubt, nothing in this Section 4.8 shall be construed as preventing the holders of Preferred Stock from seeking any appraisal rights to which they are otherwise entitled under the General Corporation Law in connection with a merger triggering an adjustment hereunder, nor shall this Section 4.8 be deemed conclusive evidence of the fair value of the shares of Preferred Stock in any such appraisal proceeding.

4.9 Certificate as to Adjustments. Upon the occurrence of each adjustment or readjustment of the Conversion Price pursuant to this Section 4, the Corporation at its expense shall, as promptly as reasonably practicable but in any event not later than ten (10) days thereafter, compute such adjustment or readjustment in accordance with the terms hereof and furnish to each holder of Preferred Stock a certificate setting forth such adjustment or readjustment (including the kind and amount of securities, cash or other property into which the Preferred Stock is convertible) and showing in detail the facts upon which such adjustment or readjustment is based. The Corporation shall, as promptly as reasonably practicable after the written request at any time of any holder of Preferred Stock (but in any event not later than ten (10) days thereafter), furnish or cause to be furnished to such holder a certificate setting forth (i) the Conversion Price then in effect, and (ii) the number of shares of Common Stock and the amount, if any, of other securities, cash or property which then would be received upon the conversion of Preferred Stock.

4.10 Notice of Record Date. In the event:

(a) the Corporation shall take a record of the holders of its Common Stock (or other capital stock or securities at the time issuable upon conversion of Preferred Stock) for the purpose of entitling or enabling them to receive any dividend or other distribution, or to receive any right to subscribe for or purchase any shares of capital stock of any class or any other securities, or to receive any other security; or

(b) of any capital reorganization of the Corporation, any reclassification of the Common Stock of the Corporation, or any Deemed Liquidation Event; or

(c) of the voluntary or involuntary dissolution, liquidation or winding-up of the Corporation, then, and in each such case, the Corporation will send or cause to be sent to the holders of Preferred Stock a notice specifying, as the case may be, (i) the record date for such dividend, distribution or right, and the amount and character of such dividend, distribution or right, or (ii) the effective date on which such reorganization, reclassification, consolidation, merger, transfer, dissolution, liquidation or winding-up is proposed to take place, and the time, if any is to be fixed, as of which the holders of record of Common Stock (or such other capital stock or securities at the time issuable upon the conversion of the Preferred Stock) shall be entitled to exchange their shares of Common Stock (or such other capital stock or securities) for securities or other property deliverable upon such reorganization, reclassification, consolidation, merger, transfer, dissolution, liquidation or winding-up, and the amount per share and character of such exchange applicable to the Preferred Stock and the Common Stock. Such notice shall be sent at least ten (10) days prior to the record date or effective date for the event specified in such notice.

5. Mandatory Conversion.

5.1 Trigger Events. Upon either (a) the closing of the sale of shares of Common Stock to the public in a firm-commitment underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended, at a price per share of at least $2.6129 per share (subject to appropriate adjustment in the event of any stock split, combination or other similar recapitalization with respect to the Common Stock) and resulting in $60,000,000 or more of gross offering proceeds to the Corporation (a "**Qualified IPO**") or (b) the date and time, or the occurrence of an event, specified by vote or written consent of the Requisite Preferred Holders (the time of such closing or the date and time specified or the time of the event specified in such vote or written consent is referred to herein as the "**Mandatory Conversion Time**"), then (i) all outstanding shares of Preferred Stock shall automatically be converted into shares of Common Stock, at the then effective conversion rate as calculated pursuant to Section 4.1.1(b) and (ii) such shares may not be reissued by the Corporation.

5.2 Procedural Requirements. All holders of record of shares of Preferred Stock shall be sent written notice of the Mandatory Conversion Time and the place designated for mandatory conversion of all such shares of Preferred Stock pursuant to this Section 5. Such notice need not be sent in advance of the occurrence of the Mandatory Conversion Time. Upon receipt of such notice, each holder of shares of Preferred Stock in certificated form shall surrender his, her or its certificate or certificates for all such shares (or, if such holder alleges that such certificate has been lost, stolen or destroyed, a lost certificate affidavit and agreement reasonably acceptable to the Corporation to indemnify the Corporation against any claim that may be made against the Corporation on account of the alleged loss, theft or destruction of such certificate) to the Corporation at the place designated in such notice. If so required by the Corporation, any certificates surrendered for conversion shall be endorsed or accompanied by written instrument or instruments of transfer, in form satisfactory to the Corporation, duly executed by the registered holder or by his, her or its attorney duly authorized in writing. All rights with respect to the Preferred Stock converted pursuant to Section 5.1, including the rights, if any, to

receive notices and vote (other than as a holder of Common Stock), will terminate at the Mandatory Conversion Time (notwithstanding the failure of the holder or holders thereof to surrender any certificates at or prior to such time), except only the rights of the holders thereof, upon surrender of any certificate or certificates of such holders (or lost certificate affidavit and agreement) therefor, to receive the items provided for in the next sentence of this Section 5.2. As soon as practicable after the Mandatory Conversion Time and, if applicable, the surrender of any certificate or certificates (or lost certificate affidavit and agreement) for Preferred Stock, the Corporation shall (a) issue and deliver to such holder, or to his, her or its nominees, a certificate or certificates for the number of full shares of Common Stock issuable on such conversion in accordance with the provisions hereof and (b) pay cash as provided in Section 4.2 in lieu of any fraction of a share of Common Stock otherwise issuable upon such conversion and the payment of any declared but unpaid dividends on the shares of Preferred Stock converted. Such converted Preferred Stock shall be retired and cancelled and may not be reissued as shares of such series, and the Corporation may thereafter take such appropriate action (without the need for stockholder action) as may be necessary to reduce the authorized number of shares of Preferred Stock accordingly.

6. Redeemed or Otherwise Acquired Shares. Any shares of Preferred Stock that are redeemed or otherwise acquired by the Corporation or any of its subsidiaries shall be automatically and immediately cancelled and retired and shall not be reissued, sold or transferred. Neither the Corporation nor any of its subsidiaries may exercise any voting or other rights granted to the holders of Preferred Stock following redemption.

7. Waiver. Any of the rights, powers, preferences and other terms of the Preferred Stock set forth herein may be waived on behalf of all holders of Preferred Stock by the Requisite Preferred Holders, except as otherwise provided in Sections 3.4 to 3.6 and Section 4.4.2.

8. Notices. Any notice required or permitted by the provisions of this Article Fourth to be given to a holder of shares of Preferred Stock shall be mailed, postage prepaid, to the post office address last shown on the records of the Corporation, or given by electronic communication in compliance with the provisions of the General Corporation Law, and shall be deemed sent upon such mailing or electronic transmission.

FIFTH: Subject to any additional vote required by this Second Amended and Restated Certificate or the Bylaws, in furtherance and not in limitation of the powers conferred by statute, the Board of Directors is expressly authorized to make, repeal, alter, amend and rescind any or all of the Bylaws.

SIXTH: Subject to any additional vote required by this Second Amended and Restated Certificate, the number of directors of the Corporation shall be determined in the manner set forth in the Bylaws.

SEVENTH: Elections of directors need not be by written ballot unless the Bylaws shall so provide.

EIGHTH: Meetings of stockholders may be held within or without the State of Delaware, as the Bylaws may provide. The books of the Corporation may be kept outside the State of Delaware at such place or places as may be designated from time to time by the Board of Directors or in the Bylaws.

NINTH: To the fullest extent permitted by law, a director of the Corporation shall not be personally liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a director. If the General Corporation Law or any other law of the State of Delaware is amended after approval by the stockholders of this Article Ninth to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of a director of the Corporation shall be eliminated or limited to the fullest extent permitted by the General Corporation Law as so amended.

Any repeal or modification of the foregoing provisions of this Article Ninth by the stockholders of the Corporation shall not adversely affect any right or protection of a director of the Corporation existing at the time of, or increase the liability of any director of the Corporation with respect to any acts or omissions of such director occurring prior to, such repeal or modification.

TENTH: To the fullest extent permitted by applicable law, the Corporation is authorized to provide indemnification of (and advancement of expenses to) directors, officers and agents of the Corporation (and any other persons to which General Corporation Law permits the Corporation to provide indemnification) through Bylaw provisions, agreements with such agents or other persons, vote of stockholders or disinterested directors or otherwise, in excess of the indemnification and advancement otherwise permitted by Section 145 of the General Corporation Law.

Any amendment, repeal or modification of the foregoing provisions of this Article Tenth shall not adversely affect any right or protection of any director, officer or other agent of the Corporation existing at the time of such amendment, repeal or modification.

ELEVENTH: The Corporation renounces, to the fullest extent permitted by law, any interest or expectancy of the Corporation in, or in being offered an opportunity to participate in, any Excluded Opportunity. An "**Excluded Opportunity**" is any matter, transaction or interest that is presented to, or acquired, created or developed by, or which otherwise comes into the possession of (i) any director of the Corporation who is not an employee of the Corporation or any of its subsidiaries, or (ii) any holder of Preferred Stock or any partner, member, director, stockholder, employee or agent of any such holder, other than someone who is an employee of the Corporation or any of its subsidiaries (collectively, "**Covered Persons**"), unless such matter, transaction or interest is presented to, or acquired, created or developed by, or otherwise comes into the possession of, a Covered Person expressly and solely in such Covered Person's capacity as a director of the Corporation.

TWELFTH: Unless the Corporation consents in writing to the selection of an alternative forum, the Court of Chancery in the State of Delaware shall be the sole and exclusive forum for any stockholder (including a beneficial owner) to bring (i) any derivative action or proceeding brought on behalf of the Corporation, (ii) any action asserting a claim of breach of fiduciary duty owed by any director, officer or other employee of the Corporation to the Corporation or the Corporation's stockholders, (iii) any action asserting a claim against the

Corporation, its directors, officers or employees arising pursuant to any provision of the General Corporation Law or this Second Amended and Restated Certificate or the Bylaws or (iv) any action asserting a claim against the Corporation, its directors, officers or employees governed by the internal affairs doctrine, except for, as to each of (i) through (iv) above, any claim as to which the Court of Chancery determines that there is an indispensable party not subject to the jurisdiction of the Court of Chancery (and the indispensable party does not consent to the personal jurisdiction of the Court of Chancery within ten (10) days following such determination), which is vested in the exclusive jurisdiction of a court or forum other than the Court of Chancery, or for which the Court of Chancery does not have subject matter jurisdiction. If any provision or provisions of this Article Twelfth shall be held to be invalid, illegal or unenforceable as applied to any person or entity or circumstance for any reason whatsoever, then, to the fullest extent permitted by law, the validity, legality and enforceability of such provisions in any other circumstance and of the remaining provisions of this Article Twelfth (including, without limitation, each portion of any sentence of this Article Twelfth containing any such provision held to be invalid, illegal or unenforceable that is not itself held to be invalid, illegal or unenforceable) and the application of such provision to other persons or entities and circumstances shall not in any way be affected or impaired thereby.

* * *

4. That the foregoing amendment and restatement was approved by the holders of the requisite number of shares of this corporation in accordance with Section 228 of the General Corporation Law.

5. That this Second Amended and Restated Certificate, which restates and integrates and further amends the provisions of the Restated Certificate, has been duly adopted in accordance with Sections 242 and 245 of the General Corporation Law.

IN WITNESS WHEREOF, this Second Amended and Restated Certificate of Incorporation has been executed by a duly authorized officer of this corporation on this 15th day of March, 2019.

By: /s/ Rahul Ballal
Rahul Ballal
Chief Executive Officer

[Signature Page to Second Amended and Restated Certificate of Incorporation of IMARA Inc.]

Exhibit 3.2

BYLAWS

OF

IMARA INC.

(a Delaware corporation)

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ARTICLE I

STOCKHOLDERS

1.1 Place of Meetings. All meetings of stockholders shall be held at such place as may be designated from time to time by the Board of Directors, the Chairman of the Board, the Chief Executive Officer or the President or, if not so designated, at the principal office of the corporation. The Board of Directors may, in its sole discretion, determine that a meeting shall not be held at any place, but may instead be held solely by means of remote communication in a manner consistent with the General Corporation Law of the State of Delaware.

1.2 Annual Meeting. The annual meeting of stockholders for the election of directors and for the transaction of such other business as may properly be brought before the meeting shall be held on a date and at a time designated by the Board of Directors, the Chairman of the Board, the Chief Executive Officer or the President (which date shall not be a legal holiday in the place where the meeting is to be held).

1.3 Special Meetings. Special meetings of stockholders for any purpose or purposes may be called at any time by only the Board of Directors, the Chairman of the Board, the Chief Executive Officer or the President, and may not be called by any other person or persons. The Board of Directors may postpone or reschedule any previously scheduled special meeting of stockholders. Business transacted at any special meeting of stockholders shall be limited to matters relating to the purpose or purposes stated in the notice of meeting.

1.4 Notice of Meetings. Except as otherwise provided by law, notice of each meeting of stockholders, whether annual or special, shall be given not less than 10 nor more than 60 days before the date of the meeting to each stockholder entitled to vote at such meeting. Without limiting the manner by which notice otherwise may be given to stockholders, any notice shall be effective if given by a form of electronic transmission consented to (in a manner consistent with the General Corporation Law of the State of Delaware) by the stockholder to whom the notice is given. The notices of all meetings shall state the place, if any, date and time of the meeting and the means of remote communications, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such meeting. The notice of a special meeting shall state, in addition, the purpose or purposes for which the meeting is called. If notice is given by mail, such notice shall be deemed given when deposited in the United States mail, postage prepaid, directed to the stockholder at such stockholder’s address as it appears on the records of the corporation. If notice is given by electronic transmission, such notice shall be deemed given at the time specified in Section 232 of the General Corporation Law of the State of Delaware.

1.5 Voting List. The Secretary shall prepare, at least 10 days before every meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting, arranged in alphabetical order, and showing the address of each stockholder and the number of shares registered in the name of each stockholder. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting, for a period of at least 10 days prior to the meeting: (a) on a reasonably accessible electronic network, provided that the information required to gain access to such list is provided with the notice of the meeting, or (b) during ordinary business hours, at the principal place of business of the corporation. If the meeting is to

be held at a physical location (and not solely by means of remote communication), then the list shall be produced and kept at the time and place of the meeting during the whole time thereof, and may be inspected by any stockholder who is present. If the meeting is to be held solely by means of remote communication, then the list shall also be open to the examination of any stockholder during the whole time of the meeting on a reasonably accessible electronic network, and the information required to access such list shall be provided with the notice of the meeting. The list shall presumptively determine the identity of the stockholders entitled to vote at the meeting and the number of shares held by each of them.

1.6 Quorum. Except as otherwise provided by law, the Certificate of Incorporation or these Bylaws, the holders of a majority in voting power of the shares of the capital stock of the corporation issued and outstanding and entitled to vote at the meeting, present in person, present by means of remote communication in a manner, if any, authorized by the Board of Directors in its sole discretion, or represented by proxy, shall constitute a quorum for the transaction of business; provided, however, that where a separate vote by a class or classes or series of capital stock is required by law or the Certificate of Incorporation, the holders of a majority in voting power of the shares of such class or classes or series of the capital stock of the corporation issued and outstanding and entitled to vote on such matter, present in person, present by means of remote communication in a manner, if any, authorized by the Board of Directors in its sole discretion, or represented by proxy, shall constitute a quorum entitled to take action with respect to the vote on such matter. A quorum, once established at a meeting, shall not be broken by the withdrawal of enough votes to leave less than a quorum.

1.7 Adjournments. Any meeting of stockholders may be adjourned from time to time to any other time and to any other place at which a meeting of stockholders may be held under these Bylaws by the chairman of the meeting or by the stockholders present or represented at the meeting and entitled to vote, although less than a quorum. It shall not be necessary to notify any stockholder of any adjournment of less than 30 days if the time and place, if any, of the adjourned meeting, and the means of remote communication, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such adjourned meeting, are announced at the meeting at which adjournment is taken, unless after the adjournment a new record date is fixed for the adjourned meeting. At the adjourned meeting, the corporation may transact any business which might have been transacted at the original meeting.

1.8 Voting and Proxies. Each stockholder shall have one vote for each share of stock entitled to vote held of record by such stockholder and a proportionate vote for each fractional share so held, unless otherwise provided by law or the Certificate of Incorporation. Each stockholder of record entitled to vote at a meeting of stockholders, or to express consent or dissent to corporate action without a meeting, may vote or express such consent or dissent in person (including by means of remote communications, if any, by which stockholders may be deemed to be present in person and vote at such meeting) or may authorize another person or persons to vote or act for such stockholder by a proxy executed or transmitted in a manner permitted by the General Corporation Law of the State of Delaware by the stockholder or such stockholder's authorized agent and delivered (including by electronic transmission) to the Secretary of the corporation. No such proxy shall be voted or acted upon after three years from the date of its execution, unless the proxy expressly provides for a longer period.

1.9 Action at Meeting. When a quorum is present at any meeting, any matter other than the election of directors to be voted upon by the stockholders at such meeting shall be decided by the vote of the holders of shares of stock having a majority in voting power of the votes cast by the holders of all of the shares of stock present or represented at the meeting and voting affirmatively or negatively on such matter (or if there are two or more classes or series of stock entitled to vote as separate classes, then in the case of each such class or series, the holders of a majority in voting power of the shares of stock of that class or series present or represented at the meeting and voting affirmatively or negatively on such matter), except when a different vote is required by law, the Certificate of Incorporation or these Bylaws. When a quorum is present at any meeting, any election by stockholders of directors shall be determined by a plurality of the votes cast by the stockholders entitled to vote on the election.

1.10 Conduct of Meetings.

(a) Chairman of Meeting. Meetings of stockholders shall be presided over by the Chairman of the Board, if any, or in the Chairman's absence by the Vice Chairman of the Board, if any, or in the Vice Chairman's absence by the Chief Executive Officer, or in the Chief Executive Officer's absence, by the President, or in the President's absence by a Vice President, or in the absence of all of the foregoing persons by a chairman designated by the Board of Directors, or in the absence of such designation by a chairman chosen by vote of the stockholders at the meeting. The Secretary shall act as secretary of the meeting, but in the Secretary's absence the chairman of the meeting may appoint any person to act as secretary of the meeting.

(b) Rules, Regulations and Procedures. The Board of Directors may adopt by resolution such rules, regulations and procedures for the conduct of any meeting of stockholders of the corporation as it shall deem appropriate including, without limitation, such guidelines and procedures as it may deem appropriate regarding the participation by means of remote communication of stockholders and proxyholders not physically present at a meeting. Except to the extent inconsistent with such rules, regulations and procedures as adopted by the Board of Directors, the chairman of any meeting of stockholders shall have the right and authority to prescribe such rules, regulations and procedures and to do all such acts as, in the judgment of such chairman, are appropriate for the proper conduct of the meeting. Such rules, regulations or procedures, whether adopted by the Board of Directors or prescribed by the chairman of the meeting, may include, without limitation, the following: (i) the establishment of an agenda or order of business for the meeting; (ii) rules and procedures for maintaining order at the meeting and the safety of those present; (iii) limitations on attendance at or participation in the meeting to stockholders of record of the corporation, their duly authorized and constituted proxies or such other persons as shall be determined; (iv) restrictions on entry to the meeting after the time fixed for the commencement thereof; and (v) limitations on the time allotted to questions or comments by participants. Unless and to the extent determined by the Board of Directors or the chairman of the meeting, meetings of stockholders shall not be required to be held in accordance with the rules of parliamentary procedure.

1.11 Action without Meeting.

(a) Taking of Action by Consent. Any action required or permitted to be taken at any annual or special meeting of stockholders of the corporation may be taken without a meeting, without prior notice and without a vote, if a consent in writing, setting forth the action so taken, is signed by the holders of outstanding stock having not less than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all shares entitled to vote on such action were present and voted. Except as otherwise provided by the Certificate of Incorporation, stockholders may act by written consent to elect directors; provided, however, that, if such consent is less than unanimous, such action by written consent may be in lieu of holding an annual meeting only if all of the directorships to which directors could be elected at an annual meeting held at the effective time of such action are vacant and are filled by such action.

(b) Electronic Transmission of Consents. A telegram, cablegram or other electronic transmission consenting to an action to be taken and transmitted by a stockholder or proxyholder, or by a person or persons authorized to act for a stockholder or proxyholder, shall be deemed to be written, signed and dated for the purposes of this section, provided that any such telegram, cablegram or other electronic transmission sets forth or is delivered with information from which the corporation can determine (i) that the telegram, cablegram or other electronic transmission was transmitted by the stockholder or proxyholder or by a person or persons authorized to act for the stockholder or proxyholder and (ii) the date on which such stockholder or proxyholder or authorized person or persons transmitted such telegram, cablegram or electronic transmission. The date on which such telegram, cablegram or electronic transmission is transmitted shall be deemed to be the date on which such consent was signed. No consent given by telegram, cablegram or other electronic transmission shall be deemed to have been delivered until such consent is reproduced in paper form and until such paper form shall be delivered to the corporation by delivery to its registered office in the State of Delaware, its principal place of business or an officer or agent of the corporation having custody of the book in which proceedings of meetings of stockholders are recorded. Delivery made to a corporation's registered office shall be made by hand or by certified or registered mail, return receipt requested. Notwithstanding the foregoing limitations on delivery, consents given by telegram, cablegram or other electronic transmission may be otherwise delivered to the principal place of business of the corporation or to an officer or agent of the corporation having custody of the book in which proceedings of meetings of stockholders are recorded if, to the extent and in the manner provided by resolution of the Board of Directors. Any copy, facsimile or other reliable reproduction of a consent in writing may be substituted or used in lieu of the original writing for any and all purposes for which the original writing could be used, provided that such copy, facsimile or other reproduction shall be a complete reproduction of the entire original writing.

(c) Notice of Taking of Corporate Action. Prompt notice of the taking of corporate action without a meeting by less than unanimous written consent shall be given to those stockholders who have not consented in writing and who, if the action had been taken at a meeting, would have been entitled to notice of the meeting if the record date for such meeting had been the date that written consents signed by a sufficient number of holders to take the action were delivered to the corporation.

ARTICLE II

DIRECTORS

2.1 General Powers. The business and affairs of the corporation shall be managed by or under the direction of a Board of Directors, who may exercise all of the powers of the corporation except as otherwise provided by law or the Certificate of Incorporation.

2.2 Number, Election and Qualification. Subject to the rights of holders of any series of Preferred Stock to elect directors, the number of directors of the corporation shall be established from time to time by the stockholders or the Board of Directors. The directors shall be elected at the annual meeting of stockholders by such stockholders as have the right to vote on such election. Election of directors need not be by written ballot. Directors need not be stockholders of the corporation.

2.3 Chairman of the Board; Vice Chairman of the Board. The Board of Directors may appoint from its members a Chairman of the Board and a Vice Chairman of the Board, neither of whom need be an employee or officer of the corporation. If the Board of Directors appoints a Chairman of the Board, such Chairman shall perform such duties and possess such powers as are assigned by the Board of Directors and, if the Chairman of the Board is also designated as the corporation's Chief Executive Officer, shall have the powers and duties of the Chief Executive Officer prescribed in Section 3.7 of these Bylaws. If the Board of Directors appoints a Vice Chairman of the Board, such Vice Chairman shall perform such duties and possess such powers as are assigned by the Board of Directors. Unless otherwise provided by the Board of Directors, the Chairman of the Board or, in the Chairman's absence, the Vice Chairman of the Board, if any, shall preside at all meetings of the Board of Directors.

2.4 Tenure. Each director shall hold office until the next annual meeting of stockholders and until a successor is elected and qualified, or until such director's earlier death, resignation or removal.

2.5 Quorum. The greater of (a) a majority of the directors at any time in office and (b) one-third of the number of directors fixed pursuant to Section 2.2 of these Bylaws shall constitute a quorum of the Board of Directors. If at any meeting of the Board of Directors there shall be less than such a quorum, a majority of the directors present may adjourn the meeting from time to time without further notice other than announcement at the meeting, until a quorum shall be present.

2.6 Action at Meeting. Every act or decision done or made by a majority of the directors present at a meeting of the Board of Directors duly held at which a quorum is present shall be regarded as the act of the Board of Directors, unless a greater number is required by law or by the Certificate of Incorporation.

2.7 Removal. Except as otherwise provided by the General Corporation Law of the State of Delaware, any one or more or all of the directors of the corporation may be removed, with or without cause, by the holders of a majority of the shares then entitled to vote at an election of directors, except that the directors elected by the holders of a particular class or series of stock may be removed without cause only by vote of the holders of a majority of the outstanding shares of such class or series.

2.8 Vacancies. Subject to the rights of holders of any series of Preferred Stock to elect directors, unless and until filled by the stockholders, any vacancy or newly-created directorship on the Board of Directors, however occurring, may be filled by vote of a majority of the directors then in office, although less than a quorum, or by a sole remaining director. A director elected to fill a vacancy shall be elected for the unexpired term of such director's predecessor in office, and a director chosen to fill a position resulting from a newly-created directorship shall hold office until the next annual meeting of stockholders and until a successor is elected and qualified, or until such director's earlier death, resignation or removal.

2.9 Resignation. Any director may resign by delivering a resignation in writing or by electronic transmission to the corporation at its principal office or to the Chairman of the Board, the Chief Executive Officer, the President or the Secretary. Such resignation shall be effective upon delivery unless it is specified to be effective at some later time or upon the happening of some later event.

2.10 Regular Meetings. Regular meetings of the Board of Directors may be held without notice at such time and place as shall be determined from time to time by the Board of Directors; provided that any director who is absent when such a determination is made shall be given notice of the determination. A regular meeting of the Board of Directors may be held without notice immediately after and at the same place as the annual meeting of stockholders.

2.11 Special Meetings. Special meetings of the Board of Directors may be held at any time and place designated in a call by the Chairman of the Board, the Chief Executive Officer, the President, two or more directors, or by one director in the event that there is only a single director in office.

2.12 Notice of Special Meetings. Notice of the date, place, if any, and time of any special meeting of directors shall be given to each director by the Secretary or by the officer or one of the directors calling the meeting. Notice shall be duly given to each director (a) in person or by telephone at least 24 hours in advance of the meeting, (b) by sending written notice by reputable overnight courier, telecopy, facsimile or electronic transmission, or delivering written notice by hand, to such director's last known business, home or electronic transmission address at least 48 hours in advance of the meeting, or (c) by sending written notice by first-class mail to such director's last known business or home address at least 72 hours in advance of the meeting. A notice or waiver of notice of a meeting of the Board of Directors need not specify the purposes of the meeting.

2.13 Meetings by Conference Communications Equipment. Directors may participate in meetings of the Board of Directors or any committee thereof by means of conference telephone or other communications equipment by means of which all persons participating in the meeting can hear each other, and participation by such means shall constitute presence in person at such meeting.

2.14 Action by Consent. Any action required or permitted to be taken at any meeting of the Board of Directors or of any committee thereof may be taken without a meeting, if all members of the Board of Directors or committee, as the case may be, consent to the action in writing or by electronic transmission, and the written consents or electronic transmissions are filed with the minutes of proceedings of the Board of Directors or committee. Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form.

2.15 Committees. The Board of Directors may designate one or more committees, each committee to consist of one or more of the directors of the corporation with such lawfully delegable powers and duties as the Board of Directors thereby confers, to serve at the pleasure of the Board of Directors. The Board of Directors may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee. In the absence or disqualification of a member of a committee, the member or members of the committee present at any meeting and not disqualified from voting, whether or not such member or members constitute a quorum, may unanimously appoint another member of the Board of Directors to act at the meeting in the place of any such absent or disqualified member. Any such committee, to the extent provided in the resolution of the Board of Directors and subject to the provisions of law, shall have and may exercise all the powers and authority of the Board of Directors in the management of the business and affairs of the corporation and may authorize the seal of the corporation to be affixed to all papers which may require it. Each such committee shall keep minutes and make such reports as the Board of Directors may from time to time request. Except as the Board of Directors may otherwise determine, any committee may make rules for the conduct of its business, but unless otherwise provided by the directors or in such rules, its business shall be conducted as nearly as possible in the same manner as is provided in these Bylaws for the Board of Directors. Except as otherwise provided in the Certificate of Incorporation, these Bylaws, or the resolution of the Board of Directors designating the committee, a committee may create one or more subcommittees, each subcommittee to consist of one or more members of the committee, and delegate to a subcommittee any or all of the powers and authority of the committee.

2.16 Compensation of Directors. Directors may be paid such compensation for their services and such reimbursement for expenses of attendance at meetings as the Board of Directors may from time to time determine. No such payment shall preclude any director from serving the corporation or any of its parent or subsidiary entities in any other capacity and receiving compensation for such service.

ARTICLE III

OFFICERS

3.1 Titles. The officers of the corporation shall consist of a Chief Executive Officer, a President, a Secretary, a Treasurer and such other officers with such other titles as the Board of Directors shall determine, including one or more Vice Presidents, Assistant Treasurers and Assistant Secretaries. The Board of Directors may appoint such other officers as it may deem appropriate.

3.2 Election. The Chief Executive Officer, President, Treasurer and Secretary shall be elected annually by the Board of Directors at its first meeting following the annual meeting of stockholders. Other officers may be appointed by the Board of Directors at such meeting or at any other meeting.

3.3 Qualification. No officer need be a stockholder. Any two or more offices may be held by the same person.

3.4 Tenure. Except as otherwise provided by law, by the Certificate of Incorporation or by these Bylaws, each officer shall hold office until such officer's successor is elected and qualified, unless a different term is specified in the resolution electing or appointing such officer, or until such officer's earlier death, resignation or removal.

3.5 Resignation and Removal. Any officer may resign by delivering a written resignation to the corporation at its principal office or to the Chief Executive Officer, the President or the Secretary. Such resignation shall be effective upon receipt unless it is specified to be effective at some later time or upon the happening of some later event. Any officer may be removed at any time, with or without cause, by vote of a majority of the directors then in office. Except as the Board of Directors may otherwise determine, no officer who resigns or is removed shall have any right to any compensation as an officer for any period following such officer's resignation or removal, or any right to damages on account of such removal, whether such officer's compensation be by the month or by the year or otherwise, unless such compensation is expressly provided for in a duly authorized written agreement with the corporation.

3.6 Vacancies. The Board of Directors may fill any vacancy occurring in any office for any reason and may, in its discretion, leave unfilled for such period as it may determine any offices other than those of Chief Executive Officer, President, Treasurer and Secretary. Each such successor shall hold office for the unexpired term of such officer's predecessor and until a successor is elected and qualified, or until such officer's earlier death, resignation or removal.

3.7 President; Chief Executive Officer. Unless the Board of Directors has designated another person as the corporation's Chief Executive Officer, the President shall be the Chief Executive Officer of the corporation. The Chief Executive Officer shall have general charge and supervision of the business of the corporation subject to the direction of the Board of Directors, and shall perform all duties and have all powers that are commonly incident to the office of chief executive or that are delegated to such officer by the Board of Directors. The President shall perform such other duties and shall have such other powers as the Board of Directors or the Chief Executive Officer (if the President is not the Chief Executive Officer) may from time to time prescribe. In the event of the absence, inability or refusal to act of the Chief Executive Officer or the President (if the President is not the Chief Executive Officer), the Vice President (or if there shall be more than one, the Vice Presidents in the order determined by the Board of Directors) shall perform the duties of the Chief Executive Officer and when so performing such duties shall have all the powers of and be subject to all the restrictions upon the Chief Executive Officer.

3.8 Vice Presidents. Each Vice President shall perform such duties and possess such powers as the Board of Directors or the Chief Executive Officer may from time to time prescribe. The Board of Directors may assign to any Vice President the title of Executive Vice President, Senior Vice President or any other title selected by the Board of Directors.

3.9 Secretary and Assistant Secretaries. The Secretary shall perform such duties and shall have such powers as the Board of Directors or the Chief Executive Officer may from time to time prescribe. In addition, the Secretary shall perform such duties and have such powers as are incident to the office of the secretary, including without limitation the duty and power to give notices of all meetings of stockholders and special meetings of the Board of Directors, to attend all meetings of stockholders and the Board of Directors and keep a record of the proceedings, to maintain a stock ledger and prepare lists of stockholders and their addresses as required, to be custodian of corporate records and the corporate seal and to affix and attest to the same on documents.

Any Assistant Secretary shall perform such duties and possess such powers as the Board of Directors, the Chief Executive Officer or the Secretary may from time to time prescribe. In the event of the absence, inability or refusal to act of the Secretary, the Assistant Secretary (or if there shall be more than one, the Assistant Secretaries in the order determined by the Board of Directors) shall perform the duties and exercise the powers of the Secretary.

In the absence of the Secretary or any Assistant Secretary at any meeting of stockholders or directors, the chairman of the meeting shall designate a temporary secretary to keep a record of the meeting.

3.10 Treasurer and Assistant Treasurers. The Treasurer shall perform such duties and shall have such powers as may from time to time be assigned by the Board of Directors or the Chief Executive Officer. In addition, the Treasurer shall perform such duties and have such powers as are incident to the office of treasurer, including without limitation the duty and power to keep and be responsible for all funds and securities of the corporation, to deposit funds of the corporation in depositories selected in accordance with these Bylaws, to disburse such funds as ordered by the Board of Directors, to make proper accounts of such funds, and to render as required by the Board of Directors statements of all such transactions and of the financial condition of the corporation.

The Assistant Treasurers shall perform such duties and possess such powers as the Board of Directors, the Chief Executive Officer or the Treasurer may from time to time prescribe. In the event of the absence, inability or refusal to act of the Treasurer, the Assistant Treasurer (or if there shall be more than one, the Assistant Treasurers in the order determined by the Board of Directors) shall perform the duties and exercise the powers of the Treasurer.

3.11 Salaries. Officers of the corporation shall be entitled to such salaries, compensation or reimbursement as shall be fixed or allowed from time to time by the Board of Directors.

3.12 Delegation of Authority. The Board of Directors may from time to time delegate the powers or duties of any officer to any other officer or agent, notwithstanding any provision hereof.

ARTICLE IV

CAPITAL STOCK

4.1 Issuance of Stock. Subject to the provisions of the Certificate of Incorporation, the whole or any part of any unissued balance of the authorized capital stock of the corporation or the whole or any part of any shares of the authorized capital stock of the corporation held in the corporation's treasury may be issued, sold, transferred or otherwise disposed of by vote of the Board of Directors in such manner, for such lawful consideration and on such terms as the Board of Directors may determine.

4.2 Stock Certificates; Uncertificated Shares. The shares of the corporation shall be represented by certificates, provided that the Board of Directors may provide by resolution or resolutions that some or all of any or all classes or series of the corporation's stock shall be uncertificated shares. Every holder of stock of the corporation represented by certificates shall be entitled to have a certificate, in such form as may be prescribed by law and by the Board of Directors, representing the number of shares held by such holder registered in certificate form. Each such certificate shall be signed in a manner that complies with Section 158 of the General Corporation Law of the State of Delaware.

Each certificate for shares of stock which are subject to any restriction on transfer pursuant to the Certificate of Incorporation, these Bylaws, applicable securities laws or any agreement among any number of stockholders or among such holders and the corporation shall have conspicuously noted on the face or back of the certificate either the full text of the restriction or a statement of the existence of such restriction.

If the corporation shall be authorized to issue more than one class of stock or more than one series of any class, the powers, designations, preferences and relative, participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights shall be set forth in full or summarized on the face or back of each certificate representing shares of such class or series of stock, provided that in lieu of the foregoing requirements there may be set forth on the face or back of each certificate representing shares of such class or series of stock a statement that the corporation will furnish without charge to each stockholder who so requests a copy of the full text of the powers, designations, preferences and relative, participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights.

Within a reasonable time after the issuance or transfer of uncertificated shares, the corporation shall send to the registered owner thereof a written notice containing the information required to be set forth or stated on certificates pursuant to Sections 151, 202(a) or 218(a) of the General Corporation Law of the State of Delaware or, with respect to Section 151 of the General Corporation Law of the State of Delaware, a statement that the corporation will furnish without charge to each stockholder who so requests the powers, designations, preferences and relative participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights.

4.3 Transfers. Shares of stock of the corporation shall be transferable in the manner prescribed by law and in these Bylaws. Transfers of shares of stock of the corporation shall be made only on the books of the corporation or by transfer agents designated to transfer shares of stock of the corporation. Subject to applicable law, shares of stock represented by certificates shall be transferred only on the books of the corporation by the surrender to the corporation or its transfer agent of the certificate representing such shares properly endorsed or accompanied by a written assignment or power of attorney properly executed, and with such proof of authority or the authenticity of signature as the corporation or its transfer agent may reasonably require. Except as may be otherwise required by law, by the Certificate of Incorporation or by these Bylaws, the corporation shall be entitled to treat the record holder of stock as shown on its books as the owner of such stock for all purposes, including the payment of dividends and the right to vote with respect to such stock, regardless of any transfer, pledge or other disposition of such stock until the shares have been transferred on the books of the corporation in accordance with the requirements of these Bylaws.

4.4 Lost, Stolen or Destroyed Certificates. The corporation may issue a new certificate of stock in place of any previously issued certificate alleged to have been lost, stolen or destroyed, upon such terms and conditions as the Board of Directors may prescribe, including the presentation of reasonable evidence of such loss, theft or destruction and the giving of such indemnity and posting of such bond as the Board of Directors may require for the protection of the corporation or any transfer agent or registrar.

4.5 Record Date. The Board of Directors may fix in advance a date as a record date for the determination of the stockholders entitled to notice of or to vote at any meeting of stockholders or to express consent (or dissent) to corporate action without a meeting, or entitled to receive payment of any dividend or other distribution or allotment of any rights in respect of any change, conversion or exchange of stock, or for the purpose of any other lawful action. Such record date shall not precede the date on which the resolution fixing the record date is adopted, and such record date shall not be more than 60 nor less than 10 days before the date of such meeting, nor more than 10 days after the date of adoption of a record date for a consent without a meeting, nor more than 60 days prior to any other action to which such record date relates.

If no record date is fixed, the record date for determining stockholders entitled to notice of or to vote at a meeting of stockholders shall be at the close of business on the day before the day on which notice is given, or, if notice is waived, at the close of business on the day before the day on which the meeting is held. If no record date is fixed, the record date for determining stockholders entitled to express consent to corporate action without a meeting, when no prior action by the Board of Directors is necessary, shall be the day on which the first consent is properly delivered to the corporation. If no record date is fixed, the record date for determining stockholders for any other purpose shall be at the close of business on the day on which the Board of Directors adopts the resolution relating to such purpose.

A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment of the meeting; provided, however, that the Board of Directors may fix a new record date for the adjourned meeting.

4.6 Regulations. The issue, transfer, conversion and registration of shares of stock of the corporation shall be governed by such other regulations as the Board of Directors may establish.

ARTICLE V

GENERAL PROVISIONS

5.1 Fiscal Year. Except as from time to time otherwise designated by the Board of Directors, the fiscal year of the corporation shall begin on the first day of January of each year and end on the last day of December in each year.

5.2 Corporate Seal. The corporate seal shall be in such form as shall be approved by the Board of Directors.

5.3 Waiver of Notice. Whenever notice is required to be given by law, by the Certificate of Incorporation or by these Bylaws, a written waiver, signed by the person entitled to notice, or a waiver by electronic transmission by the person entitled to notice, whether before, at or after the time of the event for which notice is to be given, shall be deemed equivalent to notice required to be given to such person. Neither the business nor the purpose of any meeting need be specified in any such waiver. Attendance of a person at a meeting shall constitute a waiver of notice of such meeting, except when the person attends a meeting for the express purpose of objecting at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened.

5.4 Voting of Securities. Except as the Board of Directors may otherwise designate, the Chief Executive Officer, the President or the Treasurer may waive notice of, vote, or appoint any person or persons to vote, on behalf of the corporation at, and act as, or appoint any person or persons to act as, proxy or attorney-in-fact for this corporation (with or without power of substitution) at, any meeting of stockholders or securityholders of any other entity, the securities of which may be held by this corporation.

5.5 Evidence of Authority. A certificate by the Secretary, or an Assistant Secretary, or a temporary Secretary, as to any action taken by the stockholders, directors, a committee or any officer or representative of the corporation shall as to all persons who rely on the certificate in good faith be conclusive evidence of such action.

5.6 Certificate of Incorporation. All references in these Bylaws to the Certificate of Incorporation shall be deemed to refer to the Certificate of Incorporation of the corporation, as amended and in effect from time to time.

5.7 Severability. Any determination that any provision of these Bylaws is for any reason inapplicable, illegal or ineffective shall not affect or invalidate any other provision of these Bylaws.

5.8 Pronouns. All pronouns used in these Bylaws shall be deemed to refer to the masculine, feminine or neuter, singular or plural, as the identity of the person or persons may require.

ARTICLE VI

AMENDMENTS

6.1 By the Board of Directors. These Bylaws may be altered, amended or repealed, in whole or in part, or new bylaws may be adopted by the Board of Directors.

6.2 By the Stockholders. These Bylaws may be altered, amended or repealed, in whole or in part, or new bylaws may be adopted by the affirmative vote of the holders of a majority of the shares of the capital stock of the corporation issued and outstanding and entitled to vote at any annual meeting of stockholders, or at any special meeting of stockholders, provided notice of such alteration, amendment, repeal or adoption of new bylaws shall have been stated in the notice of such special meeting.

Exhibit 4.2

Execution Version

AMENDED AND RESTATED INVESTORS' RIGHTS AGREEMENT

AMENDED AND RESTATED INVESTORS' RIGHTS AGREEMENT

THIS AMENDED AND RESTATED INVESTORS' RIGHTS AGREEMENT (this "**Agreement**"), is made as of the 15th day of March, 2019 by and among IMARA Inc., a Delaware corporation (the "**Company**"), each of the investors listed on Schedule A hereto, each of which is referred to in this Agreement as an "**Investor**", and any additional purchasers that becomes a party to this Agreement in accordance with Section 6.9 hereof, and for purposes of Sections 1, 3.1, 3.2, 3.4(b), 3.6 and 4, H. Lundbeck A/S ("**Lundbeck**").

RECITALS

WHEREAS, certain of the Investors (the "**Prior Investors**") are holders of outstanding shares of the Company's Series Seed Preferred Stock, $0.001 par value per share (the "**Series Seed Preferred Stock**"), and Series A Preferred Stock, $0.001 par value per share (the "**Series A Preferred Stock**"), and have been granted information rights, participation rights and other rights pursuant to that certain Investors' Rights Agreement, dated as of April 13, 2016, by and between the Company, the Prior Investors and the other parties thereto (the "**Prior Rights Agreement**");

WHEREAS, certain of the Investors (the "**Series B Investors**") have agreed to purchase shares of the Company's Series B Preferred Stock, $0.001 par value per share (the "**Series B Preferred Stock**"), pursuant to a Series B Preferred Stock Purchase Agreement by and among the Company and the Series B Investors of even date herewith (the "**Purchase Agreement**");

WHEREAS, the obligations of the Company and the Series B Investors under the Purchase Agreement are conditioned on, among other things, the execution and delivery of this Agreement by the parties hereto; and

WHEREAS, the Company and the Investors desire to enter into this Agreement in order to amend and restate the Prior Rights Agreement and to grant the Prior Investors and the Series B Investors the rights set forth in this Agreement, subject to the obligations set forth herein.

NOW, THEREFORE, in consideration of the foregoing recitals and the mutual promises hereinafter set forth, the parties hereto hereby agree as follows:

1. Definitions. For purposes of this Agreement:

1.1 "**Affiliate**" means, with respect to any specified Person, any other Person who, directly or indirectly, controls, is controlled by, or is under common control with such Person, including, without limitation, any parent or subsidiary of such specified Person, any partner (general partner or limited partner), member, manager, employee, officer or director of such Person or any venture capital fund now or hereafter existing that is controlled by one or more partners, members, managers or employees of, or shares the same management company with, such Person; any wholly owned subsidiary of such Person; or any direct or indirect wholly owned subsidiary of the ultimate parent entity of such Person.

1.2 "**Common Stock**" means shares of the Company's Class A Common Stock, par value $0.001 per share.

1.3 "**Competitor**" means a Person engaged, directly or indirectly (including through any partnership, limited liability company, corporation, joint venture or similar arrangement (whether now existing or formed hereafter)), in a business that is actively researching, developing or commercializing a PDE9 Inhibitor or other product in the Field, but shall not include any financial investment firm or collective investment vehicle that, together with its Affiliates, holds an equity interest in any Competitor and has not designated (and does not hereafter designate) any person as a member of the board of directors or a board observer of such Competitor.

1.4 "**Damages**" means any loss, damage, claim or liability (joint or several) to which a party hereto may become subject under the Securities Act, the Exchange Act, or other federal or state law, insofar as such loss, damage, claim or liability (or any action in respect thereof) arises out of or is based upon: (i) any untrue statement or alleged untrue statement of a material fact contained in any registration statement of the Company, including any preliminary prospectus or final prospectus contained therein or any amendments or supplements thereto; (ii) an omission or alleged omission to state therein a material fact required to be stated therein, or necessary to make the statements therein not misleading; or (iii) any violation or alleged violation by the indemnifying party (or any of its agents or Affiliates) of the Securities Act, the Exchange Act, any state securities law, or any rule or regulation promulgated under the Securities Act, the Exchange Act, or any state securities law.

1.5 "**Derivative Securities**" means any securities or rights convertible into, or exercisable or exchangeable for (in each case, directly or indirectly), Common Stock, including options and warrants.

1.6 "**Exchange Act**" means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

1.7 "**Excluded Registration**" means (i) a registration relating to the sale of securities to employees of the Company or a subsidiary pursuant to a stock option, stock purchase, or similar plan; (ii) a registration relating to an SEC Rule 145 transaction; (iii) a registration on any form that does not include substantially the same information as would be required to be included in a registration statement covering the sale of the Registrable Securities; or (iv) a registration in which the only Common Stock being registered is Common Stock issuable upon conversion of debt securities that are also being registered.

1.8 "**Exclusive License Agreement**" means the Exclusive License Agreement, dated as of April 13, 2016, by and between the Company and Lundbeck.

1.9 "**Field**" means prevention, treatment or diagnosis of disorders and/or diseases related to Hemoglobinopathies (HGP), including Sickle Cell Disease.

1.10 "**FOIA Party**" means a Person that, in the reasonable determination of the Board of Directors, may be subject to, and thereby required to disclose non-public information furnished by or relating to the Company under, the Freedom of Information Act, 5 U.S.C. 552 ("**FOIA**"), any state public records access law, any state or other jurisdiction's laws similar in intent or effect to FOIA, or any other similar statutory or regulatory requirement.

1.11 "**Form S-1**" means such form under the Securities Act as in effect on the date hereof or any successor registration form under the Securities Act subsequently adopted by the SEC.

1.12 "**Form S-3**" means such form under the Securities Act as in effect on the date hereof or any registration form under the Securities Act subsequently adopted by the SEC that permits incorporation of substantial information by reference to other documents filed by the Company with the SEC.

1.13 "**GAAP**" means generally accepted accounting principles in the United States.

1.14 "**Holder**" means any holder of Registrable Securities who is a party to this Agreement.

1.15 "**Immediate Family Member**" means a child, stepchild, grandchild, parent, stepparent, grandparent, spouse, sibling, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law, including, adoptive relationships, of a natural person referred to herein.

1.16 "**Initiating Holders**" means, collectively, Holders who properly initiate a registration request under this Agreement.

1.17 "**IPO**" means the Company's first underwritten public offering of its Common Stock under the Securities Act.

1.18 "**Key Employee**" means any executive-level employee (including division director and vice president-level positions) as well as any employee or consultant who either alone or in concert with others develops, invents, programs or designs any Company Intellectual Property.

1.19 "**Major Investor**" means (i) any Investor that, individually or together with such Investor's Affiliates, holds at least [2,500,000] shares of Registrable Securities (as adjusted for any stock splits, stock dividend, combination, or other recapitalization or reclassification effected after the date hereof), (ii) Alexandria Equities No. 3, LLC ("**ARE**"), for so long as ARE continues to hold all of the Registrable Securities previously purchased by ARE, (iii) Lundbeck, for so long as Lundbeck continues to hold all of the shares of capital stock issued to Lundbeck in accordance with Section 4.2(a) of the Exclusive License Agreement and (iv) Blackwell Partners LLC — Series A ("**Blackwell**"), for so long as Blackwell continues to hold all of the Registrable Securities purchased by Blackwell pursuant to the Purchase Agreement.

1.20 "**New Securities**" means, collectively, equity securities of the Company, whether or not currently authorized, as well as rights, options, or warrants to purchase such equity securities, or securities of any type whatsoever that are, or may become, convertible or exchangeable into or exercisable for such equity securities.

1.21 "**Person**" means any individual, corporation, partnership, trust, limited liability company, association or other entity.

1.22 "**Preferred Director**" means any director of the Company that the holders of record of any series of Preferred Stock, voting separately as a separate class, are entitled to elect pursuant to the Company's Restated Certificate.

1.23 "**Preferred Stock**" means collectively, shares of the Series Seed Preferred Stock, the Series A Preferred Stock and the Series B Preferred Stock.

1.24 "**Registrable Securities**" means (i) the Common Stock issuable or issued upon conversion of the Preferred Stock, excluding any Common Stock issued upon conversion of the Preferred Stock pursuant to Section 4.1.1(a) of Part B of Article Fourth of the Restated Certificate; (ii) any Common Stock, or any Common Stock issued or issuable (directly or indirectly) upon conversion and/or exercise of any other securities of the Company, acquired by the Investors after the date hereof; and (iii) any Common Stock issued as (or issuable upon the conversion or exercise of any warrant, right, or other security that is issued as) a dividend or other distribution with respect to, or in exchange for or in replacement of, the shares referenced in clauses (i) and (ii) above; excluding in all cases, however, any Registrable Securities sold by a Person in a transaction in which the applicable rights under this Agreement are not assigned pursuant to Subsection 6.1, and excluding for purposes of Section 2 any shares for which registration rights have terminated pursuant to Subsection 2.13 of this Agreement.

1.25 "**Registrable Securities then outstanding**" means the number of shares determined by adding the number of shares of outstanding Common Stock that are Registrable Securities and the number of shares of Common Stock issuable (directly or indirectly) pursuant to then exercisable and/or convertible securities that are Registrable Securities.

1.26 "**Restated Certificate**" means the Company's Second Amended and Restated Certificate of Incorporation, as amended and/or restated from time to time.

1.27 "**Restricted Securities**" means the securities of the Company required to be notated with the legend set forth in Subsection 2.12(b) hereof.

1.28 "**SEC**" means the Securities and Exchange Commission.

1.29 "**SEC Rule 144**" means Rule 144 promulgated by the SEC under the Securities Act.

1.30 "**SEC Rule 145**" means Rule 145 promulgated by the SEC under the Securities Act.

1.31 "**Securities Act**" means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

1.32 "**Selling Expenses**" means all underwriting discounts, selling commissions, and stock transfer taxes applicable to the sale of Registrable Securities, and fees and disbursements of counsel for any Holder, except for the fees and disbursements of the Selling Holder Counsel borne and paid by the Company as provided in Subsection 2.6.

1.33 "**Series A Purchase Agreement**" means that certain Series A Preferred Stock Purchase Agreement, dated as of April 13, 2016, by and among the Company and certain of the Investors.

2. Registration Rights. The Company covenants and agrees as follows:

2.1 Demand Registration.

(a) Form S-1 Demand. If at any time after the earlier of (i) three (3) years after the date of this Agreement or (ii) one hundred eighty (180) days after the effective date of the registration statement for the IPO, the Company receives a request from Holders of a majority of the Registrable Securities then outstanding that the Company file a Form S-1 registration statement having an aggregate offering price, net of Selling Expenses, that would exceed $10 million, then the Company shall (x) within ten (10) days after the date such request is given, give notice thereof (the "**Demand Notice**") to all Holders other than the Initiating Holders; and (y) as soon as practicable, and in any event within sixty (60) days after the date such request is given by the Initiating Holders, file a Form S-1 registration statement under the Securities Act covering all Registrable Securities that the Initiating Holders requested to be registered and any additional Registrable Securities requested to be included in such registration by any other Holders, as specified by notice given by each such Holder to the Company within twenty (20) days of the date the Demand Notice is given, and in each case, subject to the limitations of Subsections 2.1(c) and 2.3.

(b) Form S-3 Demand. If at any time when it is eligible to use a Form S-3 registration statement, the Company receives a request from Holders of at least twenty percent (20%) of the Registrable Securities then outstanding that the Company file a Form S-3 registration statement with respect to outstanding Registrable Securities of such Holders having an anticipated aggregate offering price, net of Selling Expenses, of at least $1 million, then the Company shall (i) within ten (10) days after the date such request is given, give a Demand Notice to all Holders other than the Initiating Holders; and (ii) as soon as practicable, and in any event within forty-five (45) days after the date such request is given by the Initiating Holders, file a Form S-3 registration statement under the Securities Act covering all Registrable Securities that the Initiating Holders requested to be registered and any additional Registrable Securities requested to be included in such registration by any other Holders, as specified by notice given by each such Holder to the Company within twenty (20) days of the date the Demand Notice is given, and in each case, subject to the limitations of Subsections 2.1(c) and 2.3.

(c) Notwithstanding the foregoing obligations, if the Company furnishes to Holders requesting a registration pursuant to this Subsection 2.1 a certificate signed by the Company's chief executive officer stating that in the good faith judgment of the Company's Board of Directors it would be materially detrimental to the Company and its stockholders for such registration statement to either become effective or remain effective for as long as such registration statement otherwise would be required to remain effective, because such action would (i) materially interfere with a significant acquisition, corporate reorganization, or other similar transaction involving the Company; (ii) require premature disclosure of material information that the Company has a bona fide business purpose for preserving as confidential; or (iii) render the Company unable to comply with requirements under the Securities Act or Exchange Act, then the

Company shall have the right to defer taking action with respect to such filing for a period of not more than one hundred twenty (120) days after the request of the Initiating Holders is given; provided, however, that the Company may not invoke this right more than once in any twelve (12) month period; and provided further that the Company shall not register any securities for its own account or that of any other stockholder during such one hundred twenty (120) day period other than an Excluded Registration.

(d) The Company shall not be obligated to effect, or to take any action to effect, any registration pursuant to Subsection 2.1(a) (i) during the period that is sixty (60) days before the Company's good faith estimate of the date of filing of, and ending on a date that is one hundred eighty (180) days after the effective date of, a Company-initiated registration, provided that the Company is actively employing in good faith commercially reasonable efforts to cause such registration statement to become effective; (ii) after the Company has effected two registrations pursuant to Subsection 2.1(a); or (iii) if the Initiating Holders propose to dispose of shares of Registrable Securities that may be immediately registered on Form S-3 pursuant to a request made pursuant to Subsection 2.1(b). The Company shall not be obligated to effect, or to take any action to effect, any registration pursuant to Subsection 2.1(b) (i) during the period that is thirty (30) days before the Company's good faith estimate of the date of filing of, and ending on a date that is ninety (90) days after the effective date of, a Company-initiated registration, provided that the Company is actively employing in good faith commercially reasonable efforts to cause such registration statement to become effective; or (ii) if the Company has effected two registrations pursuant to Subsection 2.1(b) within the twelve (12) month period immediately preceding the date of such request. A registration shall not be counted as "effected" for purposes of this Subsection 2.1(d) until such time as the applicable registration statement has been declared effective by the SEC, unless the Initiating Holders withdraw their request for such registration, elect not to pay the registration expenses therefor, and forfeit their right to one demand registration statement pursuant to Subsection 2.6, in which case such withdrawn registration statement shall be counted as "effected" for purposes of this Subsection 2.1(d).

2.2 Company Registration. If the Company proposes to register (including, for this purpose, a registration effected by the Company for stockholders other than the Holders) any of its Common Stock under the Securities Act in connection with the public offering of such securities solely for cash (other than in an Excluded Registration), the Company shall, at such time, promptly give each Holder notice of such registration. Upon the request of each Holder given within twenty (20) days after such notice is given by the Company, the Company shall, subject to the provisions of Subsection 2.3, cause to be registered all of the Registrable Securities that each such Holder has requested to be included in such registration. The Company shall have the right to terminate or withdraw any registration initiated by it under this Subsection 2.2 before the effective date of such registration, whether or not any Holder has elected to include Registrable Securities in such registration. The expenses (other than Selling Expenses) of such withdrawn registration shall be borne by the Company in accordance with Subsection 2.6.

2.3 Underwriting Requirements.

(a) If, pursuant to Subsection 2.1, the Initiating Holders intend to distribute the Registrable Securities covered by their request by means of an underwriting, they shall so advise the Company as a part of their request made pursuant to Subsection 2.1, and the

Company shall include such information in the Demand Notice. The underwriter(s) will be selected by the Initiating Holders, subject only to the reasonable approval of the Company. In such event, the right of any Holder to include such Holder's Registrable Securities in such registration shall be conditioned upon such Holder's participation in such underwriting and the inclusion of such Holder's Registrable Securities in the underwriting to the extent provided herein. All Holders proposing to distribute their securities through such underwriting shall (together with the Company as provided in Subsection 2.4(e)) enter into an underwriting agreement in customary form with the underwriter(s) selected for such underwriting. Notwithstanding any other provision of this Subsection 2.3, if the underwriter(s) advise(s) the Initiating Holders in writing that marketing factors require a limitation on the number of shares to be underwritten, then the Initiating Holders shall so advise all Holders of Registrable Securities that otherwise would be underwritten pursuant hereto, and the number of Registrable Securities that may be included in the underwriting shall be allocated among such Holders of Registrable Securities, including the Initiating Holders, in proportion (as nearly as practicable) to the number of Registrable Securities owned by each Holder or in such other proportion as shall mutually be agreed to by all such selling Holders; provided, however, that the number of Registrable Securities held by the Holders to be included in such underwriting shall not be reduced unless all other securities are first entirely excluded from the underwriting.

(b) In connection with any offering involving an underwriting of shares of the Company's capital stock pursuant to Subsection 2.2, the Company shall not be required to include any of the Holders' Registrable Securities in such underwriting unless the Holders accept the terms of the underwriting as agreed upon between the Company and its underwriters, and then only in such quantity as the underwriters in their sole discretion determine will not jeopardize the success of the offering by the Company. If the total number of securities, including Registrable Securities, requested by stockholders to be included in such offering exceeds the number of securities to be sold (other than by the Company) that the underwriters in their reasonable discretion determine is compatible with the success of the offering, then the Company shall be required to include in the offering only that number of such securities, including Registrable Securities, which the underwriters and the Company in their sole discretion determine will not jeopardize the success of the offering. If the underwriters determine that less than all of the Registrable Securities requested to be registered can be included in such offering, then the Registrable Securities that are included in such offering shall be allocated among the selling Holders in proportion (as nearly as practicable) to the number of Registrable Securities owned by each selling Holder or in such other proportions as shall mutually be agreed to by all such selling Holders. Notwithstanding the foregoing, in no event shall (i) the number of Registrable Securities included in the offering be reduced unless all other securities (other than securities to be sold by the Company) are first entirely excluded from the offering, or (ii) the number of Registrable Securities included in the offering be reduced below twenty-five percent (25%) of the total number of securities included in such offering, unless such offering is the IPO, in which case the selling Holders may be excluded further if the underwriters make the determination described above and no other stockholder's securities are included in such offering. For purposes of the provision in this Subsection 2.3(b) concerning apportionment, for any selling Holder that is a partnership, limited liability company, or corporation, the partners, members, retired partners, retired members, stockholders, and Affiliates of such Holder, or the estates and Immediate Family Members of any such partners, retired partners, members, and retired members and any trusts for the benefit of any of the foregoing Persons, shall be deemed to be a single "selling Holder," and any pro rata

reduction with respect to such "selling Holder" shall be based upon the aggregate number of Registrable Securities owned by all Persons included in such "selling Holder," as defined in this sentence.

(c) For purposes of Subsection 2.1, a registration shall not be counted as "effected" if: (i) as a result of an exercise of the underwriter's cutback provisions in Subsection 2.3(a), fewer than fifty percent (50%) of the total number of Registrable Securities that Holders have requested to be included in such registration statement are actually included or (ii) such registration is not closed, unless withdrawn at the request of the Initiating Holders (other than as a result of a material adverse change to the Company).

2.4 Obligations of the Company. Whenever required under this Section 2 to effect the registration of any Registrable Securities, the Company shall, as expeditiously as reasonably possible:

(a) prepare and file with the SEC a registration statement with respect to such Registrable Securities and use its commercially reasonable efforts to cause such registration statement to become effective and, upon the request of the Holders of a majority of the Registrable Securities registered thereunder, keep such registration statement effective for a period of up to one hundred twenty (120) days or, if earlier, until the distribution contemplated in the registration statement has been completed; provided, however, that (i) such one hundred twenty (120) day period shall be extended for a period of time equal to the period the Holder refrains, at the request of an underwriter of Common Stock (or other securities) of the Company, from selling any securities included in such registration, and (ii) in the case of any registration of Registrable Securities on Form S-3 that are intended to be offered on a continuous or delayed basis, subject to compliance with applicable SEC rules, such one hundred twenty (120) day period shall be extended for up to an additional one hundred twenty (120) days, if necessary, to keep the registration statement effective until all such Registrable Securities are sold;

(b) prepare and file with the SEC such amendments and supplements to such registration statement, and the prospectus used in connection with such registration statement, as may be necessary to comply with the Securities Act in order to enable the disposition of all securities covered by such registration statement;

(c) furnish to the selling Holders such numbers of copies of a prospectus, including a preliminary prospectus, as required by the Securities Act, and such other documents as the Holders may reasonably request in order to facilitate their disposition of their Registrable Securities;

(d) use its commercially reasonable efforts to register and qualify the securities covered by such registration statement under such other securities or blue-sky laws of such jurisdictions as shall be reasonably requested by the selling Holders; provided that the Company shall not be required to qualify to do business or to file a general consent to service of process in any such states or jurisdictions, unless the Company is already subject to service in such jurisdiction and except as may be required by the Securities Act;

(e) in the event of any underwritten public offering, enter into and perform its obligations under an underwriting agreement, in usual and customary form, with the underwriter(s) of such offering;

(f) use its commercially reasonable efforts to cause all such Registrable Securities covered by such registration statement to be listed on a national securities exchange or trading system and each securities exchange and trading system (if any) on which similar securities issued by the Company are then listed;

(g) provide a transfer agent and registrar for all Registrable Securities registered pursuant to this Agreement and provide a CUSIP number for all such Registrable Securities, in each case not later than the effective date of such registration;

(h) promptly make available for inspection by the selling Holders, any underwriter(s) participating in any disposition pursuant to such registration statement, and any attorney or accountant or other agent retained by any such underwriter or selected by the selling Holders, all financial and other records, pertinent corporate documents, and properties of the Company, and cause the Company's officers, directors, employees, and independent accountants to supply all information reasonably requested by any such seller, underwriter, attorney, accountant, or agent, in each case, as necessary or advisable to verify the accuracy of the information in such registration statement and to conduct appropriate due diligence in connection therewith;

(i) notify each selling Holder, promptly after the Company receives notice thereof, of the time when such registration statement has been declared effective or a supplement to any prospectus forming a part of such registration statement has been filed; and

(j) after such registration statement becomes effective, notify each selling Holder of any request by the SEC that the Company amend or supplement such registration statement or prospectus.

In addition, the Company shall ensure that, at all times after any registration statement covering a public offering of securities of the Company under the Securities Act shall have become effective, its insider trading policy shall provide that the Company's directors may implement a trading program under Rule 10b5-1 of the Exchange Act.

2.5 Furnish Information. It shall be a condition precedent to the obligations of the Company to take any action pursuant to this Section 2 with respect to the Registrable Securities of any selling Holder that such Holder shall furnish to the Company such information regarding itself, the Registrable Securities held by it, and the intended method of disposition of such securities as is reasonably required to effect the registration of such Holder's Registrable Securities.

2.6 Expenses of Registration. All expenses (other than Selling Expenses) incurred in connection with registrations, filings, or qualifications pursuant to Section 2, including all registration, filing, and qualification fees; printers' and accounting fees; fees and disbursements of counsel for the Company; and the reasonable fees and disbursements of one counsel for the selling Holders ("**Selling Holder Counsel**"), shall be borne and paid by the Company; provided,

however, that the Company shall not be required to pay for any expenses of any registration proceeding begun pursuant to Subsection 2.1 if the registration request is subsequently withdrawn at the request of the Holders of a majority of the Registrable Securities to be registered (in which case all selling Holders shall bear such expenses pro rata based upon the number of Registrable Securities that were to be included in the withdrawn registration), unless the Holders of a majority of the Registrable Securities agree to forfeit their right to one registration pursuant to Subsections 2.1(a) or 2.1(b), as the case may be; provided further that if, at the time of such withdrawal, the Holders shall have learned of a material adverse change in the condition, business, or prospects of the Company from that known to the Holders at the time of their request and have withdrawn the request with reasonable promptness after learning of such information then the Holders shall not be required to pay any of such expenses and shall not forfeit their right to one registration pursuant to Subsections 2.1(a) or 2.1(b). All Selling Expenses relating to Registrable Securities registered pursuant to this Section 2 shall be borne and paid by the Holders pro rata on the basis of the number of Registrable Securities registered on their behalf.

2.7 Delay of Registration. No Holder shall have any right to obtain or seek an injunction restraining or otherwise delaying any registration pursuant to this Agreement as the result of any controversy that might arise with respect to the interpretation or implementation of this Section 2.

2.8 Indemnification. If any Registrable Securities are included in a registration statement under this Section 2:

(a) To the extent permitted by law, the Company will indemnify and hold harmless each selling Holder, and the partners, members, officers, directors, and stockholders of each such Holder; legal counsel and accountants for each such Holder; any underwriter (as defined in the Securities Act) for each such Holder; and each Person, if any, who controls such Holder or underwriter within the meaning of the Securities Act or the Exchange Act, against any Damages, and the Company will pay to each such Holder, underwriter, controlling Person, or other aforementioned Person any legal or other expenses reasonably incurred thereby in connection with investigating or defending any claim or proceeding from which Damages may result, as such expenses are incurred; provided, however, that the indemnity agreement contained in this Subsection 2.8(a) shall not apply to amounts paid in settlement of any such claim or proceeding if such settlement is effected without the consent of the Company, which consent shall not be unreasonably withheld, nor shall the Company be liable for any Damages to the extent that they arise out of or are based upon actions or omissions made in reliance upon and in conformity with written information furnished by or on behalf of any such Holder, underwriter, controlling Person, or other aforementioned Person expressly for use in connection with such registration.

(b) To the extent permitted by law, each selling Holder, severally and not jointly, will indemnify and hold harmless the Company, and each of its directors, each of its officers who has signed the registration statement, each Person (if any), who controls the Company within the meaning of the Securities Act, legal counsel and accountants for the Company, any underwriter (as defined in the Securities Act), any other Holder selling securities in such registration statement, and any controlling Person of any such underwriter or other Holder, against any Damages, in each case only to the extent that such Damages arise out of or are based upon actions or omissions made in reliance upon and in conformity with written information furnished

by or on behalf of such selling Holder expressly for use in connection with such registration; and each such selling Holder will pay to the Company and each other aforementioned Person any legal or other expenses reasonably incurred thereby in connection with investigating or defending any claim or proceeding from which Damages may result, as such expenses are incurred; provided, however, that the indemnity agreement contained in this Subsection 2.8(b) shall not apply to amounts paid in settlement of any such claim or proceeding if such settlement is effected without the consent of the Holder, which consent shall not be unreasonably withheld; and provided further that in no event shall the aggregate amounts payable by any Holder by way of indemnity or contribution under Subsections 2.8(b) and 2.8(d) exceed the proceeds from the offering received by such Holder (net of any Selling Expenses paid by such Holder), except in the case of fraud or willful misconduct by such Holder.

(c) Promptly after receipt by an indemnified party under this Subsection 2.8 of notice of the commencement of any action (including any governmental action) for which a party may be entitled to indemnification hereunder, such indemnified party will, if a claim in respect thereof is to be made against any indemnifying party under this Subsection 2.8, give the indemnifying party notice of the commencement thereof. The indemnifying party shall have the right to participate in such action and, to the extent the indemnifying party so desires, participate jointly with any other indemnifying party to which notice has been given, and to assume the defense thereof with counsel mutually satisfactory to the parties; provided, however, that an indemnified party (together with all other indemnified parties that may be represented without conflict by one counsel) shall have the right to retain one separate counsel, with the fees and expenses to be paid by the indemnifying party, if representation of such indemnified party by the counsel retained by the indemnifying party would be inappropriate due to actual or potential differing interests between such indemnified party and any other party represented by such counsel in such action.

(d) To provide for just and equitable contribution to joint liability under the Securities Act in any case in which either: (i) any party otherwise entitled to indemnification hereunder makes a claim for indemnification pursuant to this Subsection 2.8 but it is judicially determined (by the entry of a final judgment or decree by a court of competent jurisdiction and the expiration of time to appeal or the denial of the last right of appeal) that such indemnification may not be enforced in such case, notwithstanding the fact that this Subsection 2.8 provides for indemnification in such case, or (ii) contribution under the Securities Act may be required on the part of any party hereto for which indemnification is provided under this Subsection 2.8, then, and in each such case, such parties will contribute to the aggregate losses, claims, damages, liabilities, or expenses to which they may be subject (after contribution from others) in such proportion as is appropriate to reflect the relative fault of each of the indemnifying party and the indemnified party in connection with the statements, omissions, or other actions that resulted in such loss, claim, damage, liability, or expense, as well as to reflect any other relevant equitable considerations. The relative fault of the indemnifying party and of the indemnified party shall be determined by reference to, among other things, whether the untrue or allegedly untrue statement of a material fact, or the omission or alleged omission of a material fact, relates to information supplied by the indemnifying party or by the indemnified party and the parties' relative intent, knowledge, access to information, and opportunity to correct or prevent such statement or omission; provided, however, that, in any such case (x) no Holder will be required to contribute any amount in excess of the public offering price of all such Registrable Securities offered and sold by such Holder

pursuant to such registration statement, and (y) no Person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) will be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation; and provided further that in no event shall a Holder's liability pursuant to this Subsection 2.8(c), when combined with the amounts paid or payable by such Holder pursuant to Subsection 2.8(d), exceed the proceeds from the offering received by such Holder (net of any Selling Expenses paid by such Holder), except in the case of willful misconduct or fraud by such Holder.

(e) Notwithstanding the foregoing, to the extent that the provisions on indemnification and contribution contained in the underwriting agreement entered into in connection with the underwritten public offering are in conflict with the foregoing provisions, the provisions in the underwriting agreement shall control.

(f) Unless otherwise superseded by an underwriting agreement entered into in connection with the underwritten public offering, the obligations of the Company and Holders under this Subsection 2.8 shall survive the completion of any offering of Registrable Securities in a registration under this Section 2, and otherwise shall survive the termination of this Agreement.

2.9 Reports Under Exchange Act. With a view to making available to the Holders the benefits of SEC Rule 144 and any other rule or regulation of the SEC that may at any time permit a Holder to sell securities of the Company to the public without registration or pursuant to a registration on Form S-3, the Company shall:

(a) make and keep available adequate current public information, as those terms are understood and defined in SEC Rule 144, at all times after the effective date of the registration statement filed by the Company for the IPO;

(b) use commercially reasonable efforts to file with the SEC in a timely manner all reports and other documents required of the Company under the Securities Act and the Exchange Act (at any time after the Company has become subject to such reporting requirements); and

(c) furnish to any Holder, so long as the Holder owns any Registrable Securities, forthwith upon request (i) to the extent accurate, a written statement by the Company that it has complied with the reporting requirements of SEC Rule 144 (at any time after ninety (90) days after the effective date of the registration statement filed by the Company for the IPO), the Securities Act, and the Exchange Act (at any time after the Company has become subject to such reporting requirements), or that it qualifies as a registrant whose securities may be resold pursuant to Form S-3 (at any time after the Company so qualifies); (ii) a copy of the most recent annual or quarterly report of the Company and such other reports and documents so filed by the Company; and (iii) such other information as may be reasonably requested in availing any Holder of any rule or regulation of the SEC that permits the selling of any such securities without registration (at any time after the Company has become subject to the reporting requirements under the Exchange Act) or pursuant to Form S-3 (at any time after the Company so qualifies to use such form).

2.10 Limitations on Subsequent Registration Rights. From and after the date of this Agreement, the Company shall not, without the prior written consent of the Holders of a majority of the Registrable Securities then outstanding, enter into any agreement with any holder or prospective holder of any securities of the Company that (i) would allow such holder or prospective holder to include such securities in any registration unless, under the terms of such agreement, such holder or prospective holder may include such securities in any such registration only to the extent that the inclusion of such securities will not reduce the number of the Registrable Securities of the Holders that are included; or (ii) allows such holder or prospective holder to initiate a demand for registration of any securities held by such holder or prospective holder; provided that this limitation shall not apply to any additional Investor who becomes a party to this Agreement in accordance with Subsection 6.9.

2.11 "Market Stand-off' Agreement. Each Holder hereby agrees that it will not, without the prior written consent of the managing underwriter, during the period commencing on the date of the final prospectus relating to the registration by the Company for its own behalf of shares of its Common Stock or any other equity securities under the Securities Act on a registration statement on Form S-1 or Form S-3, and ending on the date specified by the Company and the managing underwriter (such period not to exceed one hundred eighty (180) days, or such other period as may be requested by the Company or an underwriter to accommodate regulatory restrictions on (1) the publication or other distribution of research reports, and (2) analyst recommendations and opinions, including, but not limited to, the restrictions contained in FINRA Rule 2711(f)(4) or NYSE Rule 472(f)(4), or any successor provisions or amendments thereto) (i) lend; offer; pledge; sell; contract to sell; sell any option or contract to purchase; purchase any option or contract to sell; grant any option, right, or warrant to purchase; or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or any securities convertible into or exercisable or exchangeable (directly or indirectly) for Common Stock held immediately before the effective date of the registration statement for such offering or (ii) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of such securities, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of Common Stock or other securities, in cash, or otherwise. The foregoing provisions of this Subsection 2.11 shall apply only to the IPO, and shall not apply to (a) the sale of any shares to an underwriter pursuant to an underwriting agreement, (b) a transfer to an Affiliate of the Holder, regardless of whether such transfer is for consideration, or (c) the transfer of any shares to any trust for the direct or indirect benefit of the Holder or the immediate family of the Holder, provided that the trustee of the trust agrees to be bound in writing by the restrictions set forth herein, and provided further that any such transfer shall not involve a disposition for value, and shall be applicable to the Holders only if all officers and directors are subject to the same restrictions and the Company uses commercially reasonable efforts to obtain a similar agreement from all stockholders individually owning more than one percent (1%) of the Company's outstanding Common Stock (after giving effect to conversion into Common Stock of all outstanding Preferred Stock). The underwriters in connection with such registration are intended third-party beneficiaries of this Subsection 2.11 and shall have the right, power and authority to enforce the provisions hereof as though they were a party hereto. Each Holder further agrees to execute such agreements as may be reasonably requested by the underwriters in connection with such registration that are consistent with this Subsection 2.11 or that are necessary to give further effect thereto. Any discretionary waiver or termination of the restrictions of any or all of such agreements by the Company or the underwriters shall apply pro rata to all Holders subject to such agreements, based on the number of shares subject to such agreements.

2.12 Restrictions on Transfer.

(a) The Preferred Stock and the Registrable Securities shall not be sold, pledged, or otherwise transferred, and the Company shall not recognize and shall issue stop-transfer instructions to its transfer agent with respect to any such sale, pledge, or transfer, except upon the conditions specified in this Agreement, which conditions are intended to ensure compliance with the provisions of the Securities Act. A transferring Holder will cause any proposed purchaser, pledgee, or transferee of the Preferred Stock and the Registrable Securities held by such Holder to agree to take and hold such securities subject to the provisions and upon the conditions specified in this Agreement.

(b) Each certificate, instrument, or book entry representing (i) the Preferred Stock, (ii) the Registrable Securities, and (iii) any other securities issued in respect of the securities referenced in clauses (i) and (ii), upon any stock split, stock dividend, recapitalization, merger, consolidation, or similar event, shall (unless otherwise permitted by the provisions of Subsection 2.12(c)) be notated with a legend substantially in the following form:

> THE SECURITIES REPRESENTED HEREBY HAVE BEEN ACQUIRED FOR INVESTMENT AND HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933. SUCH SHARES MAY NOT BE SOLD, PLEDGED, OR TRANSFERRED IN THE ABSENCE OF SUCH REGISTRATION OR A VALID EXEMPTION FROM THE REGISTRATION AND PROSPECTUS DELIVERY REQUIREMENTS OF SAID ACT.
>
> THE SECURITIES REPRESENTED HEREBY MAY BE TRANSFERRED ONLY IN ACCORDANCE WITH THE TERMS OF AN AGREEMENT BETWEEN THE COMPANY AND THE STOCKHOLDER, A COPY OF WHICH IS ON FILE WITH THE SECRETARY OF THE COMPANY.

The Holders consent to the Company making a notation in its records and giving instructions to any transfer agent of the Restricted Securities in order to implement the restrictions on transfer set forth in this Subsection 2.12.

(c) The holder of such Restricted Securities, by acceptance of ownership thereof, agrees to comply in all respects with the provisions of this Section 2. Before any proposed sale, pledge, or transfer of any Restricted Securities, unless there is in effect a registration statement under the Securities Act covering the proposed transaction, the Holder thereof shall give notice to the Company of such Holder's intention to effect such sale, pledge, or transfer. Each such notice shall describe the manner and circumstances of the proposed sale, pledge, or transfer in sufficient detail and, if reasonably requested by the Company, shall be accompanied at such Holder's expense by either (i) a written opinion of legal counsel who shall, and whose legal opinion shall, be reasonably satisfactory to the Company, addressed to the

Company, to the effect that the proposed transaction may be effected without registration under the Securities Act; (ii) a "no action" letter from the SEC to the effect that the proposed sale, pledge, or transfer of such Restricted Securities without registration will not result in a recommendation by the staff of the SEC that action be taken with respect thereto; or (iii) any other evidence reasonably satisfactory to counsel to the Company to the effect that the proposed sale, pledge, or transfer of the Restricted Securities may be effected without registration under the Securities Act, whereupon the Holder of such Restricted Securities shall be entitled to sell, pledge, or transfer such Restricted Securities in accordance with the terms of the notice given by the Holder to the Company. The Company will not require such a legal opinion or "no action" letter (x) in any transaction in compliance with SEC Rule 144; (y) in any transaction in which such Holder distributes Restricted Securities to an Affiliate of such Holder; or (z) by a holder exercising its co-sale rights under the Amended and Restated Right of First Refusal and Co-Sale Agreement by and among the Company, Investors and Key Holders (as defined therein), dated as of even date herewith, as amended from time to time; provided that each transferee agrees in writing to be subject to the terms of this Subsection 2.12. Each certificate, instrument, or book entry representing the Restricted Securities transferred as above provided shall be notated with, except if such transfer is made pursuant to SEC Rule 144, the appropriate restrictive legend set forth in Subsection 2.12(b), except that such certificate instrument, or book entry shall not be notated with such restrictive legend if, in the opinion of counsel for such Holder and the Company, such legend is not required in order to establish compliance with any provisions of the Securities Act.

2.13 Termination of Registration Rights. The right of any Holder to request registration or inclusion of Registrable Securities in any registration pursuant to Subsections 2.1 or 2.2 shall terminate upon the earliest to occur of:

(a) the five (5) year anniversary of the IPO;

(b) with respect to any holder of registration rights, at such time following an IPO as the holder and its Affiliates hold less than one percent (1%) of the outstanding securities of the Company and all Registrable Securities of such holder and its Affiliates may be sold within a three (3) month period pursuant to SEC Rule 144; or

(c) the closing of a Deemed Liquidation Event (as defined in the Restated Certificate).

3. Information and Observer Rights.

3.1 Delivery of Financial Statements. The Company shall deliver to each Major Investor:

(a) As soon as practicable, but in any event within one hundred twenty (120) days after the end of each fiscal year of the Company, (i) a balance sheet as of the end of such year, (ii) statements of income and of cash flows for such year, and a comparison between (x) the actual amounts as of and for such fiscal year and (y) the comparable amounts for the prior year and as included in the Budget (as defined in Subsection 3.1(d)) for such year, with an explanation of any material differences between such amounts and a schedule as to the sources and applications of funds for such year, and (iii) a statement of stockholders' equity as of the end

of such year, all such financial statements shall be audited, certified by independent public accountants of nationally recognized standing selected by the Company and prepared in accordance with GAAP;

(b) as soon as practicable, but in any event within forty-five (45) days after the end of each of the first three (3) quarters of each fiscal year of the Company, unaudited statements of income and cash flows for such fiscal quarter, and an unaudited balance sheet and a statement of stockholders' equity as of the end of such fiscal quarter, all prepared in accordance with GAAP (except that such financial statements may (i) be subject to normal year-end audit adjustments; and (ii) not contain all notes thereto that may be required in accordance with GAAP);

(c) as soon as practicable, but in any event within thirty (30) days of the end of each month, an unaudited income statement and statement of cash flows for such month, and an unaudited balance sheet and statement of stockholders' equity as of the end of such month, all prepared in accordance with GAAP (except that such financial statements may (i) be subject to normal year-end audit adjustments and (ii) not contain all notes thereto that may be required in accordance with GAAP);

(d) as soon as practicable, but in any event thirty (30) days before the end of each fiscal year, a copy of the Company's annual operating plan for the next fiscal year (collectively, the "**Budget**"), prepared on a monthly basis, including balance sheets, income statements, and statements of cash flow for such months and, promptly after prepared, any other budgets or revised budgets prepared by the Company;

(e) with respect to the financial statements called for in Subsection 3.1(a), Subsection 3.1(b) and Subsection 3.1(c), an instrument executed by the chief financial officer and chief executive officer of the Company certifying that such financial statements were prepared in accordance with GAAP consistently applied with prior practice for earlier periods (except as otherwise set forth in Subsection 3.1(b) and Subsection 3.1(c)) and fairly present the financial condition of the Company and its results of operation for the periods specified therein;

(f) such other information relating to the financial condition, business, prospects, or corporate affairs of the Company as any Major Investor may from time to time reasonably request; provided, however, that the Company shall not be obligated under this Subsection 3.1 to provide information (i) that the Company reasonably determines in good faith to be a trade secret or confidential information (unless covered by an enforceable confidentiality agreement, in a form acceptable to the Company); or (ii) the disclosure of which would adversely affect the attorney-client privilege between the Company and its counsel.

If, for any period, the Company has any subsidiary whose accounts are consolidated with those of the Company, then in respect of such period the financial statements delivered pursuant to the foregoing sections shall be the consolidated and consolidating financial statements of the Company and all such consolidated subsidiaries.

Notwithstanding anything else in this Subsection 3.1 to the contrary, the Company may cease providing the information set forth in this Subsection 3.1 during the period starting with the date sixty (60) days before the Company's good-faith estimate of the date of filing of a registration

statement if it reasonably concludes it must do so to comply with the SEC rules applicable to such registration statement and related offering; provided that the Company's covenants under this Subsection 3.1 shall be reinstated at such time as the Company is no longer actively employing its commercially reasonable efforts to cause such registration statement to become effective.

3.2 Delivery of Statement of Outstanding Capital Stock. As soon as practicable, but in any event within forty-five (45) days after the end of each of the first three (3) quarters of each fiscal year of the Company, the Company shall deliver to each Major Investor a statement showing the number of shares of each class and series of capital stock and securities convertible into or exercisable for shares of capital stock outstanding at the end of the period, the Common Stock issuable upon conversion or exercise of any outstanding securities convertible or exercisable for Common Stock and the exchange ratio or exercise price applicable thereto, and the number of shares of issued stock options and stock options not yet issued but reserved for issuance, if any, all in sufficient detail as to permit the Major Investors to calculate their respective percentage equity ownership in the Company, and certified by the chief financial officer or chief executive officer of the Company as being true, complete, and correct.

3.3 Inspection. The Company shall permit each Major Investor, at such Major Investor's expense, to visit and inspect the Company's properties; examine its books of account and records; and discuss the Company's affairs, finances, and accounts with its officers, during normal business hours of the Company as may be reasonably requested by the Major Investor; provided, however, that the Company shall not be obligated pursuant to this Subsection 3.3 to provide access to any information that it reasonably and in good faith considers to be a trade secret or confidential information (unless covered by an enforceable confidentiality agreement, in form acceptable to the Company) or the disclosure of which would adversely affect the attorney-client privilege between the Company and its counsel.

3.4 Observer Rights.

(a) As long as ARE owns all of the shares of the Series A Preferred Stock it purchased under the Series A Purchase Agreement (or an equivalent amount of Common Stock issued upon conversion thereof), all of the shares of Series B Preferred Stock it purchased pursuant to the Purchase Agreement and all of the shares of capital stock it purchases in any future financings of the Company, the Company shall invite a representative of ARE to attend all meetings of its Board of Directors in a non-voting observer capacity and, in this respect, shall give such representative copies of all notices, minutes, consents, and other materials that it provides to its directors at the same time and in the same manner as provided to such directors; provided, however, that such representative shall agree to hold in confidence and trust and to act in a fiduciary manner with respect to all information so provided; and provided further, that the Company reserves the right to withhold any information and to exclude such representative from any meeting or portion thereof if access to such information or attendance at such meeting could adversely affect the attorney-client privilege between the Company and its counsel or result in disclosure of trade secrets or a conflict of interest, or if such Investor or its representative is a Competitor of the Company. Notwithstanding the foregoing, this Section 3.4(a) shall terminate and be of no further force and effect upon the automatic conversion of any shares of Preferred Stock owned by ARE pursuant to Section 6.1 of the Purchase Agreement and in accordance with Section 4.1.1(a) of Part B of Article Fourth of the Restated Certificate.

(b) For so long as Lundbeck owns of record at least fifty percent (50%) of the shares of capital stock issued to Lundbeck in accordance with Section 4.2 of the Exclusive License Agreement, the Company shall invite a designee of Lundbeck to attend all meetings of the Board of Directors or any committee thereof in a non-voting observer capacity and, in this respect, shall give such designee copies of all notices, minutes, consents, and other materials that it provides to its directors at the same time and in the same manner as provided to such directors; provided, however, that such representatives shall agree to hold in confidence and trust and to act in a fiduciary manner with respect to all information so provided, it being understood that such representative may disclose the information so provided to Lundbeck without being considered in violation of this provision, and shall, as a condition to their attendance at meetings of the Board of Directors or any committee thereof and receipt of information and materials hereunder, sign a confidentiality agreement with the Company in such form as the Company may reasonably request; and provided further, that the Company reserves the right to withhold any information and to exclude such representatives from any meeting or portion thereof (i) if access to such information or attendance at such meeting could adversely affect the attorney-client privilege between the Company and its counsel (on the advice of Lundbeck's counsel), would result in disclosure of trade secrets to persons or parties other than such designee or Lundbeck or would cause a conflict of interest, or (ii) if such designee or Lundbeck is a Competitor of the Company.

(c) As long as Arix Bioscience Holdings Limited ("**Arix**") or any of its Affiliates own any shares of Series B Preferred Stock (or any Common Stock issued upon conversion thereof, other than pursuant to Section 4.1.1(a) of Part B of Article Fourth of the Restated Certificate), the Company shall invite a representative of Arix to attend all meetings of its Board of Directors in a non-voting observer capacity and, in this respect, shall give such representative copies of all notices, minutes, consents, and other materials that it provides to its directors at the same time and in the same manner as provided to such directors; provided, however, that such representative shall agree to hold in confidence and trust and to act in a fiduciary manner with respect to all information so provided; and provided further, that the Company reserves the right to withhold any information and to exclude such representative from any meeting or portion thereof if access to such information or attendance at such meeting could adversely affect the attorney-client privilege between the Company and its counsel or result in disclosure of trade secrets or a conflict of interest. Notwithstanding the foregoing, this Section 3.4(c) shall terminate and be of no further force and effect upon the automatic conversion of any shares of Preferred Stock owned by Arix or its Affiliates pursuant to Section 6.1 of the Purchase Agreement and in accordance with Section 4.1.1(a) of Part B of Article Fourth of the Restated Certificate.

(d) As long as OrbiMed Private Investments VII, LP ("**OrbiMed**") or any of its Affiliates own any shares of Series B Preferred Stock (or any Common Stock issued upon conversion thereof, other than pursuant to Section 4.1.1(a) of Part B of Article Fourth of the Restated Certificate), the Company shall invite a representative of OrbiMed to attend all meetings of its Board of Directors in a non-voting observer capacity and, in this respect, shall give such representative copies of all notices, minutes, consents, and other materials that it provides to its directors at the same time and in the same manner as provided to such directors; provided, however, that such representative shall agree to hold in confidence and trust and to act in a fiduciary manner with respect to all information so provided; and provided further, that the Company reserves the right to withhold any information and to exclude such representative from

any meeting or portion thereof if access to such information or attendance at such meeting could adversely affect the attorney-client privilege between the Company and its counsel or result in disclosure of trade secrets or a conflict of interest. Notwithstanding the foregoing, this Section 3.4(d) shall terminate and be of no further force and effect upon the automatic conversion of any shares of Preferred Stock owned by OrbiMed or its Affiliates pursuant to Section 6.1 of the Purchase Agreement and in accordance with Section 4.1.1(a) of Part B of Article Fourth of the Restated Certificate.

(e) As long as RA Capital Healthcare Fund, L.P. ("**RA Capital**") or any of its Affiliates own any shares of Series B Preferred Stock (or any Common Stock issued upon conversion thereof, other than pursuant to Section 4.1.1(a) of Part B of Article Fourth of the Restated Certificate), the Company shall invite a representative of RA Capital to attend all meetings of its Board of Directors in a non-voting observer capacity and, in this respect, shall give such representative copies of all notices, minutes, consents, and other materials that it provides to its directors at the same time and in the same manner as provided to such directors; provided, however, that such representative shall agree to hold in confidence and trust and to act in a fiduciary manner with respect to all information so provided; and provided further, that the Company reserves the right to withhold any information and to exclude such representative from any meeting or portion thereof if access to such information or attendance at such meeting could adversely affect the attorney-client privilege between the Company and its counsel or result in disclosure of trade secrets or a conflict of interest. Notwithstanding the foregoing, this Section 3.4(e) shall terminate and be of no further force and effect upon the automatic conversion of any shares of Preferred Stock owned by RA Capital or its Affiliates pursuant to Section 6.1 of the Purchase Agreement and in accordance with Section 4.1.1(a) of Part B of Article Fourth of the Restated Certificate.

3.5 Termination of Information and Observer Rights. The covenants set forth in Subsections 3.1, 3.2, 3.3, and 3.4 shall terminate and be of no further force or effect (i) immediately before the consummation of the IPO, (ii) when the Company first becomes subject to the periodic reporting requirements of Section 12(g) or 15(d) of the Exchange Act, or (iii) upon a Deemed Liquidation Event, whichever occurs first.

3.6 Confidentiality. Each Investor and Lundbeck agrees that such Investor and Lundbeck will keep confidential and will not disclose, divulge, or use for any purpose (other than to monitor its investment in the Company) any confidential information obtained from the Company pursuant to the terms of this Agreement (including notice of the Company's intention to file a registration statement), unless such confidential information (a) is known or becomes known to the public in general (other than as a result of a breach of this Subsection 3.6 by such Investor or Lundbeck), (b) is or has been independently developed or conceived by the Investor or Lundbeck without use of the Company's confidential information, or (c) is or has been made known or disclosed to the Investor or Lundbeck by a third party without a breach of any obligation of confidentiality such third party may have to the Company; provided, however, that an Investor or Lundbeck may disclose confidential information (i) to its attorneys, accountants, consultants, and other professionals to the extent necessary to obtain their services in connection with monitoring its investment in the Company; (ii) to any prospective purchaser of any Registrable Securities from such Investor or Lundbeck, if such prospective purchaser agrees to be bound by the provisions of this Subsection 3.6; (iii) to any existing or prospective Affiliate, partner, member,

stockholder, parent or wholly owned subsidiary of such Investor or Lundbeck in the ordinary course of business, provided that such Investor or Lundbeck informs such Person that such information is confidential and directs such Person to maintain the confidentiality of such information; or (iv) as may otherwise be required by law, provided that the Investor or Lundbeck promptly notifies the Company of such disclosure and takes reasonable steps to minimize the extent of any such required disclosure. For the avoidance of doubt, nothing in this Subsection 3.6 shall restrict the right of an Investor to disclose or divulge any such confidential information to its directors, managers and officers.

4. Rights to Future Stock Issuances.

4.1 Right of First Offer. Subject to the terms and conditions of this Subsection 4.1 and applicable securities laws, if the Company proposes to offer or sell any New Securities, the Company shall first offer such New Securities to each Major Investor. A Major Investor shall be entitled to apportion the right of first offer hereby granted to it in such proportions as it deems appropriate, among (i) itself, (ii) its Affiliates and (iii) its beneficial interest holders, such as limited partners, members or any other Person having "beneficial ownership," as such term is defined in Rule 13d-3 promulgated under the Exchange Act, of such Major Investor ("**Investor Beneficial Owners**"); provided that each such Affiliate or Investor Beneficial Owner (x) is not a FOIA Party, unless such party's purchase of New Securities is otherwise consented to by the Board of Directors, (y) agrees to enter into this Agreement and each of the Second Amended and Restated Voting Agreement (the "**Voting Agreement**") and the Amended and Restated Right of First Refusal and Co-Sale Agreement of even date herewith among the Company, the Investors and the other parties named therein, as an "**Investor**" under each such agreement (provided that any FOIA Party shall not be entitled to any rights as a Major Investor under Subsections 3.1, 3.3, 3.4 and 4.1 hereof).

(a) The Company shall give notice (the "**Offer Notice**") to each Major Investor, stating (i) its bona fide intention to offer such New Securities, (ii) the number of such New Securities to be offered, and (iii) the price and terms, if any, upon which it proposes to offer such New Securities.

(b) By notification to the Company within twenty (20) days after the Offer Notice is given, each Major Investor may elect to purchase or otherwise acquire, at the price and on the terms specified in the Offer Notice, up to that portion of such New Securities which equals the proportion that the Common Stock then held by such Major Investor (including all shares of Common Stock then issuable (directly or indirectly) upon conversion and/or exercise, as applicable, of the Preferred Stock and any other Derivative Securities then held by such Major Investor) bears to the total Common Stock of the Company then outstanding (assuming full conversion and/or exercise, as applicable, of all Preferred Stock and other Derivative Securities). At the expiration of such twenty (20) day period, the Company shall promptly notify each Major Investor that elects to purchase or acquire all the shares available to it (each, a "**Fully Exercising Investor**") of any other Major Investor's failure to do likewise. During the ten (10) day period commencing after the Company has given such notice, each Fully Exercising Investor may, by giving notice to the Company, elect to purchase or acquire, in addition to the number of shares specified above, up to that portion of the New Securities for which Major Investors were entitled to subscribe but that were not subscribed for by the Major Investors which is equal to the proportion that the Common Stock issued and held, or issuable (directly or indirectly) upon

conversion and/or exercise, as applicable, of Preferred Stock and any other Derivative Securities then held, by such Fully Exercising Investor bears to the Common Stock issued and held, or issuable (directly or indirectly) upon conversion and/or exercise, as applicable, of the Preferred Stock and any other Derivative Securities then held, by all Fully Exercising Investors who wish to purchase such unsubscribed shares. The closing of any sale pursuant to this Subsection 4.1(b) shall occur within the later of ninety (90) days of the date that the Offer Notice is given and the date of initial sale of New Securities pursuant to Subsection 4.1(c).

(c) If all New Securities referred to in the Offer Notice are not elected to be purchased or acquired as provided in Subsection 4.1(b), the Company may, during the ninety (90) day period following the expiration of the periods provided in Subsection 4.1(b), offer and sell the remaining unsubscribed portion of such New Securities to any Person or Persons at a price not less than, and upon terms no more favorable to the offeree than, those specified in the Offer Notice. If the Company does not enter into an agreement for the sale of the New Securities within such period, or if such agreement is not consummated within thirty (30) days of the execution thereof, the right provided hereunder shall be deemed to be revived and such New Securities shall not be offered unless first reoffered to the Major Investors in accordance with this Subsection 4.1.

(d) The right of first offer in this Subsection 4.1 shall not be applicable to (i) Exempted Securities (as defined in the Restated Certificate); (ii) shares of Common Stock issued in the IPO; and (iii) the issuance of Milestone Tranche Shares (as defined in the Purchase Agreement).

4.2 Termination. The covenants set forth in Subsection 4.1 shall terminate and be of no further force or effect (i) immediately before the consummation of the IPO, or (ii) upon a Deemed Liquidation Event, as such term is defined in the Restated Certificate, whichever event occurs first. Solely with respect to Lundbeck, if prior to the termination of the covenants set forth in Subsection 4.1 in connection with the IPO or Deemed Liquidation Event Lundbeck is not a Fully Exercising Investor with respect to any issuance of New Securities, the rights of Lundbeck under this Section 4 shall terminate immediately following the consummation of such issuance.

5. Additional Covenants.

5.1 Insurance. The Company currently has a Directors and Officers liability insurance policy from a financially sound and reputable insurer in an amount of at least three million dollars ($3,000,000), and the Company shall, at all times, maintain such Directors and Officers liability insurance policy in an amount of at least three million dollars ($3,000,000); provided, that, the Board of Directors shall increase such coverage immediately prior to the IPO to a level commensurate with that of similarly-situated companies.

5.2 Employee Agreements. The Company will cause (i) each person now or hereafter employed by it or by any subsidiary (or engaged by the Company or any subsidiary as a consultant/independent contractor) with access to confidential information and/or trade secrets to enter into a nondisclosure and proprietary rights assignment agreement and (ii) each Key Employee to enter into a non-competition and non-solicitation agreement, substantially in the form approved by the Board of Directors. In addition, the Company shall not amend, modify, terminate, waive, or otherwise alter, in whole or in part, any of the above-referenced agreements or any restricted stock agreement between the Company and any employee, without the unanimous consent of the Preferred Directors.

5.3 Employee Stock. The Company and the Investors each agree to take all actions reasonably necessary to cause the number of shares of Common Stock available for issuance under the Stock Plan (as defined in the Purchase Agreement) to be increased after the Milestone Closing (as defined in the Purchase Agreement) such that the number of shares of Common Stock available for issuance under the Stock Plan will, together with all outstanding options and restricted stock grants as of the Initial Closing (as defined in the Purchase Agreement), equal fourteen percent (14%) of the fully-diluted outstanding Common Stock immediately after giving effect to the Milestone Closing.

Unless otherwise approved by the Board of Directors, including at least a majority of the Preferred Directors, all future employees and consultants of the Company who purchase, receive options to purchase, or receive awards of shares of the Company's capital stock after the date hereof shall be required to execute restricted stock or option agreements, as applicable, providing for (i) vesting of shares over a four (4) year period, with the first twenty-five percent (25%) of such shares vesting following twelve (12) months of continued employment or service, and the remaining shares vesting in equal quarterly installments over the following thirty-six (36) months, and (ii) a market stand-off provision substantially similar to that in Subsection 2.11. In addition, unless otherwise approved by the Board of Directors, the Company shall retain a "right of first refusal" on employee transfers until the Company's IPO and shall have the right to repurchase unvested shares at cost upon termination of employment of a holder of restricted stock.

5.4 Board Matters. Unless otherwise determined by the vote of a majority of the directors then in office, the Board of Directors shall meet at least quarterly in accordance with an agreed-upon schedule. The Company shall reimburse the directors and observers for all reasonable out-of-pocket travel expenses incurred (consistent with the Company's travel policy) in connection with attending meetings of the Board of Directors or any committee of the Board of Directors or in connection with any other activities which are required and/or requested and that involve expenses. Each of the Preferred Directors designated by the holders of Series B Preferred Stock shall be entitled to serve on any committee of the Board of Directors of the Company.

5.5 Intentionally Omitted.

5.6 Successor Indemnification. If the Company or any of its successors or assignees consolidates with or merges into any other Person and is not the continuing or surviving corporation or entity of such consolidation or merger, then to the extent necessary, proper provision shall be made so that the successors and assignees of the Company assume the obligations of the Company with respect to indemnification of members of the Board of Directors as in effect immediately before such transaction, whether such obligations are contained in the Company's Bylaws, its Restated Certificate, or elsewhere, as the case may be.

5.7 Expenses of Counsel. In the event of a transaction which is a Sale of the Company (as defined in the Voting Agreement), the reasonable fees and disbursements, not to exceed $50,000 of one (1) counsel for the Major Investors ("**Investor Counsel**"), in their capacities as stockholders, shall be borne and paid by the Company. At the outset of considering

a transaction which, if consummated would constitute a Sale of the Company, the Company shall obtain the ability to share with the Investor Counsel (and such counsel's clients) and shall share the confidential information (including, without limitation, the initial and all subsequent drafts of memoranda of understanding, letters of intent and other transaction documents and related noncompete, employment, consulting and other compensation agreements and plans) pertaining to and memorializing any of the transactions which, individually or when aggregated with others would constitute the Sale of the Company. The Company shall be obligated to share (and cause the Company's counsel and investment bankers to share) such materials when distributed to the Company's executives and/or any one or more of the other parties to such transaction(s). In the event that Investor Counsel deems it appropriate, in its reasonable discretion, to enter into a joint defense agreement or other arrangement to enhance the ability of the parties to protect their communications and other reviewed materials under the attorney client privilege, the Company shall, and shall direct its counsel to, execute and deliver to Investor Counsel and its clients such an agreement in form and substance reasonably acceptable to Investor Counsel. In the event that one or more of the other party or parties to such transactions require the clients of Investor Counsel to enter into a confidentiality agreement and/or joint defense agreement in order to receive such information, then the Company shall share whatever information can be shared without entry into such agreement and shall, at the same time, in good faith work expeditiously to enable Investor Counsel and its clients to negotiate and enter into the appropriate agreement(s) without undue burden to the clients of Investor Counsel.

5.8 Indemnification Matters. The Company hereby acknowledges that one (1) or more of the directors nominated to serve on the Board of Directors by the Investors (each a "**Fund Director**") may have certain rights to indemnification, advancement of expenses and/or insurance provided by one or more of the Investors and certain of their affiliates (collectively, the "**Fund Indemnitors**"). The Company hereby agrees (a) that it is the indemnitor of first resort (*i.e.*, its obligations to any such Fund Director are primary and any obligation of the Fund Indemnitors to advance expenses or to provide indemnification for the same expenses or liabilities incurred by such Fund Director are secondary), (b) that it shall be required to advance the full amount of expenses incurred by such Fund Director and shall be liable for the full amount of all expenses, judgments, penalties, fines and amounts paid in settlement by or on behalf of any such Fund Director to the extent legally permitted and as required by the Restated Certificate or Bylaws of the Company (or any agreement between the Company and such Fund Director), without regard to any rights such Fund Director may have against the Fund Indemnitors, and, (c) that it irrevocably waives, relinquishes and releases the Fund Indemnitors from any and all claims against the Fund Indemnitors for contribution, subrogation or any other recovery of any kind in respect thereof. The Company further agrees that no advancement or payment by the Fund Indemnitors on behalf of any such Fund Director with respect to any claim for which such Fund Director has sought indemnification from the Company shall affect the foregoing and the Fund Indemnitors shall have a right of contribution and/or be subrogated to the extent of such advancement or payment to all of the rights of recovery of such Fund Director against the Company.

5.9 Right to Conduct Activities. The Company hereby agrees and acknowledges that each of the Investors is engaged in the business of investing, and as such invests in numerous portfolio companies, some of which may be deemed competitive with the Company's business (as currently conducted or as currently propose to be conducted). The Company hereby agrees that, to the extent permitted under applicable law, no Investor shall be liable to the Company

for any claim arising out of, or based upon, (i) the investment by such Investor in any entity competitive with the Company, or (ii) actions taken by any partner, officer or other representative of such Investor to assist any such competitive company, whether or not such action was taken as a member of the board of directors of such competitive company or otherwise, and whether or not such action has a detrimental effect on the Company; provided, however, that the foregoing shall not relieve (x) any of the Investors from liability associated with the unauthorized disclosure of the Company's confidential information obtained pursuant to this Agreement, or (y) any director or officer of the Company from any liability associated with his or her fiduciary duties to the Company.

5.10 FCPA. The Company covenants that it shall not (and shall not permit any of its subsidiaries or Affiliates or any of its or their respective directors, officers, managers, employees, independent contractors, representatives or agents to) promise, authorize or make any payment to, or otherwise contribute any item of value to, directly or indirectly, to any third party, including any Non-U.S. Official (as such term is defined in the U.S. Foreign Corrupt Practices Act of 1977, as amended (the "**FCPA**")), in each case, in violation of the FCPA, the U.K. Bribery Act, or any other applicable anti-bribery or anti-corruption law. The Company further covenants that it shall (and shall cause each of its subsidiaries and affiliates to) cease all of its or their respective activities, as well as remediate any actions taken by the Company, its subsidiaries or affiliates, or any of their respective directors, officers, managers, employees, independent contractors, representatives or agents in violation of the FCPA, the U.K. Bribery Act, or any other applicable anti-bribery or anti-corruption law. The Company further covenants that it shall (and shall cause each of its subsidiaries and affiliates to) maintain systems of internal controls (including, but not limited to, accounting systems, purchasing systems and billing systems) to ensure compliance with the FCPA, the U.K. Bribery Act, or any other applicable anti-bribery or anti-corruption law. Upon request, the Company agrees to provide responsive information and/or certifications concerning its compliance with applicable anti-corruption laws. The Company shall promptly notify each Investor if the Company becomes aware of any enforcement action. The Company shall, and shall cause any direct or indirect subsidiary or entity controlled by it, whether now in existence or formed in the future, to comply with the FCPA, the U.K. Bribery Act, or any other applicable anti-bribery or anti-corruption law. The Company shall use its best efforts to cause any direct or indirect subsidiary, whether now in existence or formed in the future, to comply in all material respects with all applicable laws.

5.11 Termination of Covenants. The covenants set forth in this Section 5, except for Subsection 5.5 and Subsection 5.6, shall terminate and be of no further force or effect (i) immediately before the consummation of the IPO, (ii) when the Company first becomes subject to the periodic reporting requirements of Section 12(g) or 15(d) of the Exchange Act, or (iii) upon a Deemed Liquidation Event, whichever event occurs first.

6. Miscellaneous.

6.1 Successors and Assigns. The rights under this Agreement may be assigned (but only with all related obligations) by a Holder to a transferee of Registrable Securities that (i) is an Affiliate of a Holder; (ii) is a Holder's Immediate Family Member or trust for the benefit of an individual Holder or one or more of such Holder's Immediate Family Members; or (iii) after such transfer, holds at least 1,000,000 shares of Registrable Securities (subject to appropriate

adjustment for stock splits, stock dividends, combinations, and other recapitalizations); provided, however, that (x) the Company is, within a reasonable time after such transfer, furnished with written notice of the name and address of such transferee and the Registrable Securities with respect to which such rights are being transferred; and (y) such transferee agrees in a written instrument delivered to the Company to be bound by and subject to the terms and conditions of this Agreement, including the provisions of Subsection 2.11. For the purposes of determining the number of shares of Registrable Securities held by a transferee, the holdings of a transferee (1) that is an Affiliate or stockholder of a Holder; (2) who is a Holder's Immediate Family Member; or (3) that is a trust for the benefit of an individual Holder or such Holder's Immediate Family Member shall be aggregated together and with those of the transferring Holder; provided further that all transferees who would not qualify individually for assignment of rights shall have a single attorney-in-fact for the purpose of exercising any rights, receiving notices, or taking any action under this Agreement. The terms and conditions of this Agreement inure to the benefit of and are binding upon the respective successors and permitted assignees of the parties. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and permitted assignees any rights, remedies, obligations or liabilities under or by reason of this Agreement, except as expressly provided herein.

6.2 Governing Law. This Agreement shall be governed by the internal law of the State of Delaware.

6.3 Counterparts. This Agreement may be executed in two (2) or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Counterparts may be delivered via facsimile, electronic mail (including pdf or any electronic signature complying with the U.S. federal ESIGN Act of 2000, *e.g.*, www.docusign.com) or other transmission method and any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes.

6.4 Titles and Subtitles. The titles and subtitles used in this Agreement are for convenience only and are not to be considered in construing or interpreting this Agreement.

6.5 Notices. All notices and other communications given or made pursuant to this Agreement shall be in writing and shall be deemed effectively given upon the earlier of actual receipt or (i) personal delivery to the party to be notified; (ii) when sent, if sent by electronic mail or facsimile during the recipient's normal business hours, and if not sent during normal business hours, then on the recipient's next business day; (iii) five (5) days after having been sent by registered or certified mail, return receipt requested, postage prepaid; or (iv) one (1) business day after the business day of deposit with a nationally recognized overnight courier, freight prepaid, specifying next-day delivery, with written verification of receipt. All communications shall be sent to the respective parties at their addresses as set forth on Schedule A hereto, or to the principal office of the Company and to the attention of the Chief Executive Officer, in the case of the Company, or to such email address, facsimile number, or address as subsequently modified by written notice given in accordance with this Subsection 6.5. If notice is given to the Company, a copy shall also be sent to Goodwin Procter LLP, 100 Northern Avenue, Boston, MA 02210, Attention: Arthur McGivern, Fax: 617-523-1231, email: amcgivern@goodwinlaw.com and if notice is given to Series B Investors, a copy shall also be sent to Greenberg Traurig, P.A., 401 E. Las Olas Boulevard, Suite 2000, Fort Lauderdale, FL 33301, Attention: Mathew B. Hoffman, Esq., Fax: (954) 759-5532, email: hoffmanma@gtlaw.com.

6.6 Amendments and Waivers. Any term of this Agreement may be amended and the observance of any term of this Agreement may be waived (either generally or in a particular instance, and either retroactively or prospectively) only with the written consent of the Company and the holders of at least sixty percent (60%) of the outstanding shares of Preferred Stock (voting together as a single class and not as a separate series, and on an as-converted to Common Stock basis in accordance with Section 4.1.1(b) of Part B of Article Fourth of the Restated Certificate) (which must include New Enterprise Associates 14, Limited Partnership (for so long as it or its Affiliates holds any shares of Preferred Stock) and either Arix or OrbiMed (for so long as Arix or its Affiliates or OrbiMed or its Affiliates, as applicable, hold any shares of Preferred Stock)); provided that the Company may in its sole discretion waive compliance with Subsection 2.12(c) (and the Company's failure to object promptly in writing after notification of a proposed assignment allegedly in violation of Subsection 2.12(c) shall be deemed to be a waiver); and provided further that any provision hereof may be waived by any waiving party on such party's own behalf, without the consent of any other party. Notwithstanding the foregoing, this Agreement may not be amended or terminated and the observance of any term hereof may not be waived with respect to any Investor without the written consent of such Investor, unless such amendment, termination, or waiver applies to all Investors in the same fashion (it being agreed that a waiver of the provisions of Section 4 shall be effective (i) only if all Major Investors that have rights under Section 4 are provided the opportunity to participate in such offering to the same extent (on a percentage basis) of their pro rata share and on similar terms as the other Major Investors who are participating in such offering or (ii) if none of the Major Investors participate in such offering). Furthermore, (v) for so long as Lundbeck has any rights under Sections 1, 3.1, 3.2, 3.4(b) and 4, Sections 1, 3.1, 3.2, 3.4(b), 4 and this Section 6.6(v) may not be amended or terminated (other than in connection with any termination of this Agreement upon consummation of a Deemed Liquidation Event or the IPO or any amendment to Section 1 or Section 4 that applies equally to all of the Major Investors) and the observance of any term thereof may not be waived (other than as set forth above with respect to Section 4) with respect to Lundbeck without the written consent of Lundbeck, (w) for so long as ARE has any rights under Section 3.4(a), Section 3.4(a) and this Section 6.6(w) may not be amended or terminated (other than in connection with any termination of this Agreement upon consummation of a Deemed Liquidation Event or the IPO) and the observance of any term thereof may not be waived with respect to ARE without the written consent of ARE, (x) for so long as Arix has any rights under Section 3.4(c) and the last sentence of Section 5.4, Section 3.4(c), the last sentence of Section 5.4 and this Section 6.6(x) may not be amended or terminated (other than in connection with any termination of this Agreement upon consummation of a Deemed Liquidation Event or the IPO) and the observance of any term thereof may not be waived with respect to Arix without the written consent of Arix, (y) for so long as OrbiMed has any rights under Section 3.4(d) and the last sentence of Section 5.4, Section 3.4(d), the last sentence of Section 5.4 and this Section 6.6(y) may not be amended or terminated (other than in connection with any termination of this Agreement upon consummation of a Deemed Liquidation Event or the IPO) and the observance of any term thereof may not be waived with respect to OrbiMed without the written consent of OrbiMed and (z) for so long as RA Capital has any rights under Section 3.4(e), Section 3.4(e) and this Section 6.6(z) may not be amended or terminated (other than in connection with any termination of this Agreement upon consummation of a Deemed Liquidation Event or the IPO) and the observance of any term thereof may not be waived with

respect to RA Capital without the written consent of RA Capital. The Company shall give prompt notice of any amendment or termination hereof or waiver hereunder to any party hereto that did not consent in writing to such amendment, termination, or waiver. Any amendment, termination, or waiver effected in accordance with this Subsection 6.6 shall be binding on all parties hereto, regardless of whether any such party has consented thereto. No waivers of or exceptions to any term, condition, or provision of this Agreement, in any one or more instances, shall be deemed to be or construed as a further or continuing waiver of any such term, condition, or provision.

6.7 Severability. In case any one or more of the provisions contained in this Agreement is for any reason held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision of this Agreement, and such invalid, illegal, or unenforceable provision shall be reformed and construed so that it will be valid, legal, and enforceable to the maximum extent permitted by law.

6.8 Aggregation of Stock. All shares of Registrable Securities held or acquired by Affiliates shall be aggregated together for the purpose of determining the availability of any rights under this Agreement and such Affiliated persons may apportion such rights as among themselves in any manner they deem appropriate.

6.9 Additional Investors. Notwithstanding anything to the contrary contained herein, if the Company issues additional shares of Preferred Stock after the date hereof, any purchaser of such shares of Preferred Stock may become a party to this Agreement by executing and delivering an additional counterpart signature page to this Agreement, and thereafter shall be deemed an "Investor" for all purposes hereunder. No action or consent by the Investors shall be required for such joinder to this Agreement by such additional Investor, so long as such additional Investor has agreed in writing to be bound by all of the obligations as an "Investor" hereunder.

6.10 Entire Agreement. This Agreement (including any Schedules and Exhibits hereto) constitutes the full and entire understanding and agreement among the parties with respect to the subject matter hereof, and any other written or oral agreement relating to the subject matter hereof existing between the parties is expressly canceled. For the avoidance of doubt, with respect to Lundbeck, the provisions of this Agreement shall supersede any conflicting or inconsistent provisions of the Exclusive License Agreement, and any such provision of the Exclusive License Agreement shall be of no further force and effect.

6.11 Dispute Resolution. The parties (a) hereby irrevocably and unconditionally submit to the jurisdiction of the state courts of Delaware and to the jurisdiction of the United States District Court for the District of Delaware for the purpose of any suit, action or other proceeding arising out of or based upon this Agreement, (b) agree not to commence any suit, action or other proceeding arising out of or based upon this Agreement except in the state courts of Delaware or the United States District Court for the District of Delaware, and (c) hereby waive, and agree not to assert, by way of motion, as a defense, or otherwise, in any such suit, action or proceeding, any claim that it is not subject personally to the jurisdiction of the above-named courts, that its property is exempt or immune from attachment or execution, that the suit, action or proceeding is brought in an inconvenient forum, that the venue of the suit, action or proceeding is improper or that this Agreement or the subject matter hereof may not be enforced in or by such court.

WAIVER OF JURY TRIAL: EACH PARTY HEREBY WAIVES ITS RIGHTS TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION BASED UPON OR ARISING OUT OF THIS AGREEMENT, THE OTHER TRANSACTION DOCUMENTS, THE SECURITIES OR THE SUBJECT MATTER HEREOF OR THEREOF. THE SCOPE OF THIS WAIVER IS INTENDED TO BE ALL-ENCOMPASSING OF ANY AND ALL DISPUTES THAT MAY BE FILED IN ANY COURT AND THAT RELATE TO THE SUBJECT MATTER OF THIS TRANSACTION, INCLUDING, WITHOUT LIMITATION, CONTRACT CLAIMS, TORT CLAIMS (INCLUDING NEGLIGENCE), BREACH OF DUTY CLAIMS, AND ALL OTHER COMMON LAW AND STATUTORY CLAIMS. THIS SECTION HAS BEEN FULLY DISCUSSED BY EACH OF THE PARTIES HERETO AND THESE PROVISIONS WILL NOT BE SUBJECT TO ANY EXCEPTIONS. EACH PARTY HERETO HEREBY FURTHER WARRANTS AND REPRESENTS THAT SUCH PARTY HAS REVIEWED THIS WAIVER WITH ITS LEGAL COUNSEL, AND THAT SUCH PARTY KNOWINGLY AND VOLUNTARILY WAIVES ITS JURY TRIAL RIGHTS FOLLOWING CONSULTATION WITH LEGAL COUNSEL.

Each party will bear its own costs in respect of any disputes arising under this Agreement. The prevailing party shall be entitled to reasonable attorney's fees, costs, and necessary disbursements in addition to any other relief to which such party may be entitled. Each of the parties to this Agreement consents to personal jurisdiction for any equitable action sought in the U.S. District Court for the District of Delaware or any court of the State of Delaware having subject matter jurisdiction.

6.12 Delays or Omissions. No delay or omission to exercise any right, power, or remedy accruing to any party under this Agreement, upon any breach or default of any other party under this Agreement, shall impair any such right, power, or remedy of such nonbreaching or nondefaulting party, nor shall it be construed to be a waiver of or acquiescence to any such breach or default, or to any similar breach or default thereafter occurring, nor shall any waiver of any single breach or default be deemed a waiver of any other breach or default theretofore or thereafter occurring. All remedies, whether under this Agreement or by law or otherwise afforded to any party, shall be cumulative and not alternative.

6.13 Acknowledgment. The Company acknowledges that the Investors are in the business of venture capital investing and therefore review the business plans and related proprietary information of many enterprises, including enterprises which may have products or services which compete directly or indirectly with those of the Company. Nothing in this Agreement shall preclude or in any way restrict the Investors from investing or participating in any particular enterprise whether or not such enterprise has products or services which compete with those of the Company. The Company and each Investor that is a party to this Agreement, acknowledges and agrees that certain of the Investors or their Affiliates may presently have, or may engage in the future, in internal development programs, or may receive information from third parties that relates to, and may develop and commercialize products independently or in cooperation with such third parties, that are similar to or that are directly or indirectly competitive with, the Company's development programs, products or services. Nothing in this Agreement or any other agreement related to the transactions contemplated by this Agreement, shall in any way preclude or restrict such Investors or their Affiliates from conducting any development program, commercializing any product or service or otherwise engaging in any enterprise, whether or not

such development program, product, service or enterprise, competes with those of the Company, so long as such activities do not result in a violation of the confidentiality provisions of this Agreement.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

COMPANY:

IMARA INC.

By: /s/ Rahul Ballal
Name: Rahul Ballal
Title: Chief Executive Officer

[Signature page to Amended and Restated Investors' Rights Agreement]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

INVESTOR:

ARIX BIOSCIENCE HOLDINGS LIMITED

By: /s/ Robert Lyne
Name: Robert Lyne
Title: Director

[Signature page to Amended and Restated Investors' Rights Agreement]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

INVESTOR:

ORBIMED PRIVATE INVESTMENTS VII, LP.

By: OrbiMed Capital GP VII LLC, its General Partner

By: OrbiMed Advisors LLC, its Managing Member

By: /s/ Carl Gordon
Name: Carl Gordon
Title: Member

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

INVESTOR:

NEW ENTERPRISE ASSOCIATES 14, L.P.

By: NEA Partners 14, Limited Partnership, its General Partner

By: NEA 14 GP, LTD, its General Partner

By: /s/ Louis S. Citron
Name: Louis S. Citron
Title: Chief Legal Officer

INVESTOR:

NEA VENTURES 2016, L.P.

By: /s/ Louis S. Citron
Name: Louis S. Citron
Title: Vice-President

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

INVESTOR:

PFIZER VENTURES (US) LLC

By: /s/ Barbara Dalton
Name: Barbara Dalton
Title: President

[Signature page to Amended and Restated Investors' Rights Agreement]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

INVESTOR:

BAY CITY CAPITAL FUND V, L.P.

By: Bay City Capital Management V, LLC, its General Partner

By: Bay City Capital, LLC, its Manager

By: /s/ Carl Goldfischer
Name: Carl Goldfischer, MD
Title: Manager and Managing Director

INVESTOR:

BAY CITY CAPITAL FUND V
CO-INVESTMENT FUND, L.P.

By: Bay City Capital Management V, LLC, its General Partner

By: Bay City Capital, LLC, its Manager

By: /s/ Carl Goldfischer
Name: Carl Goldfischer, MD
Title: Manager and Managing Director

[Signature page to Amended and Restated Investors' Rights Agreement]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

INVESTOR:

ALEXANDRIA EQUITIES NO. 3, LLC,

By: Alexandria Real Estate Equities, Inc., its Managing Member

By: /s/ Aaron Jacobson

Name: Aaron Jacobson

Title: SVP — Venture Counsel

[Signature page to Amended and Restated Investors' Rights Agreement]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

INVESTOR:

LUNDBECKFOND INVEST A/S acting by:

By: /s/ Mette Kirstine Agger
Name: Mette Kirstine Agger
Title: Managing Partner, Lundbeckfonden Ventures

By: /s/ Lene Skole
Name: Lene Skole
Title: CEO, Lundbeckfond Invest A/S

[Signature page to Amended and Restated Investors' Rights Agreement]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

INVESTOR:

RA CAPITAL HEALTHCARE FUND, L.P.

By: By: RA Capital Management, LLC, its General Partner

By: /s/ James Schneider
Name: James Schneider
Title: Authorized Signatory

[Signature page to Amended and Restated Investors' Rights Agreement]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

INVESTOR:

BLACKWELL PARTNERS LLC — SERIES A

By: /s/ Abayomi Adigun
Name: Abayomi A. Adigun
Title: Investment Manager
DUMAC, Inc., Authorized Agent

By: /s/ Jannine Lall
Name: Jannine M. Lall
Title: Head of Finance & Controller
DUMAC, Inc., Authorized Agent

[Signature page to Amended and Restated Investors' Rights Agreement]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

INVESTOR:

ROCK SPRINGS CAPITAL MASTER FUND LP

By: Rock Springs General Partner LLC, its General Partner

By: /s/ Mark Bussard
Name: Mark Bussard
Title: Managing Member

[Signature page to Amended and Restated Investors' Rights Agreement]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

For purposes of Sections 1, 3.1, 3.2, 3.4(b), 3.6 and 4:

H. LUNDBECK A/S

By: /s/ Thomas Birger Riisager
Name: Thomas Birger Riisager
Title: Vice President

[Signature page to Amended and Restated Investors' Rights Agreement]

SCHEDULE A

Investors

Name and Address

Name: New Enterprise Associates 14, L.P.

Address: 1954 Greenspring Drive, Suite 600
Timonium, MD 21093

Name: NEA Ventures 2016, L.P.

Address: 1954 Greenspring Drive, Suite 600
Timonium, MD 21093

Name: Pfizer Ventures (US) LLC

Address: 235 East 42nd Street
New York, NY 10017

Name: Lundbeckfond Invest A/S

Address: Scherfigsvej 7
DK-2100 Copenhagen O, Denmark

Name: Bay City Capital Fund V, L.P.

Address: 750 Battery Street, Suite 400
San Francisco, CA 94111

Name: Bay City Capital Fund V Co-Investment Fund, L.P.

Address: 750 Battery Street, Suite 400
San Francisco, CA 94111

Name: Alexandria Equities No. 3, LLC

Address: 385 E. Colorado Blvd, Suite 299
Pasadena, CA 91101

Name: Arix Bioscience Holdings Limited

Address: 250 West 55th Street, 33rd Floor
New York, NY 10019
Attention: Mark Chin

and

20 Berkeley Square
London W1J 6EQ
United Kingdom
Attention: Robert Lyne, Esq.

Name: OrbiMed Private Investments VII, LP

Address: 601 Lexington Avenue, 54th Floor
New York, NY 10022
Attention: David P. Bonita, M.D.

Name: RA Capital Healthcare Fund, L.P.

Address: RA Capital Management, LLC
20 Park Plaza
Suite 1200
Boston, MA 02116
Attn: General Counsel

Name: Blackwell Partners LLC — Series A,

Address: 280 S. Mangum Street
Suite 210
Durham, NC 27701
Attn: Jannine Lall

Name: Rock Springs Capital Master Fund LP

Address: Rock Springs Capital
650 South Exeter Street
Suite 1070
Baltimore, MD 21202
Attention: General Counsel

2016 STOCK INCENTIVE PLAN

OF

IMARA INC.

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2016 STOCK INCENTIVE PLAN

OF

IMARA INC.

1. Purpose

The purpose of this 2016 Stock Incentive Plan (the "**Plan**") of IMARA Inc., a Delaware corporation (the "**Company**"), is to advance the interests of the Company's stockholders by enhancing the Company's ability to attract, retain and motivate persons who are expected to make important contributions to the Company and by providing such persons with equity ownership opportunities and performance-based incentives that are intended to better align the interests of such persons with those of the Company's stockholders. Except where the context otherwise requires, the term "**Company**" shall include any of the Company's present or future parent or subsidiary corporations as defined in Sections 424(e) or (f) of the Internal Revenue Code of 1986, as amended, and any regulations thereunder (the "**Code**") and any other business venture (including, without limitation, joint venture or limited liability company) in which the Company has a controlling interest, as determined by the Board of Directors of the Company (the "**Board**"); *provided*, *however*, that such other business ventures shall be limited to entities that, where required by Section 409A of the Code, are eligible issuers of service recipient stock (as defined in Treas. Reg. Section 1.409A-1(b)(5)(iii)(E), or applicable successor regulation).

2. Eligibility

All of the Company's employees, officers and directors, as well as consultants and advisors to the Company (as such terms consultants and advisors are defined and interpreted for purposes of Rule 701 under the Securities Act of 1933, as amended (the "**Securities Act**") (or any successor rule)) are eligible to be granted Awards under the Plan. Each person who is granted an Award under the Plan is deemed a "**Participant**." "**Award**" means Options (as defined in Section 5), SARs (as defined in Section 6), Restricted Stock (as defined in Section 7), Restricted Stock Units (as defined in Section 7) and Other Stock-Based Awards (as defined in Section 8).

3. Administration and Delegation

(a) Administration by the Board. The Plan will be administered by the Board. The Board shall have authority to grant Awards and to adopt, amend and repeal such administrative rules, guidelines and practices relating to the Plan as it shall deem advisable. The Board may construe and interpret the terms of the Plan and any Award agreements entered into under the Plan. The Board may correct any defect, supply any omission or reconcile any inconsistency in the Plan or any Award in the manner and to the extent it shall deem expedient to carry the Plan into effect and it shall be the sole and final judge of such expediency. All decisions by the Board shall be made in the Board's sole discretion and shall be final and binding on all persons having or claiming any interest in the Plan or in any Award.

(b) Appointment of Committees. To the extent permitted by applicable law, the Board may delegate any or all of its powers under the Plan to one or more committees or

subcommittees of the Board (each, a "**Committee**"). All references in the Plan to the "**Board**" shall mean the Board or a Committee of the Board to the extent that the Board's powers or authority under the Plan have been delegated to such Committee.

4. Stock Available for Awards

(a) Number of Shares. Subject to adjustment under Section 9, Awards may be made under the Plan for up to 1,582,846 shares of common stock, $0.001 par value per share, of the Company (the "**Common Stock**"), any or all of which Awards may be in the form of Incentive Stock Options (as defined in Section 5(b)). If any Award expires or is terminated, surrendered or canceled without having been fully exercised, is forfeited in whole or in part (including as the result of shares of Common Stock subject to such Award being repurchased by the Company at the original issuance price pursuant to a contractual repurchase right), or results in any Common Stock not being issued, the unused Common Stock covered by such Award shall again be available for the grant of Awards under the Plan. Further, shares of Common Stock tendered to the Company by a Participant to exercise an Award or to satisfy tax withholding obligations arising with respect to an Award shall be added to the number of shares of Common Stock available for the grant of Awards under the Plan. However, in the case of Incentive Stock Options, the two immediately preceding sentences shall be subject to any limitations under the Code. Shares issued under the Plan may consist in whole or in part of authorized but unissued shares or treasury shares.

(b) Substitute Awards. In connection with a merger or consolidation of an entity with the Company or the acquisition by the Company of property or stock of an entity, the Board may grant Awards in substitution for any options or other stock or stock-based awards granted by such entity or an affiliate thereof. Substitute Awards may be granted on such terms as the Board deems appropriate in the circumstances, notwithstanding any limitations on Awards contained in the Plan. Substitute Awards shall not count against the overall share limit set forth in Section 4(a), except as may be required by reason of Section 422 and related provisions of the Code.

5. Stock Options

(a) General. The Board may grant options to purchase Common Stock (each, an "**Option**") and determine the number of shares of Common Stock to be covered by each Option, the exercise price of each Option and the conditions and limitations applicable to the exercise of each Option, including conditions relating to applicable federal or state securities laws, as it considers necessary or advisable.

(b) Incentive Stock Options. An Option that the Board intends to be an "incentive stock option" as defined in Section 422 of the Code (an "**Incentive Stock Option**") shall only be granted to employees of IMARA Inc., any of IMARA Inc.'s present or future parent or subsidiary corporations as defined in Sections 424(e) or (f) of the Code, and any other entities the employees of which are eligible to receive Incentive Stock Options under the Code, and shall be subject to and shall be construed consistently with the requirements of Section 422 of the Code. An Option that is not intended to be an Incentive Stock Option shall be designated a "**Nonstatutory Stock Option**." The Company shall have no liability to a Participant, or any other party, if an Option (or any part thereof) that is intended to be an Incentive Stock Option is not an Incentive Stock Option or if the Company converts an Incentive Stock Option to a Nonstatutory Stock Option.

(c) Exercise Price. The Board shall establish the exercise price of each Option and specify the exercise price in the applicable Option agreement. The exercise price shall be not less than 100% of the fair market value per share of Common Stock, as determined by (or in a manner approved by) the Board ("**Fair Market Value**"), on the date the Option is granted. "**Fair Market Value**" of a share of Common Stock for purposes of the Plan will be determined as follows:

(1) if the Common Stock is not publicly traded, the Board will determine the Fair Market Value for purposes of the Plan using any measure of value it determines to be appropriate (including, as it considers appropriate, relying on appraisals) in a manner consistent with the valuation principles under Code Section 409A, except as the Board may expressly determine otherwise;

(2) if the Common Stock trades on a national securities exchange, the closing sale price (for the primary trading session) on the date of grant; or

(3) if the Common Stock does not trade on any such exchange, the average of the closing bid and asked prices as reported by an authorized OTCBB market data vendor as listed on the OTCBB website (otcbb.com) on the date of grant.

For any date that is not a trading day, the Fair Market Value of a share of Common Stock for such date will be determined by using the closing sale price or average of the bid and asked prices, as appropriate, for the immediately preceding trading day and with the timing in the formulas above adjusted accordingly. The Board can substitute a particular time of day or other measure of "closing sale price" or "bid and asked prices" if appropriate because of exchange or market procedures or can, in its sole discretion, use weighted averages either on a daily basis or such longer period as complies with Code Section 409A.

The Board has sole discretion to determine the Fair Market Value for purposes of the Plan, and all Awards are conditioned on the participants' agreement that the Board's determination is conclusive and binding even though others might make a different determination.

(d) Duration of Options. Each Option shall be exercisable at such times and subject to such terms and conditions as the Board may specify in the applicable option agreement; *provided, however*, that no Option will be granted with a term in excess of 10 years.

(e) Exercise of Options.

Options may be exercised by delivery to the Company of a notice of exercise in a form of notice (which may be electronic) approved by the Company, together with payment in full (in a manner specified in Section 5(f)) of the exercise price for the number of shares for which the Option is exercised. Shares of Common Stock subject to the Option will be delivered by the Company as soon as practicable following exercise.

(f) Payment Upon Exercise. Common Stock purchased upon the exercise of an Option granted under the Plan shall be paid for as follows:

(1) in cash or by check, payable to the order of the Company;

(2) when the Common Stock is registered under the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), except as may otherwise be provided in the applicable Option agreement or approved by the Board, in its sole discretion, by (i) delivery of an irrevocable and unconditional undertaking by a creditworthy broker to deliver promptly to the Company sufficient funds to pay the exercise price and any required tax withholding or (ii) delivery by the Participant to the Company of a copy of irrevocable and unconditional instructions to a creditworthy broker to deliver promptly to the Company cash or a check sufficient to pay the exercise price and any required tax withholding;

(3) when the Common Stock is registered under the Exchange Act and to the extent provided for in the applicable Option agreement or approved by the Board, in its sole discretion, by delivery (either by actual delivery or attestation) of shares of Common Stock owned by the Participant valued at their Fair Market Value, *provided* (i) such method of payment is then permitted under applicable law, (ii) such Common Stock, if acquired directly from the Company, was owned by the Participant for such minimum period of time, if any, as may be established by the Board in its discretion and (iii) such Common Stock is not subject to any repurchase, forfeiture, unfulfilled vesting or other similar requirements;

(4) to the extent provided for in the applicable Nonstatutory Stock Option agreement or approved by the Board in its sole discretion, by delivery of a notice of "net exercise" to the Company, as a result of which the Participant would pay the exercise price for the portion of the Option being exercised by cancelling a portion of the Option for such number of shares as is equal to the exercise price divided by the excess of the Fair Market Value on the date of exercise over the Option exercise price per share.

(5) to the extent permitted by applicable law and provided for in the applicable Option agreement or approved by the Board, in its sole discretion, by (i) delivery of a promissory note of the Participant to the Company on terms determined by the Board, or (ii) payment of such other lawful consideration as the Board may determine; or

(6) by any combination of the above permitted forms of payment.

6. Stock Appreciation Rights

(a) General. The Board may grant Awards consisting of stock appreciation rights ("**SARs**") entitling the holder, upon exercise, to receive an amount of Common Stock or cash or a combination thereof (such form to be determined by the Board) determined by reference to appreciation, from and after the date of grant, in the Fair Market Value of a share of Common Stock over the measurement price established pursuant to Section 6(b). The date as of which such appreciation is determined shall be the exercise date.

(b) Measurement Price. The Board shall establish the measurement price of each SAR and specify it in the applicable SAR agreement. The measurement price shall not be less than 100% of the Fair Market Value on the date the SAR is granted.

(c) Duration of SARs. Each SAR shall be exercisable at such times and subject to such terms and conditions as the Board may specify in the applicable SAR agreement; *provided*, *however*, that no SAR will be granted with a term in excess of 10 years.

(d) Exercise of SARs. SARs may be exercised by delivery to the Company of a notice of exercise in a form (which may be electronic) approved by the Company, together with any other documents required by the Board.

7. Restricted Stock; Restricted Stock Units

(a) General. The Board may grant Awards entitling recipients to acquire shares of Common Stock ("**Restricted Stock**"), subject to the right of the Company to repurchase all or part of such shares at their issue price or other stated or formula price (or to require forfeiture of such shares if issued at no cost) from the recipient in the event that conditions specified by the Board in the applicable Award are not satisfied prior to the end of the applicable restriction period or periods established by the Board for such Award. The Board may also grant Awards entitling the recipient to receive shares of Common Stock or cash to be delivered at the time such Award vests ("**Restricted Stock Units**") (Restricted Stock and Restricted Stock Units are each referred to herein as a "**Restricted Stock Award**").

(b) Terms and Conditions for All Restricted Stock Awards. The Board shall determine the terms and conditions of a Restricted Stock Award, including the conditions for vesting and repurchase (or forfeiture) and the issue price, if any.

(c) Additional Provisions Relating to Restricted Stock.

(1) Dividends. Unless otherwise provided in the applicable Award agreement, any dividends (whether paid in cash, stock or property) declared and paid by the Company with respect to shares of Restricted Stock ("**Accrued Dividends**") shall be paid to the Participant only if and when such shares become free from the restrictions on transferability and forfeitability that apply to such shares. Each payment of Accrued Dividends will be made no later than the end of the calendar year in which the dividends are paid to stockholders of that class of stock or, if later, the 15th day of the third month following the lapsing of the restrictions on transferability and the forfeitability provisions applicable to the underlying shares of Restricted Stock.

(2) Stock Certificates. The Company may require that any stock certificates issued in respect of shares of Restricted Stock, as well as dividends or distributions paid on such Restricted Stock, shall be deposited in escrow by the Participant, together with a stock power endorsed in blank, with the Company (or its designee). At the expiration of the applicable restriction periods, the Company (or such designee) shall deliver the certificates no longer subject to such restrictions to the Participant or if the Participant has died, to Participant's Designated Beneficiary. "**Designated Beneficiary**" means (i) the beneficiary designated, in a manner determined by the Board, by a Participant to receive amounts due or exercise rights of the Participant in the event of the Participant's death or (ii) in the absence of an effective designation by a Participant, "**Designated Beneficiary**" means the Participant's estate.

(d) Additional Provisions Relating to Restricted Stock Units.

(1) Settlement. Upon the vesting of and/or lapsing of any other restrictions (i.e., settlement) with respect to each Restricted Stock Unit, the Participant shall be entitled to receive from the Company one share of Common Stock or (if so provided in the applicable Award agreement) an amount of cash equal to the Fair Market Value of one share of Common Stock. The Board may, in its discretion, provide that settlement of Restricted Stock Units shall be deferred, on a mandatory basis or at the election of the Participant in a manner that complies with Section 409A of the Code.

(2) Voting Rights. A Participant shall have no voting rights with respect to any Restricted Stock Units.

(3) Dividend Equivalents. The Award agreement for Restricted Stock Units may provide Participants with the right to receive an amount equal to any dividends or other distributions declared and paid on an equal number of outstanding shares of Common Stock ("**Dividend Equivalents**"). Dividend Equivalents may be paid currently or credited to an account for the Participants, may be settled in cash and/or shares of Common Stock and may be subject to the same restrictions on transfer and forfeitability as the Restricted Stock Units with respect to which paid, in each case to the extent provided in the applicable Award agreement.

8. Other Stock-Based Awards

(a) General. Other Awards of shares of Common Stock, and other Awards that are valued in whole or in part by reference to, or are otherwise based on, shares of Common Stock or other property, may be granted hereunder to Participants ("**Other Stock-Based Awards**"). Such Other Stock-Based Awards shall also be available as a form of payment in the settlement of other Awards granted under the Plan or as payment in lieu of compensation to which a Participant is otherwise entitled. Other Stock-Based Awards may be paid in shares of Common Stock or cash, as the Board shall determine.

(b) Terms and Conditions. Subject to the provisions of the Plan, the Board shall determine the terms and conditions of each Other Stock-Based Award, including any purchase price applicable thereto.

9. Adjustments for Changes in Common Stock and Certain Other Events

(a) Changes in Capitalization. In the event of any stock split, reverse stock split, stock dividend, recapitalization, combination of shares, reclassification of shares, spin-off or other similar change in capitalization or event, or any dividend or distribution to holders of Common Stock other than an ordinary cash dividend, (i) the number and class of securities available under the Plan, (ii) the number and class of securities and exercise price per share of each outstanding Option, (iii) the share and per-share provisions and the measurement price of each outstanding SAR, (iv) the number of shares subject to and the repurchase price per share subject to each outstanding Restricted Stock Award and (v) the share and per-share-related provisions and the purchase price, if any, of each outstanding Other Stock-Based Award, shall be equitably adjusted by the Company (or substituted Awards may be made, if applicable) in the manner determined by the Board. Without limiting the generality of the foregoing, in the event the Company effects a split of the Common Stock by means of a stock dividend and the exercise price of and the number of shares subject to an outstanding Option are adjusted as of the date of the distribution of the dividend (rather than as of the record date for such dividend), then an optionee who exercises an Option between the record date and the distribution date for such stock dividend shall be entitled to receive, on the distribution date, the stock dividend with respect to the shares of Common Stock acquired upon such Option exercise, notwithstanding the fact that such shares were not outstanding as of the close of business on the record date for such stock dividend.

(b) Reorganization Events.

(1) Definition. A "**Reorganization Event**" shall mean: (a) any merger or consolidation of the Company with or into another entity as a result of which all of the Common Stock of the Company is converted into or exchanged for the right to receive cash, securities or other property or is cancelled, (b) any transfer or disposition of all of the Common Stock of the Company for cash, securities or other property pursuant to a share exchange or other transaction or (c) any liquidation or dissolution of the Company.

(2) Consequences of a Reorganization Event on Awards Other than Restricted Stock.

(i) In connection with a Reorganization Event, the Board may take any one or more of the following actions as to all or any (or any portion of) outstanding Awards other than Restricted Stock on such terms as the Board determines (except to the extent specifically provided otherwise in an applicable Award agreement or another agreement between the Company and the Participant): (i) provide that such Awards shall be assumed, or substantially equivalent Awards shall be substituted, by the acquiring or succeeding corporation (or an affiliate thereof), (ii) upon written notice to a Participant, provide that all of the Participant's unexercised Awards will terminate immediately prior to the consummation of such Reorganization Event unless exercised by the Participant (to the extent then exercisable) within a specified period following the date of such notice, (iii) provide that outstanding Awards shall become exercisable, realizable, or deliverable, or restrictions applicable to an Award shall lapse, in whole or in part prior to or upon such Reorganization Event, (iv) in the event of a Reorganization Event under the terms of which holders of Common Stock will receive upon

consummation thereof a cash payment for each share surrendered in the Reorganization Event (the "**Acquisition Price**"), make or provide for a cash payment to Participants with respect to each Award held by a Participant equal to (A) the number of shares of Common Stock subject to the vested portion of the Award (after giving effect to any acceleration of vesting that occurs upon or immediately prior to such Reorganization Event) multiplied by (B) the excess, if any, of (I) the Acquisition Price over (II) the exercise, measurement or purchase price of such Award and any applicable tax withholdings, in exchange for the termination of such Award, (v) provide that, in connection with a liquidation or dissolution of the Company, Awards shall convert into the right to receive liquidation proceeds (if applicable, net of the exercise, measurement or purchase price thereof and any applicable tax withholdings) and (vi) any combination of the foregoing. In taking any of the actions permitted under this Section 9(b)(2), the Board shall not be obligated by the Plan to treat all Awards, all Awards held by a Participant, or all Awards of the same type, identically.

(ii) Notwithstanding the terms of Section 9(b)(2)(i), in the case of outstanding Restricted Stock Units that are subject to Section 409A of the Code: (i) if the applicable Restricted Stock Unit agreement provides that the Restricted Stock Units shall be settled upon a "change in control event" within the meaning of Treasury Regulation Section 1.409A-3(i)(5)(i), and the Reorganization Event constitutes such a "change in control event", then no assumption or substitution shall be permitted pursuant to Section 9(b)(2)(i)(i) and the Restricted Stock Units shall instead be settled in accordance with the terms of the applicable Restricted Stock Unit agreement; and (ii) the Board may only undertake the actions set forth in clauses (iii), (iv) or (v) of Section 9(b)(2)(i) if the Reorganization Event constitutes a "change in control event" as defined under Treasury Regulation Section 1.409A-3(i)(5)(i) and such action is permitted or required by Section 409A of the Code; if the Reorganization Event is not a "change in control event" as so defined or such action is not permitted or required by Section 409A of the Code, and the acquiring or succeeding corporation does not assume or substitute the Restricted Stock Units pursuant to clause (i) of Section 9(b)(2)(i), then the unvested Restricted Stock Units shall terminate immediately prior to the consummation of the Reorganization Event without any payment in exchange therefor.

(iii) For purposes of Section 9(b)(2)(i)(i), an Award (other than Restricted Stock) shall be considered assumed if, following consummation of the Reorganization Event, such Award confers the right to purchase or receive pursuant to the terms of such Award, for each share of Common Stock subject to the Award immediately prior to the consummation of the Reorganization Event, the consideration (whether cash, securities or other property) received as a result of the Reorganization Event by holders of Common Stock for each share of Common Stock held immediately prior to the consummation of the Reorganization Event (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding shares of Common Stock); *provided*, *however*, that if the consideration received as a result of the Reorganization Event is not solely common stock of the acquiring or succeeding corporation (or an affiliate thereof), the Company may, with the consent of the acquiring or succeeding corporation, provide for the consideration to be received upon the exercise or settlement of the Award to consist solely of such number of shares of common stock of the acquiring or succeeding corporation (or an affiliate thereof) that the Board determined to be equivalent in value (as of the date of such determination or another date specified by the Board) to the per share consideration received by holders of outstanding shares of Common Stock as a result of the Reorganization Event.

(3) Consequences of a Reorganization Event on Restricted Stock. Upon the occurrence of a Reorganization Event other than a liquidation or dissolution of the Company, the repurchase and other rights of the Company with respect to outstanding Restricted Stock shall inure to the benefit of the Company's successor and shall, unless the Board determines otherwise, apply to the cash, securities or other property which the Common Stock was converted into or exchanged for pursuant to such Reorganization Event in the same manner and to the same extent as they applied to such Restricted Stock; *provided*, *however*, that the Board may provide for termination or deemed satisfaction of such repurchase or other rights under the instrument evidencing any Restricted Stock or any other agreement between a Participant and the Company, either initially or by amendment. Upon the occurrence of a Reorganization Event involving the liquidation or dissolution of the Company, except to the extent specifically provided to the contrary in the instrument evidencing any Restricted Stock or any other agreement between a Participant and the Company, all restrictions and conditions on all Restricted Stock then outstanding shall automatically be deemed terminated or satisfied.

10. General Provisions Applicable to Awards.

(a) Transferability of Awards. Awards (or any interest in an Award, including, prior to exercise, any interest in shares of Common Stock issuable upon exercise of an Option or SAR) shall not be sold, assigned, transferred (including by establishing any short position, put equivalent position (as defined in Rule 16a-1 issued under the Exchange Act) or call equivalent position (as defined in Rule 16a-1 issued under the Exchange Act)), pledged, hypothecated or otherwise encumbered by the person to whom they are granted, either voluntarily or by operation of law, and, during the life of the Participant, shall be exercisable only by the Participant; except that Awards, other than Awards subject to Section 409A of the Code, may be transferred to family members (as defined in Rule 701(c)(3) under the Securities Act) through gifts or (other than Incentive Stock Options) domestic relations orders or to an executor or guardian upon the death or disability of the Participant. The Company shall not be required to recognize any such permitted transfer until such time as such permitted transferee shall deliver to the Company a written instrument, as a condition to such transfer, in form and substance satisfactory to the Company confirming that such transferee shall be bound by all of the terms and conditions of the Award. References to a Participant, to the extent relevant in the context, shall include references to authorized transferees. For the avoidance of doubt, nothing contained in this Section 10(a) shall be deemed to restrict a transfer to the Company.

(b) Documentation. Each Award shall be evidenced in such form (written, electronic or otherwise) as the Board shall determine. Each Award may contain terms and conditions in addition to those set forth in the Plan.

(c) Board Discretion. Except as otherwise provided by the Plan, each Award may be made alone or in addition or in relation to any other Award. The terms of each Award need not be identical, and the Board need not treat Participants uniformly.

(d) Termination of Status. The Board shall determine the effect on an Award of the disability, death, termination or other cessation of employment, authorized leave of absence or other change in the employment or other status of a Participant and the extent to which, and the period during which, the Participant, or the Participant's legal representative, conservator, guardian or Designated Beneficiary, may exercise rights under the Award.

(e) Withholding. The Participant must satisfy all applicable federal, state, and local or other income and employment tax withholding obligations before the Company will deliver stock certificates or otherwise recognize ownership of Common Stock under an Award. The Company may decide to satisfy the withholding obligations through additional withholding on salary or wages. If the Company elects not to or cannot withhold from other compensation, the Participant must pay the Company the full amount, if any, required for withholding or have a broker tender to the Company cash equal to the withholding obligations. Payment of withholding obligations is due before the Company will issue any shares on exercise, vesting or release from forfeiture of an Award or at the same time as payment of the exercise or purchase price unless the Company determines otherwise. If provided for in an Award or approved by the Board in its sole discretion, a Participant may satisfy such tax obligations in whole or in part by delivery (either by actual delivery or attestation) of shares of Common Stock, including shares retained from the Award creating the tax obligation, valued at their Fair Market Value; *provided*, *however*, except as otherwise provided by the Board, that the total tax withholding where stock is being used to satisfy such tax obligations cannot exceed the Company's minimum statutory withholding obligations (based on minimum statutory withholding rates for federal and state tax purposes, including payroll taxes, that are applicable to such supplemental taxable income). Shares used to satisfy tax withholding requirements cannot be subject to any repurchase, forfeiture, unfulfilled vesting or other similar requirements.

(f) Amendment of Award.

(1) The Board may amend, modify or terminate any outstanding Award, including but not limited to, substituting therefor another Award of the same or a different type, changing the date of exercise or realization, and converting an Incentive Stock Option to a Nonstatutory Stock Option. The Participant's consent to such action shall be required unless (i) the Board determines that the action, taking into account any related action, does not materially and adversely affect the Participant's rights under the Plan or (ii) the change is permitted under Section 9.

(2) The Board may, without stockholder approval, amend any outstanding Award granted under the Plan to provide an exercise price per share that is lower than the then-current exercise price per share of such outstanding Award. The Board may also, without stockholder approval, cancel any outstanding award (whether or not granted under the Plan) and grant in substitution therefor new Awards under the Plan covering the same or a different number of shares of Common Stock and having an exercise price per share lower than the then-current exercise price per share of the cancelled award.

(g) Conditions on Delivery of Stock. The Company will not be obligated to deliver any shares of Common Stock pursuant to the Plan or to remove restrictions from shares previously issued or delivered under the Plan until (i) all conditions of the Award have been met

or removed to the satisfaction of the Company, (ii) in the opinion of the Company's counsel, all other legal matters in connection with the issuance and delivery of such shares have been satisfied, including any applicable securities laws and regulations and any applicable stock exchange or stock market rules and regulations, and (iii) the Participant has executed and delivered to the Company such representations or agreements as the Company may consider appropriate to satisfy the requirements of any applicable laws, rules or regulations.

(h) Acceleration. The Board may at any time provide that any Award shall become immediately exercisable in whole or in part, free of some or all restrictions or conditions, or otherwise realizable in whole or in part, as the case may be.

11. Miscellaneous.

(a) No Right To Employment or Other Status. No person shall have any claim or right to be granted an Award by virtue of the adoption of the Plan, and the grant of an Award shall not be construed as giving a Participant the right to continued employment or any other relationship with the Company. The Company expressly reserves the right at any time to dismiss or otherwise terminate its relationship with a Participant free from any liability or claim under the Plan, except as expressly provided in the applicable Award.

(b) No Rights As Stockholder. Subject to the provisions of the applicable Award, no Participant or Designated Beneficiary shall have any rights as a stockholder with respect to any shares of Common Stock to be distributed with respect to an Award until becoming the record holder of such shares.

(c) Effective Date and Term of Plan. The Plan shall become effective on the date on which it is adopted by the Board. No Awards shall be granted under the Plan after the expiration of 10 years from the earlier of (i) the date on which the Plan was adopted by the Board or (ii) the date the Plan was approved by the Company's stockholders, but Awards previously granted may extend beyond that date.

(d) Amendment of Plan. The Board may amend, suspend or terminate the Plan or any portion thereof at any time; *provided* that if at any time the approval of the Company's stockholders is required as to any modification or amendment under Section 422 of the Code or any successor provision with respect to Incentive Stock Options, the Board may not effect such modification or amendment without such approval. Unless otherwise specified in the amendment, any amendment to the Plan adopted in accordance with this Section 11(d) shall apply to, and be binding on the holders of, all Awards outstanding under the Plan at the time the amendment is adopted, provided the Board determines that such amendment, taking into account any related action, does not materially and adversely affect the rights of Participants under the Plan.

(e) Authorization of Sub-Plans (including Grants to non-U.S. Employees). The Board may from time to time establish one or more sub-plans under the Plan for purposes of satisfying applicable securities, tax or other laws of various jurisdictions. The Board shall establish such sub-plans by adopting supplements to the Plan containing (i) such limitations on the Board's discretion under the Plan as the Board deems necessary or desirable or (ii) such

additional terms and conditions not otherwise inconsistent with the Plan as the Board shall deem necessary or desirable. All supplements adopted by the Board shall be deemed to be part of the Plan, but each supplement shall apply only to Participants within the affected jurisdiction and the Company shall not be required to provide copies of any supplement to Participants in any jurisdiction which is not the subject of such supplement.

(f) Compliance with Section 409A of the Code. Except as provided in individual Award agreements initially or by amendment, if and to the extent (i) any portion of any payment, compensation or other benefit provided to a Participant pursuant to the Plan in connection with Participant's employment termination constitutes "nonqualified deferred compensation" within the meaning of Section 409A of the Code and (ii) the Participant is a specified employee as defined in Section 409A(a)(2)(B)(i) of the Code, in each case as determined by the Company in accordance with its procedures, by which determinations the Participant (through accepting the Award) agrees that the Participant is bound, such portion of the payment, compensation or other benefit shall not be paid before the day that is six months plus one day after the date of "separation from service" (as determined under Section 409A of the Code) (the "**New Payment Date**"), except as Section 409A of the Code may then permit. The aggregate of any payments that otherwise would have been paid to the Participant during the period between the date of separation from service and the New Payment Date shall be paid to the Participant in a lump sum on such New Payment Date, and any remaining payments will be paid on their original schedule.

The Company makes no representations or warranty and shall have no liability to the Participant or any other person if any provisions of or payments, compensation or other benefits under the Plan are determined to constitute nonqualified deferred compensation subject to Section 409A of the Code but do not to satisfy the conditions of that section.

(g) Limitations on Liability. Notwithstanding any other provisions of the Plan, no individual acting as a director, officer, other employee, or agent of the Company will be liable to any Participant, former Participant, spouse, beneficiary, or any other person for any claim, loss, liability, or expense incurred in connection with the Plan, nor will such individual be personally liable with respect to the Plan because of any contract or other instrument such individual executes in such individual's capacity as a director, officer, other employee, or agent of the Company. The Company will indemnify and hold harmless each director, officer, other employee, or agent of the Company to whom any duty or power relating to the administration or interpretation of the Plan has been or will be delegated, against any cost or expense (including attorneys' fees) or liability (including any sum paid in settlement of a claim with the Board's approval) arising out of any act or omission to act concerning the Plan unless arising out of such person's own fraud or bad faith.

(h) Governing Law. The provisions of the Plan and all Awards made hereunder shall be governed by and interpreted in accordance with the laws of the State of Delaware, excluding choice-of-law principles of the law of such state that would require the application of the laws of a jurisdiction other than the State of Delaware.

* * * *

IMARA Inc.
2016 STOCK INCENTIVE PLAN

CALIFORNIA SUPPLEMENT

Pursuant to Section 11(e) of the Plan, the Board has adopted this supplement for purposes of satisfying the requirements of Section 25102(o) of the California Law:

Any Awards granted under the Plan to a Participant who is a resident of the State of California on the date of grant (a "**California Participant**") shall be subject to the following additional limitations, terms and conditions:

1. Additional Limitations on Options.

(a) Maximum Duration of Options. No Options granted to California Participants shall have a term in excess of 10 years measured from the Option grant date.

(b) Minimum Exercise Period Following Termination. Unless a California Participant's employment is terminated for cause (as defined by applicable law, the terms of the Plan or option grant or a contract of employment), in the event of termination of employment of such Participant, such Participant shall have the right to exercise an Option, to the extent that such Participant is entitled to exercise such Option on the date employment terminated, until the earlier of: (i) at least six months from the date of termination, if termination was caused by such Participant's death or disability, (ii) at least 30 days from the date of termination, if termination was caused other than by such Participant's death or disability and (iii) the Option expiration date.

2. Additional Limitations for Other Stock-Based Awards. The terms of all Awards granted to a California Participant under Section 8 of the Plan shall comply, to the extent applicable, with Sections 260.140.42, 260.140.45 and 260.140.46 of the California Code of Regulations.

3. Additional Limitations on Timing of Awards. No Award granted to a California Participant shall become exercisable, vested or realizable, as applicable to such Award, unless the Plan has been approved by the holders of a majority of the Company's outstanding voting securities by the later of (i) within 12 months before or after the date the Plan was adopted by the Board, or (ii) prior to or within 12 months of the granting of any Award to a California Participant.

4. Additional Restriction Regarding Recapitalizations, Stock Splits, Etc. For purposes of Section 9 of the Plan, in the event of a stock split, reverse stock split, stock dividend, recapitalization, combination, reclassification or other distribution of the Company's securities underlying the Award without the receipt of consideration by the Company, the number of securities purchasable, and in the case of Options, the exercise price of such Options, must be proportionately adjusted.

5. Additional Limitations on Transferability of Awards. Notwithstanding the provisions of Section 10(a) of the Plan, an Award granted to a California Participant may not be transferred to an executor or guardian upon the disability of the Participant.

IMARA INC.

AMENDMENT NO. 1 TO 2016 STOCK INCENTIVE PLAN

The IMARA Inc. 2016 Stock Incentive Plan, as amended, (the "**Plan**") is hereby amended by the Board of Directors and stockholders of IMARA Inc., a Delaware corporation, as follows:

Section 4(a) of the Plan is hereby amended by replacing the number "1,582,846" with the number "2,782,846."

ADOPTED BY BOARD OF DIRECTORS:	November 11, 2016
ADOPTED BY STOCKHOLDERS:	November 16, 2016

IMARA INC.

AMENDMENT NO. 2 TO 2016 STOCK INCENTIVE PLAN

The IMARA Inc. 2016 Stock Incentive Plan, as amended, (the "**Plan**") is hereby amended by the Board of Directors and stockholders of IMARA Inc., a Delaware corporation, as follows:

Section 4(a) of the Plan is hereby amended by replacing the number "2,782,846" with the number "4,222,846."

ADOPTED BY BOARD OF DIRECTORS: May 28, 2018

ADOPTED BY STOCKHOLDERS: May 29, 2018

IMARA INC.

AMENDMENT NO. 3 TO 2016 STOCK INCENTIVE PLAN

The IMARA Inc. 2016 Stock Incentive Plan, as amended, (the "**Plan**") is hereby amended by the Board of Directors and stockholders of IMARA Inc., a Delaware corporation, as follows:

Section 4(a) of the Plan is hereby amended by replacing the number "4,222,846" with the number "10,411,048."

ADOPTED BY BOARD OF DIRECTORS:	March 15, 2019
ADOPTED BY STOCKHOLDERS:	March 15, 2019

IMARA INC.

AMENDMENT NO. 4 TO 2016 STOCK INCENTIVE PLAN

The IMARA Inc. 2016 Stock Incentive Plan, as amended, (the "**Plan**") is hereby amended by the Board of Directors and stockholders of IMARA Inc., a Delaware corporation, as follows:

Section 4(a) of the Plan is hereby amended by replacing the number "10,411,048" with the number "12,177,327."

ADOPTED BY BOARD OF DIRECTORS: May 16, 2019

ADOPTED BY STOCKHOLDERS: June 11, 2019

IMARA INC.

INCENTIVE STOCK OPTION AGREEMENT
GRANTED UNDER 2016 STOCK INCENTIVE PLAN

1. Grant of Option.

This Incentive Stock Option Agreement (the "**Agreement**") evidences the grant by IMARA Inc., a Delaware corporation (the "**Company**"), on [, 20] (the "**Grant Date**") to [ ], an employee of the Company (the "**Participant**"), of an option to purchase, in whole or in part, on the terms provided herein and in the Company's 2016 Stock Incentive Plan (the "**Plan**"), a total of [ ] shares (the "**Shares**") of common stock, $0.001 par value per share, of the Company ("**Common Stock**") at $[ ] per Share. Unless earlier terminated, this option shall expire at 5:00 p.m., Eastern time, on [, 20] [date is ten years minus one day from grant date] (the "**Final Exercise Date**").

It is intended that the option evidenced by this Agreement shall be an incentive stock option as defined in Section 422 of the Internal Revenue Code of 1986, as amended, and any regulations promulgated thereunder (the "**Code**"). Except as otherwise indicated by the context, the term "**Participant**", as used in this option, shall be deemed to include any person who acquires the right to exercise this option validly under its terms.

2. Vesting Schedule.

[ ].

The right of exercise shall be cumulative so that to the extent the option is not exercised in any period to the maximum extent permissible it shall continue to be exercisable, in whole or in part, with respect to all Shares for which it is vested until the earlier of the Final Exercise Date or the termination of this option under Section 3 hereof or the Plan.

3. Exercise of Option.

(a) Form of Exercise. Each election to exercise this option shall be accompanied by a completed Notice of Stock Option Exercise in the form attached hereto as Exhibit A, signed by the Participant, and received by the Company at its principal office, accompanied by this Agreement, and payment in full in the manner provided in the Plan. The Participant may purchase less than the number of Shares covered hereby, provided that no partial exercise of this option may be for any fractional share or for fewer than ten whole shares.

(b) Continuous Relationship with the Company Required. Except as otherwise provided in this Section 3, this option may not be exercised unless the Participant, at the time he or she exercises this option, is, and has been at all times since the Grant Date, an employee or officer of, or consultant or advisor to, the Company or any parent or subsidiary of the Company as defined in Section 424(e) or (f) of the Code (an "**Eligible Participant**").

(c) Termination of Relationship with the Company. If the Participant ceases to be an Eligible Participant for any reason, then, except as provided in paragraphs (d) and (e) below, the right to exercise this option shall terminate three months after such cessation (but in no event after the Final Exercise Date), provided that this option shall be exercisable only to the extent that the Participant was entitled to exercise this option on the date of such cessation. Notwithstanding the foregoing, if the Participant, prior to the Final Exercise Date, violates the non-competition or confidentiality provisions of any employment contract, confidentiality and nondisclosure agreement or other agreement between the Participant and the Company, the right to exercise this option shall terminate immediately upon such violation.

(d) Exercise Period Upon Death or Disability. If the Participant dies or becomes disabled (within the meaning of Section 22(e)(3) of the Code) prior to the Final Exercise Date while he or she is an Eligible Participant and the Company has not terminated such relationship for "cause" as specified in paragraph (e) below, this option shall be exercisable, within the period of one year following the date of death or disability of the Participant, by the Participant (or in the case of death by an authorized transferee), provided that this option shall be exercisable only to the extent that this option was exercisable by the Participant on the date of his or her death or disability, and further provided that this option shall not be exercisable after the Final Exercise Date.

(e) Termination for Cause. If, prior to the Final Exercise Date, the Participant's employment is terminated by the Company for Cause (as defined below), the right to exercise this option shall terminate immediately upon the effective date of such termination of employment. If, prior to the Final Exercise Date, the Participant is given notice by the Company of the termination of his or her employment by the Company for Cause, and the effective date of such employment termination is subsequent to the date of delivery of such notice, the right to exercise this option shall be suspended from the time of the delivery of such notice until the earlier of (i) such time as it is determined or otherwise agreed that the Participant's employment shall not be terminated for Cause as provided in such notice or (ii) the effective date of such termination of employment (in which case the right to exercise this option shall, pursuant to the preceding sentence, terminate upon the effective date of such termination of employment). If the Participant is party to an employment or severance agreement with the Company that contains a definition of "cause" for termination of employment, "Cause" shall have the meaning ascribed to such term in such agreement. Otherwise, "Cause" shall mean willful misconduct by the Participant or willful failure by the Participant to perform his or her responsibilities to the Company (including, without limitation, breach by the Participant of any provision of any employment, consulting, advisory, nondisclosure, non-competition or other similar agreement between the Participant and the Company), as determined by the Company, which determination shall be conclusive. The Participant's employment shall be considered to have been terminated for Cause if the Company determines, within 30 days after the Participant's resignation, that termination for Cause was warranted.

4. Company Right of First Refusal.

(a) Notice of Proposed Transfer. If the Participant proposes to sell, assign, transfer, pledge, hypothecate or otherwise dispose of, by operation of law or otherwise (collectively, "transfer") any Shares acquired upon exercise of this option, then the Participant shall first give

written notice of the proposed transfer (the "**Transfer Notice**") to the Company. The Transfer Notice shall name the proposed transferee and state the number of such Shares the Participant proposes to transfer (the "**Offered Shares**"), the price per share and all other material terms and conditions of the transfer.

(b) Company Right to Purchase. For 30 days following its receipt of such Transfer Notice, the Company shall have the option to purchase all or part of the Offered Shares at the price and upon the terms set forth in the Transfer Notice. In the event the Company elects to purchase all or part of the Offered Shares, it shall give written notice of such election to the Participant within such 30-day period. Within 10 days after his or her receipt of such notice, the Participant shall tender to the Company at its principal offices the certificate or certificates representing the Offered Shares to be purchased by the Company, duly endorsed in blank by the Participant or with duly endorsed stock powers attached thereto, all in a form suitable for transfer of the Offered Shares to the Company. Promptly following receipt of such certificate or certificates, the Company shall deliver or mail to the Participant a check in payment of the purchase price for such Offered Shares; provided that if the terms of payment set forth in the Transfer Notice were other than cash against delivery, the Company may pay for the Offered Shares on the same terms and conditions as were set forth in the Transfer Notice; and provided further that any delay in making such payment shall not invalidate the Company's exercise of its option to purchase the Offered Shares.

(c) Shares Not Purchased By Company. If the Company does not elect to acquire all of the Offered Shares, the Participant may, within the 30-day period following the expiration of the option granted to the Company under subsection (b) above, transfer the Offered Shares which the Company has not elected to acquire to the proposed transferee, provided that such transfer shall not be on terms and conditions more favorable to the transferee than those contained in the Transfer Notice. Notwithstanding any of the above, all Offered Shares transferred pursuant to this Section 4 shall remain subject to the right of first refusal set forth in this Section 4 and such transferee shall, as a condition to such transfer, deliver to the Company a written instrument confirming that such transferee shall be bound by all of the terms and conditions of this Section 4.

(d) Consequences of Non-Delivery. After the time at which the Offered Shares are required to be delivered to the Company for transfer to the Company pursuant to subsection (b) above, the Company shall not pay any dividend to the Participant on account of such Offered Shares or permit the Participant to exercise any of the privileges or rights of a stockholder with respect to such Offered Shares, but shall, insofar as permitted by law, treat the Company as the owner of such Offered Shares.

(e) Exempt Transactions. The following transactions shall be exempt from the provisions of this Section 4:

(1) any transfer of Shares to or for the benefit of any spouse, child or grandchild of the Participant, or to a trust for their benefit;

(2) any transfer pursuant to an effective registration statement filed by the Company under the Securities Act of 1933, as amended (the "**Securities Act**"); and

(3) the sale of all or substantially all of the outstanding shares of capital stock of the Company (including pursuant to a merger or consolidation);

provided, however, that in the case of a transfer pursuant to clause (1) above, such Shares shall remain subject to the right of first refusal set forth in this Section 4.

(f) Assignment of Company Right. The Company may assign its rights to purchase Offered Shares in any particular transaction under this Section 4 to one or more persons or entities.

(g) Termination. The provisions of this Section 4 shall terminate upon the earlier of the following events:

(1) the closing of the sale of shares of Common Stock in an underwritten public offering pursuant to an effective registration statement filed by the Company under the Securities Act; or

(2) the sale of all or substantially all of the outstanding shares of capital stock, assets or business of the Company, by merger, consolidation, sale of assets or otherwise (other than a merger or consolidation in which all or substantially all of the individuals and entities who were beneficial owners of the Company's voting securities immediately prior to such transaction beneficially own, directly or indirectly, more than 75% (determined on an as-converted basis) of the outstanding securities entitled to vote generally in the election of directors of the resulting, surviving or acquiring corporation in such transaction).

(h) No Obligation to Recognize Invalid Transfer. The Company shall not be required (1) to transfer on its books any of the Shares which shall have been sold or transferred in violation of any of the provisions set forth in this Section 4, or (2) to treat as owner of such Shares or to pay dividends to any transferee to whom any such Shares shall have been so sold or transferred.

(i) Legends. The certificate representing Shares shall bear a legend substantially in the following form (in addition to, or in combination with, any legend required by applicable federal and state securities laws and agreements relating to the transfer of the Company securities):

> "The shares represented by this certificate are subject to a right of first refusal in favor of the Company, as provided in a certain stock option agreement with the Company."

5. Agreement in Connection with Initial Public Offering.

The Participant agrees, in connection with the initial underwritten public offering of the Common Stock pursuant to a registration statement under the Securities Act, (i) not to (a) offer, pledge, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or any other securities of the Company or (b) enter into any swap or other agreement that transfers, in

whole or in part, any of the economic consequences of ownership of shares of Common Stock or other securities of the Company, whether any transaction described in clause (a) or (b) is to be settled by delivery of securities, in cash or otherwise, during the period beginning on the date of the filing of such registration statement with the Securities and Exchange Commission and ending 180 days after the date of the final prospectus relating to the offering (plus up to an additional 34 days to the extent requested by the managing underwriters for such offering in order to address NASD Rule 2711(f)(4) or NYSE Rule 472(f)(4) or any similar successor provision), and (ii) to execute any agreement reflecting clause (i) above as may be requested by the Company or the managing underwriters at the time of such offering. The Company may impose stop-transfer instructions with respect to the shares of Common Stock or other securities subject to the foregoing restriction until the end of the "lock-up" period.

6. Tax Matters.

(a) Withholding. No Shares will be issued pursuant to the exercise of this option unless and until the Participant pays to the Company, or makes provision satisfactory to the Company for payment of, any federal, state or local withholding taxes required by law to be withheld in respect of this option.

(b) Disqualifying Disposition. If the Participant disposes of Shares acquired upon exercise of this option within two years from the Grant Date or one year after such Shares were acquired pursuant to exercise of this option, the Participant shall notify the Company in writing of such disposition.

7. Transfer Restrictions.

(a) This option may not be sold, assigned, transferred, pledged or otherwise encumbered by the Participant, either voluntarily or by operation of law, except by will or the laws of descent and distribution, and, during the lifetime of the Participant, this option shall be exercisable only by the Participant.

(b) The Participant agrees that he or she will not transfer any Shares issued pursuant to the exercise of this option unless the transferee, as a condition to such transfer, delivers to the Company a written instrument confirming that such transferee shall be bound by all of the terms and conditions of Section 4 and Section 5; provided that such a written confirmation shall not be required with respect to (1) Section 4 after such provision has terminated in accordance with Section 4(g) or (2) Section 5 after the completion of the lock-up period in connection with the Company's initial underwritten public offering.

8. Provisions of the Plan.

This option is subject to the provisions of the Plan (including the provisions relating to amendments to the Plan), a copy of which is furnished to the Participant with this option.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written. The Participant hereby accepts the foregoing option and agrees to the terms and conditions thereof. The Participant hereby acknowledges receipt of a copy of the Company's 2016 Stock Incentive Plan.

COMPANY:

IMARA INC.

By: _____
Name: _____
Title: _____

PARTICIPANT:

By: _____
[Name]

Address: [_____]
[_____]

SPOUSAL CONSENT:

By: _____
Name: _____

Address: [_____]
[_____]

SIGNATURE PAGE TO INCENTIVE STOCK OPTION AGREEMENT

EXHIBIT A

NOTICE OF STOCK OPTION EXERCISE

[DATE]

IMARA Inc.
[Address]
[Address]

Attention: Treasurer

Dear Sir or Madam:

I am the holder of an Incentive Stock Option granted to me under the IMARA Inc. (the "**Company**") 2016 Stock Incentive Plan on [ ] for the purchase of [ ] shares of Common Stock of the Company at a purchase price of $[ ] per share.

I hereby exercise my option to purchase [ ] shares of Common Stock (the "**Shares**"), for which I have enclosed [ ] in the amount of [ ]. Please register my stock certificate as follows:

Name(s): _____

_____

Address: _____

_____

I represent, warrant and covenant as follows:

1. I am purchasing the Shares for my own account for investment only, and not with a view to, or for sale in connection with, any distribution of the Shares in violation of the Securities Act of 1933 (the "**Securities Act**"), or any rule or regulation under the Securities Act.

2. I have had such opportunity as I have deemed adequate to obtain from representatives of the Company such information as is necessary to permit me to evaluate the merits and risks of my investment in the Company.

3. I have sufficient experience in business, financial and investment matters to be able to evaluate the risks involved in the purchase of the Shares and to make an informed investment decision with respect to such purchase.

4. I can afford a complete loss of the value of the Shares and am able to bear the economic risk of holding such Shares for an indefinite period.

5. I understand that (i) the Shares have not been registered under the Securities Act and are "restricted securities" within the meaning of Rule 144 under the Securities Act, (ii) the Shares

cannot be sold, transferred or otherwise disposed of unless they are subsequently registered under the Securities Act or an exemption from registration is then available; (iii) in any event, the exemption from registration under Rule 144 will not be available for at least one year and even then will not be available unless a public market then exists for the Common Stock, adequate information concerning the Company is then available to the public, and other terms and conditions of Rule 144 are complied with; and (iv) there is now no registration statement on file with the Securities and Exchange Commission with respect to any stock of the Company and the Company has no obligation or current intention to register the Shares under the Securities Act.

Very truly yours,

_____

[Name]

IMARA Inc.

NONSTATUTORY STOCK OPTION AGREEMENT
GRANTED UNDER 2016 STOCK INCENTIVE PLAN

1. Grant of Option.

This Nonstatutory Stock Option Agreement (the "**Agreement**") evidences the grant by IMARA Inc., a Delaware corporation (the "**Company**"), on [, 20] (the "**Grant Date**") to [ ], an employee, consultant or director of the Company (the "**Participant**"), of an option to purchase, in whole or in part, on the terms provided herein and in the Company's 2016 Stock Incentive Plan (the "**Plan**"), a total of [ ] shares (the "**Shares**") of common stock, $0.001 par value per share, of the Company ("**Common Stock**") at $[ ] per Share. Unless earlier terminated, this option shall expire at 5:00 p.m., Eastern time, on [, 20] [date is ten years minus one day from grant date] (the "**Final Exercise Date**").

It is intended that the option evidenced by this Agreement shall not be an incentive stock option as defined in Section 422 of the Internal Revenue Code of 1986, as amended, and any regulations promulgated thereunder (the "**Code**"). Except as otherwise indicated by the context, the term "**Participant**", as used in this option, shall be deemed to include any person who acquires the right to exercise this option validly under its terms.

2. Vesting Schedule.

[ ].

The right of exercise shall be cumulative so that to the extent the option is not exercised in any period to the maximum extent permissible it shall continue to be exercisable, in whole or in part, with respect to all Shares for which it is vested until the earlier of the Final Exercise Date or the termination of this option under Section 3 hereof or the Plan.

3. Exercise of Option.

(a) Form of Exercise. Each election to exercise this option shall be accompanied by a completed Notice of Stock Option Exercise in the form attached hereto as Exhibit A, signed by the Participant, and received by the Company at its principal office, accompanied by this Agreement, and payment in full in the manner provided in the Plan. The Participant may purchase less than the number of Shares covered hereby, provided that no partial exercise of this option may be for any fractional share or for fewer than ten whole shares.

(b) Continuous Relationship with the Company Required. Except as otherwise provided in this Section 3, this option may not be exercised unless the Participant, at the time he or she exercises this option, is, and has been at all times since the Grant Date, an employee, officer or director of, or consultant or advisor to, the Company or any other entity the employees, officers, directors, consultants, or advisors of which are eligible to receive option grants under the Plan (an "**Eligible Participant**").

(c) Termination of Relationship with the Company. If the Participant ceases to be an Eligible Participant for any reason, then, except as provided in paragraphs (d) and (e) below, the right to exercise this option shall terminate three months after such cessation (but in no event after the Final Exercise Date), provided that this option shall be exercisable only to the extent that the Participant was entitled to exercise this option on the date of such cessation. Notwithstanding the foregoing, if the Participant, prior to the Final Exercise Date, violates the non-competition or confidentiality provisions of any employment contract, confidentiality and nondisclosure agreement or other agreement between the Participant and the Company, the right to exercise this option shall terminate immediately upon such violation.

(d) Exercise Period Upon Death or Disability. If the Participant dies or becomes disabled (within the meaning of Section 22(e)(3) of the Code) prior to the Final Exercise Date while he or she is an Eligible Participant and the Company has not terminated such relationship for "cause" as specified in paragraph (e) below, this option shall be exercisable, within the period of one year following the date of death or disability of the Participant, by the Participant (or in the case of death by an authorized transferee), provided that this option shall be exercisable only to the extent that this option was exercisable by the Participant on the date of his or her death or disability, and further provided that this option shall not be exercisable after the Final Exercise Date.

(e) Termination for Cause. If, prior to the Final Exercise Date, the Participant's employment or other relationship with the Company is terminated by the Company for Cause (as defined below), the right to exercise this option shall terminate immediately upon the effective date of such termination of employment or other relationship. If, prior to the Final Exercise Date, the Participant is given notice by the Company of the termination of his or her employment or other relationship by the Company for Cause, and the effective date of such employment or other termination is subsequent to the date of the delivery of such notice, the right to exercise this option shall be suspended from the time of the delivery of such notice until the earlier of (i) such time as it is determined or otherwise agreed that the Participant's employment or other relationship shall not be terminated for Cause as provided in such notice or (ii) the effective date of such termination of employment or other relationship (in which case the right to exercise this option shall, pursuant to the preceding sentence, terminate immediately upon the effective date of such termination of employment or other relationship). If the Participant is party to an employment, consulting or severance agreement with the Company that contains a definition of "cause" for termination of employment or other relationship, "Cause" shall have the meaning ascribed to such term in such agreement. Otherwise, "Cause" shall mean willful misconduct by the Participant or willful failure by the Participant to perform his or her responsibilities to the Company (including, without limitation, breach by the Participant of any provision of any employment, consulting, advisory, nondisclosure, non-competition or other similar agreement between the Participant and the Company), as determined by the Company, which determination shall be conclusive. The Participant's employment or other relationship shall be considered to have been terminated for "Cause" if the Company determines, within 30 days after the Participant's resignation, that termination for Cause was warranted.

4. Company Right of First Refusal.

(a) Notice of Proposed Transfer. If the Participant proposes to sell, assign, transfer, pledge, hypothecate or otherwise dispose of, by operation of law or otherwise (collectively, "transfer") any Shares acquired upon exercise of this option, then the Participant shall first give written notice of the proposed transfer (the "**Transfer Notice**") to the Company. The Transfer Notice shall name the proposed transferee and state the number of such Shares the Participant proposes to transfer (the "**Offered Shares**"), the price per share and all other material terms and conditions of the transfer.

(b) Company Right to Purchase. For 30 days following its receipt of such Transfer Notice, the Company shall have the option to purchase all or part of the Offered Shares at the price and upon the terms set forth in the Transfer Notice. In the event the Company elects to purchase all or part of the Offered Shares, it shall give written notice of such election to the Participant within such 30-day period. Within 10 days after his or her receipt of such notice, the Participant shall tender to the Company at its principal offices the certificate or certificates representing the Offered Shares to be purchased by the Company, duly endorsed in blank by the Participant or with duly endorsed stock powers attached thereto, all in a form suitable for transfer of the Offered Shares to the Company. Promptly following receipt of such certificate or certificates, the Company shall deliver or mail to the Participant a check in payment of the purchase price for such Offered Shares; provided that if the terms of payment set forth in the Transfer Notice were other than cash against delivery, the Company may pay for the Offered Shares on the same terms and conditions as were set forth in the Transfer Notice; and provided further that any delay in making such payment shall not invalidate the Company's exercise of its option to purchase the Offered Shares.

(c) Shares Not Purchased By Company. If the Company does not elect to acquire all of the Offered Shares, the Participant may, within the 30-day period following the expiration of the option granted to the Company under subsection (b) above, transfer the Offered Shares which the Company has not elected to acquire to the proposed transferee, provided that such transfer shall not be on terms and conditions more favorable to the transferee than those contained in the Transfer Notice. Notwithstanding any of the above, all Offered Shares transferred pursuant to this Section 4 shall remain subject to the right of first refusal set forth in this Section 4 and such transferee shall, as a condition to such transfer, deliver to the Company a written instrument confirming that such transferee shall be bound by all of the terms and conditions of this Section 4.

(d) Consequences of Non-Delivery. After the time at which the Offered Shares are required to be delivered to the Company for transfer to the Company pursuant to subsection (b) above, the Company shall not pay any dividend to the Participant on account of such Offered Shares or permit the Participant to exercise any of the privileges or rights of a stockholder with respect to such Offered Shares, but shall, insofar as permitted by law, treat the Company as the owner of such Offered Shares.

(e) Exempt Transactions. The following transactions shall be exempt from the provisions of this Section 4:

(1) any transfer of Shares to or for the benefit of any spouse, child or grandchild of the Participant, or to a trust for their benefit;

(2) any transfer pursuant to an effective registration statement filed by the Company under the Securities Act of 1933, as amended (the "**Securities Act**"); and

(3) the sale of all or substantially all of the outstanding shares of capital stock of the Company (including pursuant to a merger or consolidation);

provided, however, that in the case of a transfer pursuant to clause (1) above, such Shares shall remain subject to the right of first refusal set forth in this Section 4.

(f) Assignment of Company Right. The Company may assign its rights to purchase Offered Shares in any particular transaction under this Section 4 to one or more persons or entities.

(g) Termination. The provisions of this Section 4 shall terminate upon the earlier of the following events:

(1) the closing of the sale of shares of Common Stock in an underwritten public offering pursuant to an effective registration statement filed by the Company under the Securities Act; or

(2) the sale of all or substantially all of the outstanding shares of capital stock, assets or business of the Company, by merger, consolidation, sale of assets or otherwise (other than a merger or consolidation in which all or substantially all of the individuals and entities who were beneficial owners of the Company's voting securities immediately prior to such transaction beneficially own, directly or indirectly, more than 75% (determined on an as-converted basis) of the outstanding securities entitled to vote generally in the election of directors of the resulting, surviving or acquiring corporation in such transaction).

(h) No Obligation to Recognize Invalid Transfer. The Company shall not be required (1) to transfer on its books any of the Shares which shall have been sold or transferred in violation of any of the provisions set forth in this Section 4, or (2) to treat as owner of such Shares or to pay dividends to any transferee to whom any such Shares shall have been so sold or transferred.

(i) Legends. The certificate representing Shares shall bear a legend substantially in the following form (in addition to, or in combination with, any legend required by applicable federal and state securities laws and agreements relating to the transfer of the Company securities):

> "The shares represented by this certificate are subject to a right of first refusal in favor of the Company, as provided in a certain stock option agreement with the Company."

5. Agreement in Connection with Initial Public Offering.

The Participant agrees, in connection with the initial underwritten public offering of the Common Stock pursuant to a registration statement under the Securities Act, (i) not to (a) offer, pledge, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or any other securities of the Company or (b) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of shares of Common Stock or other securities of the Company, whether any transaction described in clause (a) or (b) is to be settled by delivery of securities, in cash or otherwise, during the period beginning on the date of the filing of such registration statement with the Securities and Exchange Commission and ending 180 days after the date of the final prospectus relating to the offering (plus up to an additional 34 days to the extent requested by the managing underwriters for such offering in order to address NASD Rule 2711(f)(4) or NYSE Rule 472(f)(4) or any similar successor provision), and (ii) to execute any agreement reflecting clause (i) above as may be requested by the Company or the managing underwriters at the time of such offering. The Company may impose stop-transfer instructions with respect to the shares of Common Stock or other securities subject to the foregoing restriction until the end of the "lock-up" period.

6. Withholding.

No Shares will be issued pursuant to the exercise of this option unless and until the Participant pays to the Company, or makes provision satisfactory to the Company for payment of, any federal, state or local withholding taxes required by law to be withheld in respect of this option.

7. Transfer Restrictions.

(a) This option may not be sold, assigned, transferred, pledged or otherwise encumbered by the Participant, either voluntarily or by operation of law, except by will or the laws of descent and distribution, and, during the lifetime of the Participant, this option shall be exercisable only by the Participant.

(b) The Participant agrees that he or she will not transfer any Shares issued pursuant to the exercise of this option unless the transferee, as a condition to such transfer, delivers to the Company a written instrument confirming that such transferee shall be bound by all of the terms and conditions of Section 4 and Section 5; provided that such a written confirmation shall not be required with respect to (1) Section 4 after such provision has terminated in accordance with Section 4(g) or (2) Section 5 after the completion of the lock-up period in connection with the Company's initial underwritten public offering.

8. Provisions of the Plan.

This option is subject to the provisions of the Plan (including the provisions relating to amendments to the Plan), a copy of which is furnished to the Participant with this option.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written. The Participant hereby accepts the foregoing option and agrees to the terms and conditions thereof. The Participant hereby acknowledges receipt of a copy of the Company's 2016 Stock Incentive Plan.

COMPANY:

IMARA INC.

By: _____
Name: _____
Title: _____

PARTICIPANT:

By: _____
[Name]

Address: [_____]
[_____]

SPOUSAL CONSENT:

By: _____
Name: _____

Address: [_____]
[_____]

SIGNATURE PAGE TO NONSTATUTORY STOCK OPTION AGREEMENT

EXHIBIT A

NOTICE OF STOCK OPTION EXERCISE

[DATE]

IMARA Inc.
[Address]
[Address]

Attention: Treasurer

Dear Sir or Madam:

I am the holder of a Nonstatutory Stock Option granted to me under the IMARA Inc. (the "**Company**") 2016 Stock Incentive Plan on [ ] for the purchase of [ ] shares of Common Stock of the Company at a purchase price of $[ ] per share.

I hereby exercise my option to purchase [ ] shares of Common Stock (the "**Shares**"), for which I have enclosed [ ] in the amount of [ ]. Please register my stock certificate as follows:

Name(s): _____

_____

Address: _____

_____

I represent, warrant and covenant as follows:

1. I am purchasing the Shares for my own account for investment only, and not with a view to, or for sale in connection with, any distribution of the Shares in violation of the Securities Act of 1933 (the "**Securities Act**"), or any rule or regulation under the Securities Act.

2. I have had such opportunity as I have deemed adequate to obtain from representatives of the Company such information as is necessary to permit me to evaluate the merits and risks of my investment in the Company.

3. I have sufficient experience in business, financial and investment matters to be able to evaluate the risks involved in the purchase of the Shares and to make an informed investment decision with respect to such purchase.

4. I can afford a complete loss of the value of the Shares and am able to bear the economic risk of holding such Shares for an indefinite period.

5. I understand that (i) the Shares have not been registered under the Securities Act and are "restricted securities" within the meaning of Rule 144 under the Securities Act, (ii) the Shares

cannot be sold, transferred or otherwise disposed of unless they are subsequently registered under the Securities Act or an exemption from registration is then available; (iii) in any event, the exemption from registration under Rule 144 will not be available for at least one year and even then will not be available unless a public market then exists for the Common Stock, adequate information concerning the Company is then available to the public, and other terms and conditions of Rule 144 are complied with; and (iv) there is now no registration statement on file with the Securities and Exchange Commission with respect to any stock of the Company and the Company has no obligation or current intention to register the Shares under the Securities Act.

Very truly yours,

_____

[Name]

Exhibit 10.7

EXECUTION COPY

Certain identified information has been excluded from the exhibit because it is both (i) not material and (ii) would likely cause competitive harm to the Company, if publicly disclosed. Double asterisks denote omissions.

EXCLUSIVE LICENSE AGREEMENT

This Exclusive License Agreement (this "Agreement") is made and is effective this 11th day of April, 2016 (the "Effective Date") between IMARA, INC., a Delaware, U.S.A. corporation ("Licensee") and having an address at 700 Technology Square, 3rd Floor, Cambridge, MA 02139, and H. LUNDBECK A/S, a for profit corporation organized and existing under the laws of Denmark with company registration no. (CVR) 56759913 ("Licensor") and having an address at Ottiliavej 9, DK-2500 Valby, Copenhagen, Denmark. Licensee and Licensor are each referred to as a "Party" and collectively referred to as the "Parties."

Recitals

WHEREAS, Licensee is engaged in the research and development of therapeutics for the treatment of orphan diseases;

WHEREAS, Licensor possesses certain compounds and related intellectual property rights potentially useful for the research, development, and commercialization of therapeutics for the treatment of orphan diseases; and

WHEREAS, Licensee wishes to obtain, and Licensor wishes to grant to Licensee, an exclusive, royalty-bearing license under the Licensed Patent Rights (as defined below) to develop, make, have made, use, import, offer for sale or sell or otherwise distribute Licensed Products (as defined below) within the Field (as defined below), with the right to sublicense, in all cases subject to the terms and conditions of this Agreement;

NOW THEREFORE, Licensor and Licensee, intending to be legally bound, agree as follows:

ARTICLE 1
Definitions

1.1. "Additional Securities" means shares of capital stock, convertible securities or warrants, options, or other rights to subscribe for, purchase or acquire from Licensee any capital stock of Licensee; provided that, "other rights to subscribe for, purchase or acquire" shall not include (i) preemptive or other rights to participate in new offerings of securities by Licensee after the Effective Date, (ii) obligations under a purchase agreement for preferred stock of Licensee to acquire additional shares of such preferred stock on the same terms as those purchased at an initial closing upon the passage of time or meeting (or waiver) of specified Licensee performance conditions or (iii) anti-dilution provisions that have not been triggered.

1.2. "Affiliate" means, with respect to a Party, any Person that controls, is controlled by, or is under common control with such Party. For purposes of this Section 1.2, "control" shall refer to (i) in the case of a Person that is a corporate entity, direct or indirect ownership of more than fifty percent (50%) of the stock or shares having the right to vote for the election of directors of such

Person and (ii) in the case of a Person that is not a corporate entity, the possession, directly or indirectly, of the power to direct, or cause the direction of, the management or policies of such Person, whether through the ownership of voting securities, by contract or otherwise.

1.3. "Additional Patent Cases" means patents or patent applications, including any patent applications set forth on Exhibit D under the heading "Additional Patent Cases," and any and all related Patent Rights (other than the Patent Rights with respect to the Primary Patent Cases), anywhere in the world, owned by or exclusively licensed to Licensor during the Term that Cover one or more Licensed Compounds, which Licensed Compounds are Covered by a Patent Right anywhere in the world and, with respect to patent applications or patents exclusively licensed to Licensor, that may be sublicensed to Licensee without (i) triggering payment obligations to a Third Party, unless Licensee has agreed in writing to (a) make any such payments arising from Licensee's exercise of rights sublicensed to Licensee and (b) comply with any terms and conditions applicable to the exercise of such sublicensed rights, or (ii) violating any agreement with any Third Party (including with respect to any of the rights granted to Licensee herein).

1.4. "Back-Up Compound" means a compound that is designated as a Back-Up Compound pursuant to Section 2.1(b).

1.5. "Business Days" means a day that is not a Saturday, Sunday or a day on which banking institutions in Boston, Massachusetts or Denmark are authorized by Law to remain closed.

1.6. "Calendar Year" means each successive period of twelve (12) months commencing on January 1 and ending on December 31; provided, however, that the first Calendar Year hereunder shall commence on the Effective Date and the final Calendar hereunder shall end on the effective date of termination or expiration of this Agreement.

1.7. "Combination Product" means (i) a combination of a Product with another product (including in the case of a drug, another active ingredient) which is not a Product or (ii) the sale of a Product in a bundle with other products.

1.8. "Commercialization" or "Commercialize" means any and all activities that relate to producing, manufacturing, marketing, promoting, distributing, importing or selling a product, including activities related to regulatory review and/or approval of a product.

1.9. "Compound Improvement" means a compound that is an enhancement, improvement, modification or derivative of a Licensed Compound, which enhancement, improvement, modification or derivative is Covered by a [**] anywhere in the world.

1.10. "Compound Improvement Event" means the development event set forth in Exhibit A.

1.11. "Compound Improvement Term" means the period commencing on the Effective Date and ending on the earlier of (i) the date on which [**] Back-Up Compounds have been identified by Licensee and approved by Licensor in accordance with Section 2.1(b), (ii) the [**] of the Effective Date, or (iii) the date on which Licensee [**] involving a Licensed Compound.

1.12. [RESERVED]

1.13. "Confidential Information" means any confidential or proprietary information furnished by one Party to the other Party in connection with this Agreement, provided that such information is (i) specifically designated as confidential or (ii) reasonably identifiable by an individual familiar with the industry as confidential or proprietary. Confidential Information includes:

(a) non-public information disclosed by Licensee to Licensor in reports submitted by Licensee to Licensor pursuant to Section 3.2, 3.3 or 4.6(a) and through audits conducted by Licensor pursuant to Section 4.6(b);

(b) non-public information disclosed by Licensor to Licensee in reports submitted by Licensor to Licensee pursuant to Section 3.3; and

(b) non-public information disclosed by Licensor to Licensee relating to patent application prosecution files for the Licensed Patent Rights.

1.14. "Controlled" means, with respect to Patent Rights or Know-How, that a Party owns or has a license or sublicense to such Patent Rights or Know-How and has the ability to grant a license or sublicense to such Patent Rights or Know-How as provided for in this Agreement, or has the ability to assign its right, title and interest in and to such Patent Rights or Know-How, without violating the terms of any agreement or other arrangement with any Third Party.

1.15. "Cover," "Covering" or "Covered" means, with respect to a product, technology, process or method, that in the absence of ownership of or a license granted under a Valid Claim, the manufacture, use, offer for sale, sale or importation of such product or the practice of such technology, process or method would infringe such Valid Claim (or, in the case of a Valid Claim that has not yet issued, would infringe such Valid Claim if it were to issue).

1.16. "Designated Compounds" mean the two Licensed Compounds set forth on Exhibit B, and all [**] thereof, which may be replaced by other Licensed Compounds by Licensee in accordance with Section 2.4.

1.17. "Field" means prevention, treatment or diagnosis of disorders and/or diseases related to Hemoglobinopathies (HGP), including Sickle Cell Disease.

1.18. "Field of Use Sales" means Net Sales of Licensee PDE9 Products.

1.19. "First Commercial Sale" means, with respect to a Product and a country, the first bona fide, arms-length sale of such Product in such country by or on behalf of Licensee or a Related Party after receipt of Regulatory Approval in the jurisdiction in question; provided, that, for clarity First Commercial Sale does not include the sale of a Product for compassionate use or clinical trial.

1.20. "Financing Threshold" means an aggregate total investment of [**] U.S. Dollars ($[**]) in cash since the date of incorporation or formation of Licensee, in one or a series of related or unrelated transactions, in each case, in exchange for Licensee's capital stock.

1.21. "Fully-Diluted Basis" means, as of a specified date, the number of shares of common stock of Licensee then-outstanding plus the number of shares of common stock of Licensee issuable upon exercise or conversion of then-outstanding convertible securities or warrants, options, or other rights to subscribe for, purchase or acquire from Licensee any capital stock of Licensee (which shall be determined without regard to whether such securities or rights are then vested, exercisable or convertible) plus, without duplication, the number of shares reserved and available for future grant under any then-existing equity incentive plan of Licensee; provided that, for clarity, "other rights to subscribe for, purchase or acquire" shall not include (i) preemptive or other rights to participate in new offerings of securities by Licensee after the Effective Date, (ii) obligations under a purchase agreement for preferred stock of Licensee to acquire additional shares of such preferred stock on the same terms as those purchased at an initial closing upon the passage of time or meeting (or waiver) of specified Licensee performance conditions or (iii) anti-dilution provisions that have not been triggered.

1.22. "Invention" means any new and useful process, article of manufacture, compound, composition of matter, formulation or apparatus, or any improvement thereof, discovery or finding, whether or not patentable.

1.23. "Know-How" means any and all commercial, technical, regulatory, scientific and other know-how and information, knowledge, technology, materials, methods, processes, practices, standard operating procedures, formulae, instructions, skills, techniques, procedures, assay protocols, experiences, ideas, technical assistance, designs, drawings, assembly procedures, specifications, regulatory filings, data and results (including biological, chemical, pharmacological, toxicological, pharmaceutical, physical and analytical, pre-clinical, clinical, safety, regulatory, manufacturing and quality control data and know-how, including study designs and protocols), whether or not confidential, proprietary or patentable, in written, electronic or any other form.

1.24. "Law" means all laws, statutes, rules, codes, regulations, orders, judgments or ordinances applicable to a Party, this Agreement or the activities contemplated hereunder.

1.25. "Licensed Compounds" mean the PDE9 Inhibitors set forth on Exhibit C and any Back-Up Compounds and, in each case, all [**] thereof.

1.26. "Licensed Know-How" means Know How that is owned by or licensed to Licensor, as of the Effective Date, and that is required or useful, but with respect to useful, solely to the extent expressly made available to Licensee for licensing in writing by Licensor, in Licensor's sole discretion, in researching, developing, using, manufacturing or Commercializing Licensed Products, and, with respect to Know How licensed to Licensor, that may be sublicensed to Licensee without (i) triggering payment obligations to a Third Party, unless Licensee has agreed in writing to (a) make any such payments arising from Licensee's exercise of rights sublicensed

to Licensee and (b) comply with any terms and conditions applicable to the exercise of such sublicensed rights, or (ii) violating any agreement with any Third Party (including with respect to any of the rights granted to Licensee herein). Any Licensed Know-How transferred from Licensor to Licensee pursuant to the technology transfer plan contemplated by Section 2.8 shall be deemed "expressly made available to Licensee for licensing in writing by Licensor" for purposes of this definition.

1.27. "Licensed Patent Rights" means any patents or patent applications and any and all related Patent Rights (a) comprising a Primary Patent Case or Additional Patent Case, or (b) arising from a Primary Patent Case or Additional Patent Case, or (c) Covering a Compound Improvement, in each of cases (b) and (c) that is Controlled by Licensor.

1.28. "Licensed Product" means any product comprising or containing a Licensed Compound.

1.29. "Licensed Technology" means the Licensed Patent Rights and Licensed Know-How.

1.30. "Licensee PDE9 Product" means a product that is or comprises a PDE9 Inhibitor that is not a Licensed Product. Notwithstanding anything in this Agreement to the contrary, Licensee PDE9 Product shall not include a product that is or comprises a PDE9 Inhibitor owned or controlled by an assignee in an assignment of this Agreement or by a constituent party (other than Licensee) to a Change in Control: (a) prior to such assignment or Change in Control; or (b) after such assignment or Change in Control unless such product is or comprises a PDE9 Inhibitor that was owned or controlled by Licensee immediately prior to such assignment.

1.31. "Listed Countries" means the countries listed on Exhibit E, as amended from time to time in accordance with this Section 1.31. Licensee may, in its sole discretion, add or remove countries from the Listed Countries and amend Exhibit E upon written notice to Licensor.

1.32. "NDA" means a New Drug Application (as defined in the United States Federal Food, Drug, and Cosmetic Act and the regulations promulgated thereunder (21 C.F.R. §§ 314 et seq.).

1.33. "Net Sales" shall mean the gross amount invoiced for Products sold by Licensee or a Related Party to Third Party end users, in bona-fide arm's length transactions less the following deductions:

(a) customary trade, quantity or cash discounts and rebates;

(b) return, rejection or recall of Products;

(c) rebates and allowances, chargebacks, and retroactive price reductions, including those granted to wholesalers, buying groups and retailers;

(d) credits, reserves and allowances for bad debts, uncollectible amounts and charge-offs; provided that, (i) any such amounts shall not exceed [**]% of Net Sales during the applicable quarter, and (ii) if such amounts deducted are subsequently paid to or recovered by Licensee, such paid or recovered amounts shall be included within Net Sales (subject to the other offsets or deductions provided herein as applicable);

(e) transportation, freight, postage charges and other charges, such as insurance, relating thereto, in each case paid or incurred by Licensee and, in each case, included as a specific line item on an invoice or other document of sale delivered to the purchaser, and in any event not exceeding [**]% of Net Sales during the applicable quarter; and

(f) taxes, duties, excises or other governmental charges or levies charged upon the import, export, production, sale, transportation, delivery or use of goods (other than income taxes).

Net Sales on Product provided as part of a non-cash exchange or other than through an arms-length transaction shall mean the average amount invoiced in arms-length sales of the same or equivalent Products during the applicable royalty reporting period in the same country, and if no such sales have occurred, shall be the fair market value of the transferred Product(s).

For clarity, Net Sales shall not include the distribution of a Product free of charge for promotional samples, clinical studies, compassionate use, named patient programs, or test marketing, provided that if any amounts are actually received for such Product, such amounts shall be included in the calculation of Net Sales hereunder.

In no event shall any particular amount of deduction identified above be deducted more than once in calculating Net Sales (i.e., no “double counting” of deductions).

The above deductions shall be the only deductions made in net sales and only to the extent such deductions are actually taken and documented as attributable to Product, and in all cases in a manner consistent with generally accepted accounting principles (in accordance with GAAP or IFRS, as applicable) consistently employed with respect to external reporting.

In the event Product is sold as part of a Combination Product, the Net Sales from the Combination Product, for the purposes of determining royalty payments, shall be determined by multiplying the Net Sales (as determined above) of the Combination Product, during the applicable royalty reporting period, by the fraction, A/A+B, where A is the average sale price of the Product when sold separately in finished form and B is the average sale price of the other product included in the Combination Product when sold separately in finished form, in each case during the applicable royalty reporting period or, if sales of both the Product and the other product did not occur in such period, then in the most recent royalty reporting period in which sales of both occurred. In the event that such average sale price cannot be determined for both the Product and all other products included in such Combination Product, Net Sales for the purposes of determining royalty payments shall be calculated by multiplying the Net Sales of the Combination Product by the fraction of C/C+D where C is the fair market value of the Product and D is the fair market value of all other products included in the Combination Product. In such event, Licensee shall in good faith make a determination of the respective fair market values of

the Product and all other products included in the Combination Product, and shall notify Licensor of such determination and provide Licensor with data to support such determination. Licensor shall have the right to review such determination of fair market values and, if Licensor disagrees with such determination, to notify Licensee of such disagreement within [**] after Licensee notifies Licensor of such determination. If Licensor notifies Licensee that Licensor disagrees with such determination within such [**] period and if thereafter the Parties are unable to agree in good faith as to such respective fair market values, then such matter shall be resolved as provided in Section 10.11.

1.34. "Patent Rights" means with respect to any patents or patent applications, any and all (a) patents issuing from such patent applications, (b) substitutions, divisionals, renewals, continuations or continuations-in-part (only to the extent of claims that are entitled to the priority date of the parent application); (c) patents of addition, restorations, extensions, supplementary protection certificates, registration or confirmation patents, patents resulting from post-grant proceedings, re-issues and re-examinations; (d) other patents or patent applications claiming and entitled to claim priority to (i) such patents and patent applications and any patent or patent application specified in (a), (b) or (c), or (ii) any patent or patent application from which such patents and patent applications or a patent or patent application specified in (a), (b) or (c) claims and is entitled to claim priority; (d) all rights of priority attendant to such patents and patent applications and any of the patents and patent applications listed in (a) through (c); and (e) in each case of such patents and patent applications and of the patents and patent applications described in (a) through (d), including all counterparts and foreign equivalents thereof filed in any country, territory or jurisdiction in the world.

1.35. "PDE9 Inhibitor" means any and all inhibitors of phosphodiesterase type 9.

1.36. "Person" means any natural person or any corporation, company, partnership, joint venture, firm or other entity, including a Party, or any government or agency or political subdivision thereof.

1.37. "Phase 1 Clinical Trial" means, as to a specific Licensed Product, a human clinical trial in subjects (whether or not patients) in any country that is intended as a study of such product designed to satisfy the requirements of 21 C.F.R. § 312.21(a) in the United States, as amended from time to time, or the corresponding regulation in jurisdictions other than the United States.

1.38. "Phase 1b Clinical Trial" means, as to a specific Licensed Product, a human clinical trial in patients in any country that is intended as a study of such product designed to satisfy the requirements of 21 C.F.R. § 312.21(a) in the United States, as amended from time to time, or the corresponding regulation in jurisdictions other than the United States.

1.39. "Phase 2 Clinical Trial" means, as to a specific Licensed Product, a human clinical trial in any country that is intended to preliminarily evaluate the efficacy and safety or dose-ranging of such product for a particular indication or indications in patients with the disease or indication under study or would otherwise satisfy requirements of 21 CFR 312.21(b) in the United States, as amended from time to time, or the corresponding regulation in jurisdictions other than the United States.

1.40. "Phase 3 Clinical Trial" means, as to a specific Licensed Product, (a) a human clinical trial in any country, whether controlled or uncontrolled, that is performed to obtain Regulatory Approval of such product after preliminary evidence suggesting effectiveness of such product under evaluation has been obtained, and intended to confirm with statistical significance the efficacy and safety of such product, to evaluate the overall benefit-risk relationship of such product and to provide an adequate basis for physician labeling, or (b) a human clinical trial of such product that satisfies the requirements of 21 C.F.R. § 312.21(c) in the United States, as amended from time to time, or the corresponding regulation in jurisdictions other than the United States.

1.41. "Primary Patent Cases" means the Lundbeck patent cases [**] as further described in Exhibit D under the heading "Primary Patent Cases."

1.42. "Products" means Licensed Products or Licensee PDE9 Products, as the context requires.

1.43. "Prosecution and Maintenance" or "Prosecute and Maintain" means, with respect to the applicable Patent Rights, the preparation, filing, prosecution and maintenance of such Patent Rights, as well as re-examinations, reissues, appeals, and requests for patent term adjustments and patent term extensions with respect to such Patent Rights, together with the initiation or defense of interferences, the initiation or defense of oppositions, post grant review, and other similar proceedings with respect to the particular Patent Rights, and any appeals therefrom. For clarification, "Prosecution and Maintenance" or "Prosecute and Maintain" shall not include any other enforcement actions taken with respect to Patent Rights.

1.44. "Regulatory Approval" means, with respect to a country or territory, the approvals (including any applicable governmental price and reimbursement approvals), licenses, registrations or authorizations of Regulatory Authorities necessary for the Commercialization of a pharmaceutical product in such country or territory, including, as applicable, approval of an NDA or comparable filing in the United States or approval of a comparable filing in any other country or jurisdiction.

1.45. "Regulatory Authority" means a federal, national, multinational, state, provincial or local regulatory agency, department, bureau or other governmental entity with authority over the testing, manufacture, use, storage, import, promotion, marketing or sale of a product in the applicable country.

1.46. "Related Party" means Licensee's Affiliates, Sublicensees, and Third Parties granted rights by Licensee or its Affiliates with respect to Licensee PDE9 Products.

1.47. "Restricted Stock Agreement" means a Restricted Stock Agreement in the form attached hereto as Exhibit F, entered into by and between Licensee and Licensor in connection with the issuance of equity securities by Licensee under Section 4.2.

1.48. "Royalty Term" means, (a) with respect to each Licensed Product in each country, the period commencing on the First Commercial Sale of such Licensed Product in such country and continuing until the later of (i) the date that is ten (10) years after the date of such First Commercial Sale of such Licensed Product in such country, or (ii) the expiration of the last Valid Claim of a Licensed Patent Right Covering such Licensed Product or the Licensed Compound that is or is contained in such Licensed Product and (b) with respect to each Licensee PDE9 Product in each country, the period commencing on the First Commercial Sale of such Licensee PDE9 Product in such country and continuing until ten (10) years after the date of such First Commercial Sale of such Licensee PDE9 Product.

1.49. "Sublicensee" shall have the meaning set forth in Section 2.2(a).

1.50. "Term" means the term of this Agreement as provided in Section 9.1.

1.51. "Third Party" means any Person other than a Party or any of its Affiliates.

1.52. "Valid Claim" means (a) a claim of an issued patent that has not expired or been donated to the public, abandoned, disclaimed or admitted to be or rendered unenforceable through reissue, disclaimer or otherwise, nor been revoked, held invalid, unpatentable or unenforceable or revoked by a patent office, court or other governmental agency of competent jurisdiction in a final and non-appealable judgment (or judgment from which no appeal was taken within the allowable time period), or (b) a claim within a patent application (i) which application has not been pending for more than [**] years from the date of its priority filing date or (ii) which claim has not been revoked, cancelled, withdrawn or abandoned, or held invalid, unallowable or abandoned by a patent office, court or other governmental agency of competent jurisdiction in a final and non-appealable decision or judgment (or decision or judgment from which no appeal was taken within the allowable time period). For clarity, the determination whether a given claim is invalid, unallowable or abandoned shall be made on a claim-by-claim basis and a ruling with respect to a given claim will not be deemed to apply to any other claim or patent.

1.53. Additional Definitions. Each of the following definitions is set forth in the section of this Agreement indicated below:

Definition	Section
AAA	10.11(a)(i)
Achievement Due Date	3.1
Achieved Milestone	4.3(c)
Anti-Dilution Shares	4.2(a)
Bankruptcy Code	2.8
Board	4.2(d)
Change in Control	4.2(g)

Competitor	4.2(e)
Compound Safety Data	3.3
Development Event	3.1
Enforcing Party	5.3(d)
FPFD	4.3(a)
Indemnified Party	8.3
Indemnifying Party	8.3
Infringement Action	5.3(a)
Licensee's Code	3.5
Prosecuting Party	5.2(e)
Publication	6.4
Reporting Party	3.3
SEC Filing	6.5(c)
Shares	4.2(a)
Skipped Milestone	4.3(c)

ARTICLE 2
Grant of License; Technology Transfer

2.1 License Grant.

(a) Subject to the terms and conditions of this Agreement, Licensor hereby grants to Licensee an exclusive (even as to Licensor), worldwide, royalty bearing license under the Licensed Technology, with the right to grant sublicenses in accordance with Section 2.2, to research, develop, make, have made, use, sell, have sold, offer to sell, import, export and Commercialize Licensed Products within the Field. Upon the expiration of the Royalty Term with respect to a Licensed Product in a country, the foregoing license shall become non-exclusive, fully-paid and perpetual with respect to such Licensed Product in such country.

(b) Subject to the terms and conditions of this Agreement, Licensor hereby grants to Licensee, during the Compound Improvement Term, a non-exclusive license under the Licensed Technology to research and develop, and make, have made, use, import and export for purposes of enabling such research and development, Compound Improvements to but not beyond the Compound Improvement Event. Licensee may request Licensor's approval to deem such Compound Improvement a Back-Up Compound. Such request shall be accompanied by a written description of such Compound Improvement sufficient for Licensor to identify it specifically and with a written summary of the results of the research and development efforts of Licensee on

such Compound Improvement. Licensor shall provide notice of its approval or rejection of such request, which approval or rejection shall be made on a reasonable basis and in good faith, within [**] after the date of such request. If Licensor does not provide such notice by the end of such [**] period, Licensee's request shall be deemed approved. For clarity, the license granted to Licensee pursuant to this Section 2.1(b) does not include a right to sell, have sold, offer to sell or Commercialize Compound Improvements. Such rights are granted pursuant to Section 2.1(a) when and if a Compound Improvement is designated a Back-Up Compound.

(c) Except as explicitly set forth in this Agreement, Licensor grants no license, express or implied, under its intellectual property rights to Licensee, whether by implication, estoppel or otherwise, including any rights with respect to the Licensee PDE9 Products. Licensee covenants that it will not use or practice any of Licensor's Patent Rights licensed (or sublicensed, as applicable) to it under this Article 2 or other intellectual property rights licensed (or sublicensed, as applicable) to it under this Article 2, except for the purposes expressly permitted in the applicable license grant; provided, that, the [**].

(d) Licensee hereby grants Licensor a non-exclusive, irrevocable, perpetual, worldwide, sublicenseable, and fully paid-up right and license under, in and to, all Patent Rights that Licensee Controls as of the Effective Date or at any time during the Term (except as a result of the licenses granted by Licensor hereunder) to the extent necessary for Licensor to research, develop, make, have made, use, sell, have sold, offer to sell, import, export and commercialize Licensed Products outside of the Field and subject to Section 2.3 The foregoing license shall not extend to any Patent Right owned or controlled by an assignee in an assignment of this Agreement or by a constituent party (other than Licensee) to a Change in Control: (i) prior to such assignment or Change in Control; or (ii) after such assignment or Change in Control unless such Patent Right was Controlled by Licensee immediately prior to such assignment.

(e) Except as explicitly set forth in Section 2.1(d), Licensee grants no license, express or implied, under its intellectual property rights to Licensor, whether by implication, estoppel or otherwise, including any rights with respect to the Licensed Products outside the Field. Licensor covenants that it will not use or practice any of Licensee's Patent Rights licensed to it under Section 2.1(d), except for the purposes expressly permitted in Section 2.1(d) ; provided, that, the [**].

2.2 Sublicensing.

(a) Subject to Section 2.7, Licensee shall have the right to grant sublicenses under the license granted to it under Section 2.1 hereof to Affiliates and Third Parties (each, a "Sublicensee"); provided that (i) any such Sublicensees shall be prohibited from further sublicensing without the prior written consent of Licensor (provided, however, that Licensee shall have the right during the period prior to [**] of this Agreement in accordance with Section [**], if any, to grant a sublicense that includes the right to

sublicense through one additional tier without such consent of Licensor, if the sub-sublicensee is an entity with [**] and [**] and [**] the activities being sub-sublicensed to it), and (ii) any such sublicense shall include additional intellectual property rights controlled by Licensee that are not licensed to it by Licensor under this Agreement. For clarity, such additional intellectual property rights include data, results, or other know-how and need not be patent rights. Licensee shall include in any sublicense terms and conditions commensurate with the obligations of Licensee under this Agreement.

(b) If this Agreement is terminated for any reason other than by Licensee pursuant to Section 9.4 (Termination for Convenience), then, at the option of any Sublicensee not in default of the applicable sublicense (or any provision of this Agreement applicable to such Sublicensee), it shall become a direct licensee under, and subject to the terms and conditions of, this Agreement, subject only to modifications with respect to territory, field and exclusivity so as to accommodate all such Sublicensees and without application of Section 4.2 to any such Sublicensee.

2.3 Restrictive Covenant. Licensor and/or its Affiliates shall not research, develop, make, have made, use, import, export, offer to sell, sell, have sold or Commercialize the [**] within [**] anywhere in the world, and shall not grant any Third Party any right or license, or any option or other right to acquire a right or license, to research, develop, make, have made, use, import, export, offer to sell, sell, have sold or Commercialize the [**] within [**] anywhere in the world. In the event that Licensee [**] in accordance with Section [**], Licensor shall not be in breach of the obligations set forth in this Section 2.3 in connection with any activities or rights initiated and/or granted by Licensor prior to the date of such substitution, which activities or rights Licensor will, at the time of the proposed substitution, advise Licensee regarding, to the extent such activities or rights are not subject to obligations of confidentiality to a Third Party.

2.4 Designated Compounds. In the event that Licensee determines to cease the development of a Designated Compound prior to obtaining Regulatory Approval therefor, Licensee shall have the right to substitute another Licensed Compound for such Designated Compound upon written notice to Licensor (which written notice will identify both the “new” Designated Compound and the Designated Compound that is being “deselected”); provided that, at no time will there be more than [**] Designated Compounds.

2.5 Affiliates. Subject to Section 2.2, to the extent applicable, and Section 2.7, Licensee may have exercised or performed on its behalf some or all of its rights or obligations under this Agreement by one or more of Licensee’s Affiliates.

2.6 Subcontractors. Subject to Section 2.2, to the extent applicable, and Section 2.7, Licensee may subcontract the exercise or performance of some or all of its rights or obligations under this Agreement without having to grant any sublicense or sublicenses to the applicable subcontractor, provided that (a) such subcontractors obtain no rights to any Licensed Technology or Licensed Compounds.

2.7 Sublicensees, Affiliates, and Subcontractors. Notwithstanding Sections 2.2, 2.5 and 2.6, Licensee shall remain responsible for the performance by any of its Affiliates, Sublicensees and subcontractors and shall cause all such Persons to comply with all applicable provisions of this Agreement in connection with such performance. Without limiting the foregoing, Licensee shall ensure that each of its Affiliates, Sublicensees and subcontractors accepts in writing all applicable terms and conditions of this Agreement, including reporting, inspection and confidentiality obligations (at least with respect to Licensed Technology, Licensed Compounds and other Confidential Information of Licensor) consistent with those provided hereunder, and shall terminate (subject to a commercially reasonable notice and cure period, not to exceed [**]) all relevant agreements with any such Affiliate, Sublicensee or subcontractor in the case of any uncured material breach of such terms and conditions by such Person. Each Affiliate, Sublicensee and subcontractor shall also be prohibited from further sublicensing and subcontracting (except to the extent expressly permitted under Section 2.2(a)(i)). For the avoidance of doubt, (a) Licensee will remain directly responsible for all amounts owed to Licensor under this Agreement, and (b) Licensee hereby expressly waives any requirement that Licensor exhaust any right, power or remedy, or proceed against an Affiliate, Sublicensee or subcontractor, for any breach (or anticipated breach) of an obligation or failure (or anticipated failure) of performance hereunder prior to proceeding directly against Licensee.

2.8 Section 365(n) of the Bankruptcy Code. All rights and licenses granted under or pursuant to any section of this Agreement are and will otherwise be deemed to be for purposes of Section 365(n) of the United States Bankruptcy Code (Title 11, U.S. Code), as amended or any comparable Law outside the United States (the "Bankruptcy Code"), licenses of rights to "intellectual property" as defined in Section 101(35A) of the Bankruptcy Code. Licensor agrees that Licensee, as licensee of such rights under this Agreement, will retain and may fully exercise all of its rights and elections under the Bankruptcy Code or any other provisions of Law outside the United States that provide similar protection for "intellectual property." Any agreement supplemental hereto will be deemed to be "agreements supplementary to" this Agreement for purposes of Section 365(n) of the Bankruptcy Code.

ARTICLE 3
Development and Commercialization

3.1 Diligence. Licensee shall use commercially reasonable efforts (for purposes of clarity, itself or through an Affiliate or Sublicensee) to develop, seek Regulatory Approval for, manufacture, market and otherwise Commercialize at least one (1) Licensed Product, with a goal of achieving the development events (each a "Development Event"), as specified below, by the end of the Calendar Year specified below (for each development event, the "Achievement Due Date"):

Development Plan

Development Event	Achievement Due Date
[**]	12/31/[**]
[**]	12/31/[**]
[**]	12/31/[**]

In the event an Achievement Due Date for any of the above Development Events is not achieved, Licensee shall provide written notice to Licensor regarding the reasons therefor. To the extent such delay is caused by [**], to the extent outside Licensee's control, the period for achievement shall be extended for the duration of such delay. In the event of any other delay, the Parties shall discuss a course of action going forward, which could include Licensor terminating this Agreement pursuant to Section 9.2, to the extent applicable in the event Licensee does not elect an extension pursuant to the following sentence. Licensee may extend all of the then-remaining Achievement Due Dates (which have not yet been achieved) for each of the above Development Events, by [**], at its option on two occasions by either (i) making a payment to Licensor, in an amount of US$[**], or by agreeing to pay an additional [**]% of the next successive (after the then-most recently achieved milestone, if any) milestone payment set forth in the table in Section 4.3(a), such payment to become due at the same time when such next successive milestone payment becomes due.

3.2 Progress Reports. Until [**] after the First Commercial Sale of a Licensed Product in any [**] of [**], Licensee shall provide, within [**] after the end of each [**], a reasonably detailed written progress report to Licensor that summarizes the status of Licensee's research and development, manufacturing, and commercialization efforts with respect to Licensed Products, on a Licensed Product-by-Licensed Product basis, during such [**]. Licensee shall also make appropriate employees of Licensee or an applicable Related Party reasonably available, at a mutually agreed date and time, at the offices of Licensee (or via teleconference), during normal business hours, no more frequently than [**] and solely within the period commencing on the date of delivery of the relevant report and ending [**] thereafter, to answer any reasonable questions that Licensor may have in connection with such report.

3.3 Pharmacovigilance. Each Party (the "Reporting Party") agrees to provide to the other Party any toxicity findings, adverse event reports or findings, and other safety data generated, received by or known to the Reporting Party that are (or, in the absence of a specific finding, could be) attributed to Licensed Compounds (the "Compound Safety Data") promptly after such information and/or data is received by or becomes known to the Reporting Party. With respect to the Licensor as the Reporting Party, Licensor hereby grants Licensee the right to use the Compound Safety Data for any lawful purpose in connection with the exercise by Licensee of the licenses granted to Licensee hereunder.

3.4 Compliance. Licensee shall, and shall ensure that its Affiliates and Sublicensees, and its and their subcontractors, conduct all development, manufacture and Commercialization of Licensed Products in accordance with sound and ethical business and scientific practices, and in compliance with all Laws, including good manufacturing practices, good clinical practices, and good laboratory practices (as all such "good practices" can be broadly defined), and also including all applicable data privacy and data protection laws. In addition, Licensee shall not knowingly use in any capacity, in connection with its development, manufacture or Commercialization of the Compound or Licensed Product any Person who has been debarred pursuant to Section 306 of the FD&C Act (or similar Law outside of the U.S.), or who is the subject of a conviction described in such section, and Licensee shall inform Licensor in writing immediately to the extent it becomes aware that it or any Person who is performing activities hereunder is debarred or is the subject of a conviction described in Section 306 (or similar Law outside of the U.S.), or if any action, suit, claim, investigation or legal administrative proceeding is pending or, to Licensee's knowledge, is threatened, relating to the debarment of Licensee or any Person used in any capacity by Licensee in connection with its development, manufacture or Commercialization of the Compound or Licensed Product.

3.5 Code of Conduct. Licensee represents, warrants, and covenants that (i) Licensee has and will comply, and Licensee has and will require its employees to comply, with the code of conduct set forth in Exhibit G ("Licensee's Code") and (ii) Licensee at all times during the Term will maintain a code of conduct that is consistent with industry standards and substantially similar to the Licensee's Code. Licensee shall provide Licensor with copies of updates that Licensee may make from time to time to Licensee's Code.

ARTICLE 4
Royalties and Payment Terms

4.1 Initial Payment. Licensee shall pay to Licensor an initial, non-refundable, non-creditable, license fee of US$[**] within [**] after the Effective Date.

4.2 Equity.

(a) Issuances. In accordance with the terms of the Restricted Stock Agreement, Licensee has issued to Licensor, on or before the Effective Date and as partial consideration for the licenses granted hereunder, 1,053,457 shares of common stock of Licensee, representing eight percent (8%) of Licensee's outstanding capital stock on a Fully-Diluted Basis as of the date of such issuance after giving effect to such issuance (the "Shares"). If, at any time, prior to the achievement of the Financing Threshold, Licensee issues Additional Securities that would cause the Shares to represent less than eight percent (8%) of Licensee's outstanding capital stock on a Fully-Diluted Basis, Licensee shall immediately issue to Licensor, for no additional consideration, such additional number of shares of common stock of Licensee (the "Anti-Dilution Shares") such that the Shares plus the Anti-Dilution Shares would then represent in the aggregate eight percent (8%) of Licensee's outstanding capital stock on a Fully-Diluted Basis, as calculated after giving effect to the anti-dilutive issuance up to the Financing Threshold, but not any issuances in consideration for investment amounts in excess of the Financing Threshold; provided however, that to the extent such Additional Securities are issued

pursuant to an equity incentive plan, Licensee shall issue the Anti-Dilution Shares upon the earlier of (a) the end of Licensee's fiscal year in which the issuances took place and (b) the closing of the next preferred stock financing, in each case, calculated as of the date contemplated by (a) or (b), as applicable. Licensee shall provide Licensor with evidence of the issuance of such Anti-Dilution Shares promptly after their issuance. Such issuances shall continue only up to, and until such time as Licensee has achieved, the Financing Threshold. Thereafter, no additional shares shall be due to Licensor pursuant to this Section 4.2.

(b) Restrictions. The Anti-Dilution Shares will be subject to the same restrictions as the Shares, (1) a right of first refusal and co-sale agreement and a voting agreement as are applicable to other stockholders of Licensee who hold more than one percent (1%) of the common stock (on an as-converted basis) of Licensee and (2) a prohibition on the transfer of the Shares or Anti-Dilution Shares to any third party that is a Competitor (as defined below) or in any manner that is a violation of applicable securities laws, which restrictions referred to in this clause (2) will be set forth in the Restricted Stock Agreement.

(c) Right of First Offer. Licensor shall have the right, pursuant to a customary investors' rights agreement, or other agreement to which Licensor shall become a party, to purchase from Licensee in offerings of equity securities by Licensee after the Financing Threshold has been achieved, subject to certain customary conditions and exceptions and on the same terms and conditions offered to other purchasers of such equity securities, that portion of such equity securities as equals the proportion that the common stock then held by Licensor (including all shares of common stock then issuable upon conversion and/or exercise, as applicable, of preferred stock and any other equity securities then held by Licensor) bears to the total common stock of Licensee then outstanding on a Fully-Diluted Basis. The foregoing right of first offer will terminate if Licensor fails to purchase, in any transaction subject to such right of first offer, all of Licensor's pro rata amount of such equity securities allocated (or, if less than Licensor's pro rata amount is offered by Licensee, such lesser amount so offered) to Licensor.

(d) Board Observer. For so long as Licensor holds of record at least fifty percent (50%) of the shares of capital stock issued to Licensor in accordance with this Section 4.2, Licensee shall invite one designee of Licensor to attend all meetings of the Board of Directors of Licensee (the "Board") in a nonvoting observer capacity and, in this respect, shall give such designee copies of all notices, minutes, consents, and other materials that it provides to its directors at the same time and in the same manner as provided to such directors; provided, however, that such representatives shall agree to hold in confidence and trust and to act in a fiduciary manner with respect to all information so provided and shall, as a condition to their attendance at meetings of the Board and receipt of information and materials hereunder, sign a confidentiality agreement with Licensee in such form as Licensee may reasonably request; and provided further, that Licensee reserves the right to withhold any information and to exclude such representatives from any meeting or portion thereof (i) if access to such information or

attendance at such meeting could adversely affect the attorney-client privilege between Licensee and its counsel (on the advice of Licensor's counsel), would result in disclosure of trade secrets to persons or parties other than such designee or Licensor or would cause a conflict of interest, or (ii) if such designee or Licensor is a Competitor (as defined below).

(e) Transferability. Any common stock of Licensee held by Licensor, along with its associated rights and obligations, shall be transferable in its and their entirety, to any third party or Affiliate of Licensor who is not a Competitor of Licensee; provided that such transfer complies with any applicable securities laws and the restrictions on transfer set forth in the Restricted Stock Agreement and any applicable right of first refusal and co-sale agreement to which Licensor is a party and with the terms of any applicable investors' rights agreement or voting agreement to which Licensor is a party. "Competitor" means a Person engaged, directly or indirectly (including through any partnership, limited liability company, corporation, joint venture or similar arrangement (whether now existing or formed hereafter)), in a business that is actively researching, developing or commercializing a PDE9 Inhibitor or other product in the Field, but shall not include any financial investment firm or collective investment vehicle that, together with its Affiliates, holds an equity interest in any Competitor and has not designated (and does not hereafter designate) any person as a member of the board of directors or a board observer of such Competitor.

(f) Information. Upon request, but no more frequently than [**], Licensee will deliver to the Licensor a statement of the outstanding capital stock of Licensor on a Fully Diluted Basis in sufficient detail as to permit Licensor to calculate its percentage equity ownership in Licensor.

(g) Termination. The rights of Licensor set forth in Sections 4.2(a), (c), (d) and (f) shall terminate and be of no further force or effect (i) immediately before the consummation of the means Licensee's first underwritten public offering of its common stock under the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder, (ii) immediately before Licensee becomes a reporting company under the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder; or (iii) immediately before the closing of a Change in Control, whichever event occurs first. For purposes of this Agreement, "Change in Control" means: (a) any merger or consolidation in which (1) Licensee is a constituent party or (2) a subsidiary of Licensee is a constituent party and Licensee issues equity securities pursuant to such merger or consolidation except any such merger or consolidation involving Licensee or a Subsidiary of Licensee in which the equity securities outstanding immediately prior to such merger or consolidation continue to represent, or are converted into or exchanged for equity securities that represent, immediately following such merger or consolidation, at least a majority, by voting power, of the equity securities of (A) the surviving or resulting entity or (B) if the surviving or resulting entity is a wholly-owned subsidiary of another entity immediately following such merger or consolidation, the parent entity of such surviving or resulting entity; or (b) the sale, lease, transfer, exclusive

license or other disposition, in a single transaction or series of related transactions, by Licensee or any subsidiary of Licensee of all or substantially all the assets of Licensee and its subsidiaries taken as a whole, or the sale or disposition (whether by merger, consolidation or otherwise) of one or more subsidiaries of Licensee if substantially all of the assets of Licensee and its subsidiaries taken as a whole are held by such subsidiary or subsidiaries, except where such sale, lease, transfer, exclusive license or other disposition is to a wholly-owned subsidiary of Licensee. Notwithstanding anything to the contrary in this paragraph, the sale of equity securities by Licensee for capital raising purposes in a financing transaction shall not be deemed a Change in Control.

4.3 Milestone Payments.

(a) Licensed Product Milestone Payments. Licensee shall pay Licensor the applicable, non-refundable, non-creditable, milestone payment set forth below upon the first achievement of each milestone event set forth below by or on behalf of Licensee or a Related Party.

Milestone Event	Milestone Payment
[**]	US $[**]
[**]	US $[**]
[**]	US $[**]
[**]	US $[**]
[**]	US $[**]

(b) Licensee PDE9 Product Milestone Payments. Licensee shall pay Licensor the applicable, non-refundable, non-creditable, milestone payment set forth below upon the first achievement of each milestone event set forth below by or on behalf of Licensee or a Related Party.

Milestone Event	Milestone Payment
[**]	US $[**]
[**]	US $[**]
[**]	US $[**]
[**]	US $[**]
[**]	US $[**]

(c) General Provisions Regarding Milestone Payments. The milestone events set forth in this Section 4.3 are intended to be successive. If a clinical trial milestone event is achieved ("Achieved Milestone") by Licensee or a Related Party prior to the achievement of one or more prior clinical trial milestone events (each a "Skipped Milestone") by Licensee or a Related Party, each such Skipped Milestone shall be deemed to have been achieved and payment of the associated clinical trial milestone payment(s) shall be due with payment of the clinical trial milestone payment for the Achieved Milestone.

Licensee shall notify Licensor of the achievement of a milestone event set forth in Section 4.3(a) or (b) above within [**] after its achievement and shall make the corresponding, non-refundable, non-creditable, milestone payment to Licensor within [**] after the receipt of an invoice from Licensor (which invoice shall be dated on or after the date of such notice). The failure to provide any such notice shall not excuse Licensee from its obligation to make any milestone payment.

Each of the milestone payments provided above in Section 4.3(a) or (b) above is payable only once under this Agreement regardless of how many times the corresponding event is achieved by or on behalf of Licensee or a Related Party with respect to one or more Products.

4.4 Royalties.

(a) Royalties on Net Sales of Licensed Products. Licensee shall pay running royalties to Licensor on the aggregate annual Net Sales of Licensed Products during the applicable Royalty Term (such Royalty Term determined on a Licensed Product-by-Licensed Product and country-by-country basis) at the applicable royalty rates set forth below:

Annual Net Sales of a Licensed Product	*Royalty Rate*
On the portion of worldwide annual Net Sales less than or equal to $[**]	[**]%
On the portion of worldwide annual Net Sales greater than $[**] but less than or equal to $[**]	[**]%
On the portion of worldwide annual Net Sales greater than $[**]	[**]%

The Parties acknowledge and agree that the royalty rates set forth above, and the Royalty Term during which such royalty rates will apply, have been negotiated by the Parties and take into consideration the transfer of, license to, and use of Know-How and materials, including the Licensed Compounds, in addition to licenses granted under the Licensed Patent Rights during the Royalty Term. Furthermore, the royalty rates have been specifically negotiated to remain constant during the Royalty Term, instead of having higher royalty rates when and where there is a Valid Claim within the Licensed Patent Rights.

(b) Royalties on Net Sales of Licensee PDE9 Products. Licensee shall pay running royalties to Licensor on the aggregate annual Field of Use Sales of Licensee PDE9 Products during the applicable Royalty Term (such Royalty Term determined on a Licensed Product-by-Licensed Product and country-by-country basis) at the applicable royalty rates set forth below:

Annual Net Sales of a Licensee PDE9 Product	*Royalty Rate*
On the portion of worldwide annual Field of Use Sales less than or equal to $[**]	[**]%
On the portion of worldwide annual Field of Use Sales greater than $[**] but less than or equal to $[**]	[**]%
On the portion of worldwide annual Field of Use Sales greater than $[**]	[**]%

(c) No Multiple Royalties. The obligation to pay royalties is imposed only once with respect to Net Sales of the same unit of a Licensed Product or Field of Use Sales of the same unit of a Licensee PDE9 Product. If the manufacture, use, sale or import of any Licensed Product is Covered by more than one Valid Claim of the Licensed Patent Rights or encompasses or uses more than one element of Licensed Know-How, multiple royalties shall not be due.

4.5 Calculation of Royalty Tiers. In determining the royalty rates on Net Sales of Licensed Products under Section 4.4(a), Net Sales of Licensed Products shall not be included in such determination after the expiration of the applicable Royalty Term with respect to such Licensed Product. In determining the royalty rates of Field of Use Sales under Section 4.4(b), Field of Use Sales of Licensee PDE9 Products shall not be included in such determination after the expiration of the applicable Royalty Term with respect to such Licensee PDE9 Product.

4.6 Reports, Payments and Accounting.

(a) Reports and Payments. Licensee shall deliver to Licensor, within [**] after the end of each calendar quarter commencing with the calendar quarter in which the First Commercial Sale of a Licensed Product occurs, a written report of Net Sales of the Licensed Products that are subject to royalty payment obligations to Licensor for such

calendar quarter. Licensee shall deliver to Licensor, within [**] after the end of each calendar quarter commencing with the calendar quarter in which the First Commercial Sale of a Licensee PDE9 Product occurs, a written report of Field of Use Sales of Licensee PDE9 Products that are subject to royalty payment obligations to Licensor for such calendar quarter. Such quarterly reports shall indicate (i) gross sales, Net Sales on a Licensed Product-by-Licensed Product and country-by-country basis or Field of Use Sales on a Licensee PDE9 Product-by-Licensee PDE9 Product and country-by-country basis, as the case may be, and (ii) the calculation of payment amounts owed to Licensor. When Licensee delivers such accounting to Licensor, Licensee shall also deliver all amounts due under Section 4.4 to Licensor for the calendar quarter.

(b) Audits by Licensor. Licensee shall keep, and shall require the Related Parties to keep, records of the latest [**] relating to gross sales and Net Sales of Licensed Products and Field of Use Sales of Licensee PDE9 Products that, in each case, are subject to royalty payment obligations to Licensor. For the sole purpose of verifying Licensee's compliance with its payment obligations hereunder**,** Licensor shall have the right no more than [**] (except [**]), and no more than [**] (except [**]), at Licensor's expense, to cause an independent, certified public accountant (chosen by Licensor and reasonably acceptable to Licensee) to review such records in the location(s) where such records are maintained by Licensee or its applicable Affiliate(s) upon reasonable notice and during regular business hours. The results of such review shall be made available to Licensee at the same time as such results are made available to Licensor. If the review reflects an underpayment to Licensor, such underpayment shall be promptly remitted to Licensor, together with interest calculated in the manner provided in Section 4.6(c). If the underpayment is equal to or greater than [**] percent ([**]%) of the amount that was otherwise due, Licensor shall be entitled to have Licensee pay all of the reasonable costs of such review, and such review shall not count as the [**] review Licensor is entitled to conduct hereunder. Licensor shall not have the right to audit Sublicensee(s) directly, but in connection with an audit of Licensee under this Section 4.6(b), Licensor shall have the right to cause Licensee to audit the applicable sublicensee(s) using the independent, certified public accountant conducting the audit under this Section 4.6(b). Each report provided by Licensee shall be deemed final and not subject to challenge, except in the event of fraud or other willful misconduct, [**] after the date furnished to Licensor.

(c) Late Payments. Licensee shall pay interest to Licensor on the aggregate amount of any payment that is not paid on or before the date such payment is due under this Agreement at a rate per annum equal to the prime rate in the United States of Citibank, NA (or its successor bank) as in effect on the date such payment is due plus (i) with respect to the first late payment hereunder, [**] percent ([**]%), and (ii) with respect to any subsequent late payment hereunder, [**] percent ([**]%), for the period during which such payment remains overdue.

(d) Mode of Payment; Currency Conversion. All payments under this Agreement, shall be made by deposit of U.S. Dollars in the requisite amount to such bank account as Licensor may from time to time designate by notice to Licensee. For the purpose of

calculating any sums due under this Agreement (including the calculation of Net Sales expressed in currencies other than U.S. Dollars), Licensee shall convert any amount expressed in a foreign currency into U.S. Dollar equivalents using Licensee's (or its Related Party's) standard conversion methodology consistent with U.S. generally accepted accounting principles (GAAP) or international financial reports standards (IFRS), as applicable, in a manner consistent with such Person's normal practices used to prepare its audited financial reports; provided that, such practices use a widely accepted source of published exchange rates.

(e) Taxes. If Licensee is required to withhold taxes imposed upon royalty payments or other payments due hereunder, then [**]. Licensee shall provide to Licensor [**]. Licensee shall provide Licensor with reasonable assistance in efforts by Licensor to [**] as far as possible under the provisions of any relevant tax treaty or other statutory or regulatory provision.

ARTICLE 5
Intellectual Property Protection and Related Matters

5.1 Ownership. Ownership of Inventions shall follow inventorship. The determination of inventorship for Inventions and other intellectual property made in connection with this Agreement shall be in accordance with the Laws of the United States as if such Inventions were made in the United States.

5.2 Prosecution and Maintenance of Licensed Patent Rights.

(a) Licensor shall have the sole right, at its sole expense and discretion, to Prosecute and Maintain Licensed Patent Rights in countries other than Listed Countries and shall provide Licensee with prompt written notice of the countries in which it exercises such right.

(b) Subject to Section 5.2(a), Licensee shall have the right, at is sole expense and discretion, to Prosecute and Maintain all Patent Rights owned or controlled by Licensee. In addition, Licensee shall have the first right, at its sole expense and discretion, to Prosecute and Maintain all Licensed Patent Rights in the Listed Countries. In the event Licensee fails or chooses not to Prosecute or Maintain any Licensed Patent Rights in a Listed Country, Licensor shall have the right, but not the obligation, at its sole expense and discretion, to Prosecute and Maintain such Licensed Patent Rights in such Listed Country. Prior to exercising such right, Licensor shall consult with Licensee and give good faith consideration to Licensee's reasons for not Prosecuting and Maintaining such Licensed Patent Rights in such Listed Country.

(c) With respect to the Prosecution and Maintenance of Licensed Patent Rights, Licensee shall: (i) choose patent counsel reasonably acceptable to Licensor; and (ii) instruct such patent counsel to furnish Licensor with copies of all correspondence relating to the Licensed Patent Rights received from the United States Patent and Trademark

Office and any other patent office promptly after receipt (but in any event, no later than [**] after it is received), (iii) instruct such patent counsel to furnish Licensor with copies of all correspondence relating to the Licensed Patent Rights sent to the United States Patent and Trademark Office and any other patent office promptly after it is sent (but in any event, no later than [**] after it is sent), and (iv) instruct such patent counsel to furnish Licensor with copies of all proposed filings or other correspondence to the United States Patent and Trademark Office and any other patent office sufficiently in advance of such filing to permit Licensor a reasonable opportunity to review and comment on such response. Licensee [**] the comments and requests of Licensor with respect to the Prosecution and Maintenance of the applicable Licensed Patent Rights. During the Term, Licensee shall notify Licensor at least [**] in advance of the next deadline if (A) Licensee decides that it does not wish to continue paying for the Prosecution and Maintenance of a particular patent or patent application within the Licensed Patent Rights in the Listed Countries for which no substitute has been filed, or (B) Licensee decides that it intends to expressly abandon claim scope in a particular patent or patent application within the Licensed Patent Rights. In such cases (A) or (B), Licensor shall have the right to assume sole responsibility for Prosecution and Maintenance of the respective patent or patent application within the Licensed Patent Rights, after consultation with Licensee and good faith consideration to Licensee's reasons for not Prosecuting or Maintaining the applicable respective patent or patent application (and, if the Licensor assumes such responsibility, with respect to clause (B), such sole responsibility will be assumed for the claim scope by filing a continuing application restricted to such abandoned claim scope). If Licensor assumes such responsibility, then Licensor shall be deemed the new Prosecuting Party and: (1) Licensor may designate any counsel of its choice to handle the Prosecution and Maintenance of such patent or patent application or of the continuing application; (2) Licensor, shall solely bear the cost of such Prosecution and Maintenance; and (3) Licensee shall cooperate reasonably, at its sole cost and expense, with Licensor in such Prosecution and Maintenance.

(d) Both Parties shall cooperate with each other and patent counsel in Prosecution and Maintenance of the Licensed Patent Rights in all countries, including, as applicable, (i) providing patent counsel with data and other information as appropriate with respect thereto, (ii) providing [**] and (iii) executing any other required documents or instruments for such Prosecution and Maintenance.

(e) The Party controlling the Prosecution and Maintenance of the applicable Licensed Patent Rights in accordance with Section 5.2(a), (b) or (c), as applicable, is referred to as the "Prosecuting Party". The Prosecuting Party shall be responsible for all fees and costs charged by patent counsel with respect to the Prosecution and Maintenance of the applicable Licensed Patent Rights and all other out-of-pocket costs and expenses incurred by the Prosecuting Party in connection with such Prosecution and Maintenance of the applicable Licensed Patent Rights during the Term. For clarity, such expenses shall not include any expenses of the other Party incurred by such other Party in connection with (i) its rights to review and comment on patent prosecution, (ii) its rights to undertake enforcement actions, or (iii) any actions undertaken by such other Party other than at the Prosecuting Party's request.

5.3 Third Party Infringement.

(a) Each Party shall notify the other Party promptly of any knowledge it acquires of any actual or potential infringements of the Licensed Patent Rights with respect to any activities of a Third Party in the Field in any country in the world. In the event that Licensee or Licensor becomes aware of any such suspected infringement of any Licensed Patent Right, or such Licensed Patent Right is challenged by such Third Party in any action or proceeding (a suit brought against such an infringement or to defend against such a challenge, an "Infringement Action"), such Party shall notify the other Party promptly, and following such notification, the Parties shall confer.

(b) As between the Parties, Licensee will have the first right, but not an obligation, to bring any Infringement Action in the Listed Countries at Licensee's expense and with counsel of its choice. Upon Licensee's request, Licensor will reasonably assist Licensee in the bringing, prosecution and maintenance of any such Infringement Action, at Licensee's cost and expense. For clarity, such expenses shall not include any expenses of Licensor incurred by Licensor in connection with (i) Licensor's review and comment on such Infringement Action, which opportunity Licensee offers Licensor as a courtesy, (ii) any Infringement Actions undertaken by Licensor, or (iii) in connection with any actions undertaken by Licensor other than at Licensee's request. Licensor agrees to be named as a party to such Infringement Action if necessary to bring or maintain such Infringement Action and further agrees to participate in such Infringement Action, at Licensee's sole expense, solely to the extent such participation is legally required to bring or maintain such Infringement Action.

(c) If Licensee withdraws from an Infringement Action or does not bring an Infringement Action within [**] after notice of the existence of an infringement or challenge, Licensor, after consultation with Licensee and good faith consideration to Licensee's reasons for not undertaking or maintaining such Infringement Action, shall have the right, but not the obligation, to bring or maintain such Infringement Action at Licensor's sole expense, in its own name and entirely under its own direction and control. Licensee agrees to be named as a party to such Infringement Action if necessary to bring or maintain such Infringement Action and further agrees to participate in such Infringement Action, at Licensor's sole expense, solely to the extent such participation is legally required to bring or maintain such Infringement Action. Licensee may be represented by counsel of its own choosing in any such Infringement Action brought by Licensor in which Licensee is a named party or for which Licensee's participation is legally required.

(d) The Party bringing, prosecuting or maintaining an Infringement Action (the "Enforcing Party") shall keep the other Party reasonably informed of the progress of the action or proceeding and shall give the other Party a reasonable opportunity in advance to consult with the Enforcing Party and offer its views about material decisions affecting such action or proceeding.

(e) Unless otherwise agreed by the Parties in writing, the amount of any recovery from an Infringement Action shall first be applied to the out-of-pocket costs of both Parties in connection with such Infringement Action by both Parties, and then (i) if Licensee was the Enforcing Party, Licensor shall receive an amount equal to the [**], and the remaining portion of such recovery shall be paid to Licensee, or (ii) if Licensor was the Enforcing Party, the remaining portion of such recovery shall be paid [**] percent ([**]%) to Licensor and [**] percent ([**]%) to Licensee.

(f) If Licensee is the Enforcing Party, no settlement of any Infringement Action which restricts the scope of, or otherwise adversely affects, a Licensed Patent Right shall be entered into by Licensee without the prior written consent of Licensor, which consent shall not be unreasonably withheld, delayed or conditioned. If Licensor is the Enforcing Party, no settlement of any Infringement Action which restricts or adversely affects the scope of the licenses granted by Licensor to Licensee under the terms of this Agreement, will be entered into by Licensor without the prior written consent of Licensee, which consent shall not be unreasonably withheld, delayed or conditioned.

5.4 Patent Invalidity Claim. During the Term, each Party shall promptly notify the other Party in the event of any legal or administrative action by any Third Party against a Licensed Patent Right of which such Party becomes aware, including any nullity, revocation, reexamination or compulsory license proceeding or similar proceeding in a Listed Country. To the extent such action is in connection with an enforcement of such Patent Right under Section 5.3, Licensee's rights with respect to defending any such Patent Right in any such proceeding shall correspond to those set forth in Section 5.3, and the non-enforcing Party, shall cooperate fully with the enforcing Party in preparing and formulating a response to such legal or administrative action.

5.5 Patent Term Extensions. Licensee shall have the [**] right to obtain patent term extensions or supplemental protection certificates or their equivalents with respect to any Licensed Product in the Field, including with respect to any Licensed Patent Right in any Listed Country, and Licensor shall reasonably cooperate with Licensee in connection therewith. Licensor shall have the [**] right to obtain patent term extensions or supplemental protection certificates or their equivalents with respect to any Licensed Patent Right in any country other than a Listed Country, and Licensee shall reasonably cooperate with Licensor in connection therewith.

5.6 Patent Marking. Licensee agrees to comply with the patent marking statutes in each country in which Licensed Products are sold by or on behalf of Licensee and/or its Affiliates or sublicensees.

ARTICLE 6
Confidentiality

6.1 Confidential Obligations. Each Party shall (a) maintain in confidence the Confidential Information of the other Party to the same extent such Party maintains its own confidential information, (b) not disclose such Confidential Information to any Third Party without the prior written consent of the other Party (except as permitted pursuant to Section 6.3 below), and (c) not use such Confidential Information for any purpose except those permitted by this Agreement.

6.2 Exceptions to Confidentiality. Notwithstanding the foregoing, the obligations of confidentiality set forth in Section 6.1 shall not apply to information that, in each case as demonstrated by competent written documentation:

(a) is publicly disclosed or made generally available to the public by the disclosing Party, either before or after it becomes known to the receiving Party;

(b) was known to the receiving Party, without any obligation to keep it confidential, prior to the date of first disclosure by the disclosing Party to the receiving Party, as shown by the receiving Party's files and records;

(c) is subsequently disclosed to the receiving Party by a Third Party lawfully in possession thereof without obligation to keep it confidential and without a breach of such Third Party's obligations of confidentiality;

(d) has been publicly disclosed or made generally available to the public other than through any act or omission of the receiving Party or its Affiliates in breach of this Agreement; or

(e) has been independently developed by the receiving Party without the aid, application or use of the disclosing Party's Confidential Information (the competent written proof of which must be contemporaneous with such independent development).

6.3 Authorized Disclosure. Notwithstanding Section 6.1, a Party may disclose Confidential Information of the other Party to the extent such disclosure is reasonably necessary in the following instances:

(a) Prosecuting and Maintaining Patent Rights in accordance with this Agreement; provided that the non-filing Party whose Confidential Information is being disclosed is given a reasonable opportunity to review the proposed disclosure of such Confidential Information and the filing Party considers in good faith any comments provided by the non-filing Party;

(b) communicating and making filings with Regulatory Authorities or otherwise complying with Laws or submitting information to tax or other governmental authorities; provided that if a Party is required by Law to make any public disclosure of Confidential Information of the other Party, to the extent it may legally do so, it will give reasonable

advance notice to the other Party of such disclosure and will use its reasonable efforts to secure confidential treatment of such Confidential Information prior to its disclosure (whether through protective orders or otherwise);

(c) for Regulatory Approval of Licensed Products; provided that Licensor is given a reasonable opportunity to review the proposed disclosure of such Confidential Information and Licensee considers in good faith any comments provided by Licensor;

(d) to its Affiliates, and to prospective and actual acquirers, lenders, licensees, and sublicensees, and to each of their employees, consultants, contractors, agents, accountants, lawyers, advisors, investors and underwriters, on a need to know basis, each of whom, in the case of Third Parties, prior to disclosure must be bound by written or professional ethical obligations of confidentiality and non-use equivalent in scope to those set forth in this Article 6; or

(e) to the extent mutually agreed to in writing by the Parties

6.4 Scientific Publications. Licensee and its Affiliates and Sublicensees shall provide Licensor with a copy of any manuscript, abstract or other proposed publication relating to the Licensed Compounds or Licensed Technology (a "Publication"), prior to submission thereof to a publisher or to any third party, and in any case, not less than [**] prior to any public disclosure, for the purpose of protecting proprietary or intellectual property of Licensor that might be contained in such Publication. Following receipt of such proposed Publication, Licensor shall have the right to cause Licensee or its Affiliates or Sublicensees, as applicable, to (i) withhold publication or other public disclosure thereof for a period of up to [**] in order to provide Licensor time to obtain appropriate intellectual property protection thereof and (ii) remove any proprietary, or otherwise confidential, information of Licensor contained in such Publication.

6.5 Press Releases and Other Permitted Disclosures.

(a) Licensor and Licensee each agree not to disclose any of the terms and conditions of this Agreement to any Third Party, except as described below in this Section 6.5 or as otherwise agreed in writing by the Parties. The Parties have agreed on a press release to be issued by Licensee announcing this Agreement after the Effective Date in substantially the form set forth in Exhibit H. Subject to the other provisions of this Agreement, no other press release, public statement or public disclosure concerning the existence or terms of this Agreement shall be made, either directly or indirectly, by either Party without the prior written approval of the other Party; provided, that, notwithstanding anything to the contrary herein, the Parties acknowledge and agree that Licensor shall have the right to make any public disclosures, including publishing articles, related to the Licensed Products or Licensed Compounds that Licensor has disclosed to Licensee that Licensor is planning as of the Effective Date. If disclosure of the terms and conditions of this Agreement, including the amount of a milestone payment, or its filing publicly is required by Law or applicable stock exchange regulation, or by order or other ruling of a competent court, as set forth in Section 6.5(c), then Licensor or Licensee, as the case may

be, may also disclose such terms or this Agreement in a public statement or disclosure. Once any public statement or public disclosure has been approved in accordance with this Section 6.5, then either Party may appropriately communicate information contained in such permitted statement or disclosure.

(b) Either Party may disclose publicly the identity and stage of development of any Licensed Product or Licensed Compound; provided, however, that Licensor shall not have the right to disclose publicly such identity or stage of development of a Licensed Product or Licensed Compound comprising or containing a Designated Compound unless Licensee, or Licensor prior to the Effective Date, or the Parties jointly in accordance herewith, has previously disclosed such identity or stage of development. Either Party may disclose the fact that a milestone payment has been paid hereunder. Neither Party shall disclose the financial terms of this Agreement or the amount of any milestone payment, except as provided for, and in accordance with, Section 6.5(a); provided, however, that if and to the extent such financial terms or amount of a milestone payment has been reported publicly by a Party as permitted pursuant to Section 6.5(a) or Section 6.5(c), then either Party may subsequently communicate information contained in such permitted disclosure. For purposes of this Section 6.5(b), the identity of a Licensed Product shall include its, and its corresponding Licensed Compound's, structure, mechanism of action, molecular class, name, acronym, and stage of development.

(c) Notwithstanding the foregoing provisions of this Article 6, a Party may disclose the existence and terms of this Agreement where required, as reasonably determined by the legal counsel of the disclosing Party, by Law, by applicable stock exchange regulation or by order or other ruling of a competent court, although, to the extent practicable under Law and applicable stock exchange regulation or court, the other Party shall be given at least [**] advance notice of any such legally required disclosure to comment and the disclosing Party shall reasonably consider such comments provided by such other Party on the proposed disclosure. In case either Party is obliged to publicly disclose or file this Agreement as a "material agreement" in accordance with Law or applicable stock exchange regulations ("SEC Filing"), this Agreement shall be redacted by the filing Party to the extent permissible upon the advice of legal counsel, and the filing Party shall provide the other Party a copy of such redacted Agreement in advance of such SEC Filing to enable the other Party to review and comment on the scope of such redaction; provided that the filing Party shall consider in good faith any comments provided by such other Party.

ARTICLE 7
Representations and Warranties

7.1 Representations of Authority. Each Party represents and warrants to the other that as of the Effective Date it has full right, power and authority to enter into this Agreement and to perform its respective obligations under this Agreement.

7.2 Consents. Each Party represents and warrants that as of the Effective Date all necessary consents, approvals and authorizations of all government authorities and other Persons required to be obtained by such Party in connection with execution, delivery and performance of this Agreement have been obtained.

7.3 No Conflict. Each Party represents and warrants that, as of the Effective Date, the execution and delivery of this Agreement and the performance of such Party's obligations hereunder (a) do not conflict with or violate any requirement of Laws and (b) do not conflict with, violate or breach or constitute a default of, or require any consent under, any contractual obligations of such Party, except such consents as have been obtained as of the Effective Date.

7.4 Employee, Consultant and Advisor Obligations. Each Party represents and warrants that, as of the Effective Date, each of its and its Affiliates' employees, consultants and advisors has executed an agreement or has an existing obligation under law obligating such employee, consultant or advisor to maintain the confidentiality of Confidential Information to the extent required under Section 6. The Parties acknowledge and agree that the obligations of confidentiality imposed by Danish law on Licensor and its employees satisfy the requirements of Article 6.

7.5 Intellectual Property. Licensor represents and warrants to Licensee that (a) Licensor owns the entire right, title and interest in and to the Primary Patent Cases, free and clear of all liens, charges, and encumbrances, (b) Licensor has the right to grant to Licensee the rights and licenses under the Licensed Patent Rights, existing as of the Effective Date, granted in this Agreement and has not previously assigned, transferred, conveyed or otherwise encumbered its right, title and interest in Licensed Patent Rights in any manner inconsistent with the terms hereof, and will not take any of the foregoing actions in any manner inconsistent with the terms hereof, (c) none of the Licensed Patent Rights, existing as of the Effective Date, was, to the actual knowledge of Licensor's employees involved in the negotiation of this Agreement or prosecution of the Primary Patent Cases, fraudulently procured from the relevant governmental patent granting authority, (d) as of the Effective Date, there is, to the actual knowledge of Licensor's employees involved in the negotiation of this Agreement or prosecution of the Primary Patent Cases, no claim or demand of any Person pertaining to, or any proceeding which is pending or threatened in writing, that asserts the invalidity, misuse or unenforceability of the Licensed Patent Rights or challenges Licensor's ownership of the Licensed Patent Rights or makes any adverse claim with respect thereto, and, to the knowledge of Licensor's employees involved in the negotiation of this Agreement or prosecution of the Primary Patent Cases, there is no basis for any such claim, demand or proceeding, (e) to the actual knowledge of Licensor, as of the Effective Date, the Licensed Patent Rights [**], and (f) the Licensed Patent Rights include all Patent Rights that (i) are owned or exclusively licensed by Licensor as of the Effective Date and (ii) Cover the Licensed Compounds or their use in the Field.

7.6 No Warranties. **EXCEPT AS OTHERWISE EXPRESSLY SET FORTH HEREIN, THE PARTIES MAKE NO REPRESENTATIONS AND EXTEND NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-**

INFRINGEMENT, OR NON-MISAPPROPRIATION OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS, ARE MADE OR GIVEN BY OR ON BEHALF OF A PARTY. EXCEPT AS EXPRESSLY STATED IN THIS AGREEMENT, ALL REPRESENTATIONS AND WARRANTIES, WHETHER ARISING BY OPERATION OF LAW OR OTHERWISE, ARE HEREBY EXPRESSLY EXCLUDED.

ARTICLE 8
Indemnification; Insurance; and Limitation on Damages

8.1 By Licensee. Licensee agrees to defend Licensor, its Affiliates and their respective directors, officers, employees and agents at Licensee's cost and expense, and shall indemnify and hold harmless Licensor and its Affiliates and their respective directors, officers, employees and agents from and against any liabilities, losses, costs, damages, fees or expenses arising out of any Third Party claim relating to (i) any breach by Licensee of any of its representations, warranties or obligations pursuant to this Agreement or (ii) product liability, personal injury, property damage or other damage resulting from the development, manufacturing or Commercialization of Compounds, Compound Improvements, Licensed Products or Licensee PDE9 Products by or on behalf of Licensee or its Affiliates or Sublicensees.

8.2 By Licensor. Licensor agrees to defend Licensee, its Affiliates and their respective directors, officers, employees and agents at Licensor's cost and expense, and shall indemnify and hold harmless Licensee and its Affiliates and their respective directors, officers, employees and agents from and against any liabilities, losses, costs, damages, fees or expenses arising out of any Third Party claim relating to (i) any breach by Licensor of any of its representations, warranties or obligations pursuant to this Agreement or (ii) product liability, personal injury, property damage or other damage resulting from the development, manufacturing or Commercialization of Compound Improvements or Licensed Products by or on behalf of Licensor or its Affiliates or licensees other than by or on behalf of Licensee (or its Affiliates or (sub)licensees).

8.3 Procedures. A Party entitled to indemnification under this Article 8 (an "Indemnified Party") shall give prompt written notification to the Party from whom indemnification is sought (the "Indemnifying Party") of any claim, suit, action or demand for which indemnification is sough under this Agreement. Within [**] after delivery of such notification, the Indemnifying Party may, upon written notice thereof to the Indemnified Party, assume control of the defense of such claim, suit, action or demand with counsel reasonably satisfactory to the Indemnified Party. If the Indemnifying Party does not assume control of such defense, the Indemnified Party shall control such defense. The Party not controlling such defense may participate therein at its own expense; provided that, if that the Indemnified Party shall have the right to retain its own counsel, at the expense of the Indemnifying Party, if representation of such Indemnified Party by the counsel retained by the Indemnifying Party would be inappropriate because of actual or potential differences in the interests of such Indemnified Party and any other party represented by such counsel. The Indemnified Party shall not agree to any settlement of such action, suit, proceeding or claim without the prior written consent of the Indemnifying Party, which shall not be unreasonably withheld, delayed or conditioned.

8.4 Insurance. Licensee shall procure and maintain insurance, including general liability insurance and, starting at the time at which a Licensed Product first enters clinical testing in human subjects by or on behalf of Licensee or its Affiliates or Sublicensees, product liability insurance, in each case adequate to cover its obligations hereunder and consistent with normal business practices of prudent companies similarly situated, which insurance shall identify Licensor as an additional insured starting at the time at which a Licensed Product first enters clinical testing in human subjects by or on behalf of Licensee or its Affiliates or Sublicensees. It is understood that any such insurance shall not be construed to create a limit of Licensee's liability with respect to its indemnification obligations under this Article 8. Licensee shall provide Licensor with written evidence of such insurance upon request. Licensee shall provide Licensor with written notice at least [**] prior to the cancellation, non-renewal or material change in such insurance or self-insurance which could adversely affect rights hereunder.

8.5 No Consequential or Punitive Damages. **NEITHER PARTY SHALL BE LIABLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, LOST PROFIT, EXPECTATION, EXEMPLARY, PUNITIVE OR OTHER INDIRECT DAMAGES, INCLUDING LOST PROFITS, IN CONNECTION WITH ANY CLAIM ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER GROUNDED IN TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, CONTRACT, OR OTHERWISE, WHETHER OR NOT SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES; PROVIDED, THAT THE FORGOING LIMITATION OF LIABILITY SHALL NOT APPLY WITH RESPECT TO (1) A PARTY'S INDEMNIFICATION OBLIGATIONS HEREUNDER, (2) A PARTY'S GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, OR (3) WITH RESPECT TO A PARTY'S BREACH OF ITS OBLIGATIONS OF [**] HEREUNDER.**

ARTICLE 9
Term and Termination

9.1 Term. This Agreement shall become effective as of the Effective Date, may be terminated as set forth in this Section 9, and otherwise remains in effect until the expiration of all payment obligations hereunder.

9.2 Termination for Material Breach. Upon any material breach of this Agreement by either Party, the other Party may terminate this Agreement by providing [**] prior written notice ([**] prior written notice with respect to a payment breach) to the breaching Party, specifying the material breach. The termination shall become effective at the end of the [**] (or [**], as applicable) period unless the breaching Party cures such breach during such [**] (or [**], as applicable) period.

9.3 Termination for Bankruptcy. To the extent allowed under Law, either Party shall have the right to terminate this Agreement in the event of the commencement of any proceeding in or for bankruptcy, insolvency, dissolution or winding up by or against the other Party (other than pursuant to a corporate restructuring) that is not dismissed or otherwise disposed of within [**] thereafter and/or the administrator of the bankruptcy estate or the Party under in-court restructuring has not, within [**] after the receipt of an inquiry from the other Party, confirmed that the bankruptcy estate or the Party under in-court restructuring will adopt this Agreement.

9.4 Termination for Convenience. Licensee may terminate this Agreement, at any time and for any reason or no reason, by providing six (6) months' prior written notice to Licensor. The termination shall become effective at the end of the six (6) month period.

9.5 Patent Challenge Termination by Licensor. Licensor will be permitted to terminate this Agreement following written notice to Licensee if Licensee or any of its Affiliates, Sublicensees or subcontractors, directly or indirectly (i) initiate or request an interference, *inter partes* review, post grant review or opposition proceeding with respect to or (ii) make, file or maintain any claim, demand, lawsuit or cause of action to challenge the validity or enforceability of, any Licensed Patent Right, or (iii) oppose Licensor's exercise of its rights under Section 5.5 to obtain any extension of, or the grant of a supplementary protection certificate with respect to, any Licensed Patent Right, and such Person has not ceased the applicable activities set forth in the foregoing clauses (i)-(iii) within [**] after such notice. For the avoidance of doubt, an action by or on behalf of Licensee in accordance with Article 5 of this Agreement to amend claims within a pending patent application of the Licensed Patent Rights or to make any submission to any patenting agency in compliance with an obligation of disclosure similar to that in Rule 56 before the United States Patent and Trademark Office (provided, that, such obligation of disclosure is not triggered by any of the activities set forth in the foregoing clauses (i)-(iii)), or to abandon a patent application included in the Licensed Patent Rights during the course of Licensee's Prosecution and Maintenance of any such pending patent application, during the course of Licensee's Prosecution and Maintenance of such pending patent application or in defense of a Third Party proceeding, shall not constitute an activity under the foregoing clauses (i)-(iii) of this Section 9.5.

9.6 Continued Sales. For a period of [**] after the effective date of termination of this Agreement, other than termination by Licensor pursuant to Section 9.2, if such termination occurs after Regulatory Approval of a Licensed Product, Licensee and its Affiliates shall be entitled to sell any of the Licensed Products remaining in inventory in accordance with the terms of this Agreement to the extent such Licensed Products were being sold at the time of termination, provided that such sales and related activities shall be subject to the terms and conditions of this Agreement, including the royalty and milestone provisions of this Agreement.

9.7 Effects of Termination. Expiration or termination of this Agreement shall not relieve the Parties of any obligation accruing prior to such expiration or termination. Any expiration or termination of this Agreement shall be without prejudice to the rights of either Party against the other accrued or accruing under this Agreement prior to expiration or termination, including the obligation to pay royalties for the Licensed Product sold prior to such expiration or termination. Except as expressly provided otherwise herein, termination of this Agreement shall be in addition to, and shall not prejudice, the Parties' remedies at law or in equity, including the Parties' ability to receive legal damages or equitable relief with respect to any breach of this Agreement, regardless of whether or not such breach was the reason for the termination. In the event of any early termination of this Agreement, the Parties will work together in good faith to

determine and implement reasonable wind-down procedures with respect to relevant Licensed Product- and Licensed Compound-related activities ongoing at the time of such termination, which shall include continuation of the licenses granted to Licensee hereunder (and subject to the continuing terms and conditions of this Agreement) to permit Licensee and its Affiliates and Sublicensees to continue and complete any ongoing clinical trials of Licensed Products and to make or have made such Licensed Products as necessary to continue and complete such clinical trials; provided, however, in that the event such termination is by Licensor pursuant to Section 9.2, such activities shall be limited to those necessary for Licensee to comply with regulatory obligations, or medical or ethical obligations to patients consistent with industry standards.

9.8 Survival. The following provisions shall survive the expiration or termination of this Agreement: Articles 1 (to the extent necessary to give effect to other surviving provisions), 6 and 10, and Sections 2.1(d), 2.7, 3.5, 4.6, 8.1, 8.2, 8.3, 8.4 (only for so long as a Licensed Product is being developed or commercialized by or on behalf of Licensee or its Affiliates or Sublicensees and for a period of [**] after the last date on which a Licensed Product was being developed or commercialized), 8.5, 9.6 (for the period set forth therein), 9.7 and this Section 9.8. In addition, if Licensee terminates this Agreement pursuant to Section 9.4, or if Licensor terminates this Agreement pursuant to Section 9.2, 9.3 or 9.5, or if this Agreement expires, then Licensee's obligations to pay milestones and royalties for Licensee PDE9 Products pursuant to Sections 4.3(b) and 4.4(b), respectively, shall survive the effective date of such termination.

ARTICLE 10
Miscellaneous Provisions

10.1 Governing Law; Language. This Agreement and all disputes arising out of or related to this Agreement shall be construed and the respective rights of the Parties determined in accordance with the laws of the State of New York, U.S.A., excluding application of any conflict of laws principles that would require application of the laws of a jurisdiction outside of New York, and will be subject to the exclusive jurisdiction of the courts of competent jurisdiction located in New York, New York. The Parties hereby expressly consent to the jurisdiction of such courts and irrevocably waive any objection to jurisdiction or venue. This Agreement and all communications related to it, or to any dispute or controversy arising out of it, shall be conducted in English.

10.2 Notice. Any notices required or permitted by this Agreement shall be in writing, shall specifically refer to this Agreement, and shall be sent by hand, recognized national overnight courier, confirmed facsimile transmission, or registered or certified mail, postage prepaid, return receipt requested, to the following address or facsimile number of the parties:

If to Licensor:

H. LUNDBECK A/S,
Ottiliavej 9
DK-2500 Valby,
Copenhagen,
Denmark
Attention: Corporate Development

With a copy to the attention of General Counsel, Corporate Legal, at the same address

If to Licensee:

IMARA, INC.
700 Technology Square, 3rd Floor
Cambridge, MA02139 U.S.A.
Attention: Chief Executive Officer

With a copy to:

WilmerHale LLP
60 State Street
Boston, MA 02109
U.S.A.
Attention: Richard A. Hoffman, Esq.
Fax: 617-526-5000

All notices under this Agreement shall be deemed effective upon receipt. A party may change its contact information immediately upon written notice to the other party in the manner provided in this Section 10.2.

10.3 Assignment. Neither Party may, without the consent of the other Party, assign or transfer any of its rights and obligations hereunder; provided that (a) Licensor may assign this Agreement, in its entirety, without the consent of Licensee in connection with the assignment or exclusive license of all of Licensor's right, title and interest in all intellectual property which is licensed to Licensee under this Agreement, and (b) Licensee may assign this Agreement, in its entirety, without the consent of Licensor, (i) in connection with a merger, consolidation, transfer, or sale of all or substantially all of its business or assets related to this Agreement, to an assignee so long as such assignee has [**] at least $[**] or (ii) to an Affiliate so long as Licensee and such Affiliate assignee arrange to duplicate, as nearly as practicable, the anti-dilution protection and other rights provided to Licensor under this Agreement and the Restricted Stock Agreement.

10.4 Entire Agreement. This Agreement constitutes the entire agreement between the parties with respect to its subject matter and supersedes all prior agreements or understandings between the parties relating to its subject matter.

10.5 Interpretation. The captions and headings to this Agreement are for convenience only, and are to be of no force or effect in construing or interpreting any of the provisions of this Agreement. Unless specified to the contrary, references to Articles, Sections or Exhibits mean the particular Articles, Sections or Exhibits to this Agreement and references to this Agreement

include all Exhibits hereto. Unless context otherwise clearly requires, whenever used in this Agreement: (a) the words “include” or “including” shall be construed as incorporating, also, “but not limited to” or “without limitation;” (b) the word “day” or “year” means a calendar day or year unless otherwise specified; (c) the word “notice” shall mean notice in writing (whether or not specifically stated) and shall include notices, consents, approvals and other written communications contemplated under this Agreement; (d) the words “hereof,” “herein,” “hereby” and derivative or similar words refer to this Agreement (including any Exhibits); (e) the word “or” shall be construed as the inclusive meaning identified with the phrase “and/or;” (f) provisions that require that a Party or the Parties hereunder “agree,” “consent” or “approve” or the like shall require that such agreement, consent or approval be specific and in writing, whether by written agreement, letter or otherwise; (g) words of any gender include the other gender; (h) words using the singular or plural number also include the plural or singular number, respectively; and (i) the word “law” (or “laws”) when used herein means any applicable, legally binding statute, ordinance, resolution, regulation, code, guideline, rule, order, decree, judgment, injunction, mandate or other legally binding requirement of a government entity, together with any then-current modification, amendment and re-enactment thereof, and any legislative provision substituted therefor. The Parties and their respective counsel have had an opportunity to fully negotiate this Agreement. If any ambiguity or question of intent or interpretation arises, this Agreement shall be construed as if drafted jointly by the Parties, and no presumption or burden of proof shall arise favoring or disfavoring any Party by virtue of the authorship of any provision of this Agreement. No prior draft of this Agreement shall be used in the interpretation or construction of this Agreement.

10.6 Amendment and Waiver. This Agreement may be amended, supplemented, or otherwise modified only by means of a written instrument signed by both parties. Any waiver of any right or failure to act in a specific instance shall related only to such instance and shall not be construed as an agreement to waive any right or fail to act in any other instance, whether or not similar.

10.7 Severability. In the event that any provision of this Agreement shall be held invalid or unenforceable for any reason, such invalidity or unenforceability shall not affect any other provision of this Agreement. The Parties shall consult one another and use reasonable efforts to agree upon a valid and enforceable provision that is a reasonable substitute for the invalid or unenforceable provision.

10.8 Use of Name. Licensee shall not use Licensor’s name (except in connection with disclosures permitted under Article 6) or logo without Licensor’s express prior written consent, which consent may be granted in the context of the Parties mutually approving a press release or other public disclosure related to this Agreement.

10.9 Counterparts. This Agreement may be executed in counterparts, each of which counterparts, when so executed and delivered, shall be deemed to be an original, and all of which counterparts, taken together, shall constitute one and the same instrument.

10.10 Force Majeure. Neither Party will be responsible for delays resulting from causes beyond the reasonable control of such Party, including fire, explosion, flood, war, strike, or riot, provided that the nonperforming Party uses commercially reasonable efforts for a company of its size and resources to avoid or remove such causes of nonperformance and continues performance under this Agreement with reasonable dispatch whenever such causes are removed.

10.11 Dispute Resolution.

(a) Alternative Dispute Resolution. Any dispute arising out of or relating to this Agreement shall be resolved through binding arbitration as follows:

(i) A Party may submit such dispute to arbitration by notifying the other Party, in writing, of such dispute. Within [**] after receipt of such notice, the Parties shall designate in writing a single arbitrator to resolve the dispute; provided, however, that if the Parties cannot agree on an arbitrator within such [**] period, the arbitrator shall be selected by the New York, New York office of the American Arbitration Association (the "AAA"). The arbitrator shall not be an Affiliate, employee, consultant, officer, director or stockholder of any Party.

(ii) Within [**] after the designation of the arbitrator, the arbitrator and the Parties shall meet, at which time the Parties shall be required to set forth in writing all disputed issues and a proposed ruling on the merits of each such issue.

(iii) The arbitrator shall set a date for a hearing, which shall be no later than [**] after the submission of written proposals pursuant to Section 10.11(a)(ii), to discuss each of the issues identified by the Parties. The Parties shall have the right to be represented by counsel. Except as provided herein, the arbitration shall be governed by the Commercial Arbitration Rules of the AAA; provided, however, that the Federal Rules of Evidence shall apply with regard to the admissibility of evidence and the arbitration shall be conducted by a single arbitrator.

(iv) The arbitrator shall use his or her best efforts to rule on each disputed issue within [**] after the completion of the hearings described in Section 10.11(a)(iii). The determination of the arbitrator as to the resolution of any dispute shall be binding and conclusive upon all Parties. All rulings of the arbitrator shall be in writing and shall be delivered to the Parties.

(v) The attorneys' fees of the Parties in any arbitration, fees of the arbitrator, and costs and expenses of the arbitration shall be borne by the Parties as determined by the arbitrator.

(vi) Any arbitration pursuant to this Section 10.11 shall be conducted in New York, New York, U.S.A. Any arbitration award may be entered in and enforced by any court of competent jurisdiction.

(b) No Limitation. Nothing in Section 10.11 shall be construed as limiting in any way the right of a Party to seek an injunction or other equitable relief with respect to any actual or threatened breach of this Agreement or to bring an action in aid of arbitration. Should any Party seek an injunction or other equitable relief, or bring an action in aid of arbitration, then for purposes of determining whether to grant such injunction or other equitable relief, or whether to issue any order in aid of arbitration, the dispute underlying the request for such injunction or other equitable relief, or action in aid of arbitration, may be heard by the court in which such action or proceeding is brought.

10.12 Offset Rights. Notwithstanding anything to the contrary in this Agreement, neither Party may, at any time or for any reason, offset any payments due to the other Party or its Affiliates under this Agreement.

10.13 No Third Party Beneficiaries. No Person other than Licensee, Licensor and their respective Affiliates, successors and permitted assignees hereunder, shall be deemed an intended beneficiary hereunder or have any right to enforce any obligation of this Agreement.

10.14 Independent Contractors. It is expressly agreed that Licensee and Licensor shall be independent contractors and that the relationship between Licensee and Licensor shall not constitute a partnership, joint venture or agency. Neither Licensee nor Licensor shall have the authority to make any statements, representations, or commitments of any kind, or to take any action, which shall be binding on the other Party, without the prior written consent of such other Party.

[remainder of page intentionally left blank]

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date first set forth above.

H. LUNDBECK A/S

By: /s/ Kim Andersen
Name: Kim Andersen
Title: SVP

IMARA, INC.

By: /s/ James McArthur
Name: James McArthur
Title: CEO

Exhibit F

Restricted Stock Agreement

[See attached sheets]

RESTRICTED STOCK AGREEMENT

THIS RESTRICTED STOCK AGREEMENT is made as of the 11th day of April, 2016 by and among IMARA Inc., a Delaware corporation (the "**Company**"), and H. Lundbeck A/S, a for profit corporation organized and existing under the laws of Denmark with company registration no. (CVR) 56759913 (the "**Purchaser**").

WHEREAS, Company is engaged in the research and development of therapeutics for the treatment of orphan diseases;

WHEREAS, Purchaser possesses certain compounds and related intellectual property rights potentially useful for the research, development, and commercialization of therapeutics for the treatment of orphan diseases; and

WHEREAS, the Company and the Purchaser are entering into an Exclusive License Agreement (the "**License Agreement**") on the date hereof, pursuant to which the Company will (i) obtain certain rights to Licensed Products (as defined in the License Agreement) within the Field (as defined in the License Agreement) from the Purchaser and (ii) issue shares of Class A Common Stock, par value $0.001 per share, of the Company (the "**Class A Common Stock**" and, together with the Special Common Stock, par value $0.001 per share, of the Company, the "**Common Stock**") to the Purchaser in accordance with the terms of this Agreement.

NOW, THEREFORE, the parties hereby agree as follows:

1. Issuance of Common Shares; Closing.

1.1 On or prior to the Closing (as defined below), the Company shall have authorized the issuance to the Purchaser of 1,055,231 shares of Class A Common Stock (the "**Shares**") in accordance with the terms of this Agreement.

1.2 The issuance of the Shares shall take place remotely via the exchange of documents and signatures, at 9:00 a.m., on April 11, 2016, or at such other time and place as the Company and the Purchaser mutually agree upon, orally or in writing (which time and place is designated as the "**Closing**"). At the Closing and in consideration of the execution and delivery of the License Agreement by the Purchaser to the Company, the Company shall issue to the Purchaser a certificate in the name of the Purchaser for the Shares. The Purchaser agrees that the Shares shall be subject to the restrictions on transfer set forth in Section 4 of this Agreement.

2. Representations and Warranties of the Company. The Company hereby represents and warrants to the Purchaser that the following representations are true and complete as of the date of the Closing.

2.1. Organization, Good Standing, Corporate Power and Qualification. The Company is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware and has all requisite corporate power and authority to carry on its business as presently conducted or proposed to be conducted. The Company is duly qualified to transact business and is in good standing in each jurisdiction in which the failure so to qualify would have a material adverse effect.

2.2. Capitalization. The authorized capital stock of the Company consists, immediately prior to the Closing, of:

(a) 43,758,565 shares of Common Stock, 1,834,565 shares of which are issued and outstanding immediately prior to the Closing. All of the outstanding shares of Common Stock have been duly authorized, are fully paid and nonassessable and were issued in compliance with all applicable federal and state securities laws.

(b) 34,000,000 shares of Preferred Stock, $0.001 par value per share (the "**Preferred Stock**"), of which (i) 3,000,000 shares have been designated Series Seed Preferred Stock, 2,712,960 of which are issued and outstanding immediately prior to the Closing and (ii) 31,000,000 shares have been designated Series A Preferred Stock, none of which are issued and outstanding immediately prior to the Closing.

(c) The Company has reserved 1,582,846 shares of Class A Common Stock for issuance to officers, directors, employees and consultants of the Company pursuant to its 2016 Stock Incentive Plan duly adopted by the Board of Directors and approved by the Company stockholders (the "**Stock Plan**"). Of such reserved shares of Class A Common Stock, all remain available for issuance to officers, directors, employees and consultants pursuant to the Stock Plan.

2.3. Authorization. All corporate action required to be taken by the Company's Board of Directors and stockholders in order to authorize the Company to enter into this Agreement, and to issue the Shares at the Closing, has been taken or will be taken prior to the Closing. All action on the part of the officers of the Company necessary for the execution and delivery of this Agreement, the performance of all obligations of the Company under this Agreement to be performed as of the Closing, and the issuance of the Shares has been taken or will be taken prior to the Closing. This Agreement, when executed and delivered by the Company, shall constitute valid and legally binding obligation of the Company, enforceable against the Company in accordance with its terms except (i) as limited by applicable bankruptcy, insolvency, reorganization, moratorium, fraudulent conveyance, or other laws of general application relating to or affecting the enforcement of creditors' rights generally, or (ii) as limited by laws relating to the availability of specific performance, injunctive relief, or other equitable remedies.

2.4. Valid Issuance of Shares. The Shares, when issued and sold in accordance with the terms and for the consideration set forth in this Agreement, will be validly issued and free of restrictions on transfer other than restrictions on transfer under this Agreement, applicable state and federal securities laws and liens or encumbrances created by or imposed by the Purchaser. Assuming the accuracy of the representations of the Purchaser in Section 3 of this Agreement and subject to the applicable governmental filings with respect to the transactions contemplated by this Agreement, the Shares will be issued in compliance with all applicable federal and state securities laws.

3. Representations and Warranties of the Purchaser. The Purchaser hereby represents and warrants to the Company that:

3.1. Authorization. The Purchaser has full power and authority to enter into this Agreement. When executed and delivered by the Purchaser, this Agreement shall constitute valid and legally binding obligation of the Purchaser, enforceable against the Purchaser in accordance with its terms except (i) as limited by applicable bankruptcy, insolvency, reorganization, moratorium, fraudulent conveyance, or other laws of general application relating to or affecting the enforcement of creditors' rights generally, or (ii) as limited by laws relating to the availability of specific performance, injunctive relief, or other equitable remedies.

3.2. Purchase Entirely for Own Account. This Agreement is made with the Purchaser in reliance upon the Purchaser's representation to the Company, which by the Purchaser's execution of this Agreement, the Purchaser hereby confirms, that the Shares to be acquired by the Purchaser will be acquired for investment for the Purchaser's own account, not as a nominee or agent, and not with a view to the resale or distribution of any part thereof, and that the Purchaser has no present intention of selling, granting any participation in, or otherwise distributing the same. By executing this Agreement, the Purchaser further represents that the Purchaser does not presently have any contract, undertaking, agreement or arrangement with any Person to sell, transfer or grant participations to such Person or to any third Person, with respect to any of the Shares. The Purchaser has not been formed for the specific purpose of acquiring the Shares.

3.3. Disclosure of Information. The Purchaser has had an opportunity to discuss the Company's business, management, financial affairs and the terms and conditions of the offering of the Shares with the Company's management. The foregoing, however, does not limit or modify the representations and warranties of the Company in Section 2 of this Agreement or the right of the Purchaser to rely thereon.

3.4. No Public Market. The Purchaser understands that no public market now exists for the Shares, and that the Company has made no assurances that a public market will ever exist for the Shares.

3.5. Accredited Investor. The Purchaser is an "accredited investor" as defined in Rule 501(a) of Regulation D promulgated under the Securities Act.

3.6. No General Solicitation. Neither the Purchaser, nor any of its officers, managers, employees, agents, stockholders or partners has either directly or indirectly, including through a broker or finder (a) engaged in any general solicitation, or (b) published any advertisement in connection with the offer and sale of the Shares.

4. Restricted Securities.

4.1. The Purchaser understands that the Shares and any Anti-Dilution Shares (as defined below) have not been, and will not be, registered under the Securities Act of 1933, as amended (the "**Securities Act**"), by reason of a specific exemption from the registration provisions of the Securities Act which depends upon, among other things, the bona fide nature of the investment intent and the accuracy of the Purchaser's representations as expressed herein. The Purchaser understands that the Shares and any Anti-Dilution Shares are "restricted securities" under applicable U.S. federal and state securities laws and that, pursuant to these laws, the Purchaser must hold the Shares and any Anti-Dilution Shares indefinitely unless they are registered with the Securities and Exchange Commission and qualified by state authorities, or an exemption from such registration and qualification requirements is available. The Purchaser acknowledges that the Company has no obligation to register or qualify the Shares or any Anti-Dilution Shares for resale. The Purchaser further acknowledges that if an exemption from registration or qualification is available, it may be conditioned on various requirements including, but not limited to, the time and manner of sale, the holding period for the Shares and any Anti-Dilution Shares, and on requirements relating to the Company which are outside of the Purchaser's control, and which the Company is under no obligation and may not be able to satisfy.

4.2 The Purchaser will not transfer any Shares and any Anti-Dilution Shares to any Competitor. For purposes of this Agreement, "**Competitor**" means a Person engaged, directly or indirectly (including through any partnership, limited liability company, corporation, joint venture or similar arrangement (whether now existing or formed hereafter)), in a business that is actively researching, developing or commercializing a PDE9 inhibitor or other product in the Field, but shall not include any financial investment firm or collective investment vehicle that, together with its Affiliates (as defined in the License Agreement), holds an equity interest in any Competitor and has not designated (and does not hereafter designate) any person as a member of the board of directors or a board observer of such Competitor.

4.2. The provisions of this Section 4 shall terminate upon the earlier of the following events:

(a) the closing of the IPO; or

(b) the closing of a Deemed Liquidation Event (as defined in the Company's Amended and Restated Certificate of Incorporation, as amended from time to time).

Agreement in Connection with Initial Public Offering. The Purchaser hereby agrees that it will not, without the prior written consent of the managing underwriter, during the period commencing on the date of the final prospectus relating to the Company's initial public offering (the "**IPO**") and ending on the date specified by the Company and the managing underwriter (such period not to exceed one hundred eighty (l80) days, or such other period as may be requested by the Company or an underwriter to accommodate regulatory restrictions on (1) the publication or other distribution of research reports; and (2) analyst recommendations and opinions,

including, but not limited to, the restrictions contained in FINRA Rule 2711(f)(4) or NYSE Rule 472(f)(4), or any successor provisions or amendments thereto) (a) lend, offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, any shares of capital stock of the Company held immediately prior to the effectiveness of the registration statement for the IPO; or (b) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the capital stock of the Company, whether any such transaction described in clause (a) or (b) above is to be settled by delivery of capital stock or other securities of the Company, in cash or otherwise. The foregoing provisions of this Section 5 shall not apply to the sale of any shares to an underwriter pursuant to an underwriting agreement, and shall only be applicable to the Purchaser if all officers, directors and holders of more than one percent (1%) of the outstanding Common Stock (after giving effect to the conversion into Common Stock of all outstanding Preferred Stock) enter into similar agreements. The underwriters in connection with the IPO are intended third-party beneficiaries of this Section 5 and shall have the right, power and authority to enforce the provisions hereof as though they were a party hereto. The Purchaser further agrees to execute such agreements as may be reasonably requested by the underwriters in the IPO that are consistent with this Section 5 or that are necessary to give further effect thereto. Any discretionary waiver or termination of the restrictions of any or all of such agreements by the Company or the underwriters shall apply pro rata to all parties subject to such agreements, based on the number of shares subject to such agreements.

Restrictive Legends. All certificates representing Shares and any Anti-Dilution Shares shall have affixed thereto legends in substantially the following form, in addition to any other legends that may be required under federal or state securities laws:

> "The shares of stock represented by this certificate are subject to restrictions on transfer and an option to purchase set forth in a certain Restricted Stock Agreement between the corporation and the registered owner of these shares (or his or her predecessor in interest), and such Agreement is available for inspection without charge at the office of the Secretary of the corporation."
>
> "The shares represented by this certificate have not been registered under the Securities Act of 1933, as amended, and may not be sold, transferred or otherwise disposed of in the absence of an effective registration statement under such Act or an opinion of counsel satisfactory to the corporation to the effect that such registration is not required."

5. Anti-Dilution Rights.

5.1. If, prior to the occurrence of the Minimum Investment Event, the Company issues additional Equity Securities, the Company shall promptly issue a number of additional shares of Class A Common Stock to the Purchaser for no consideration to the extent necessary to cause the Purchaser Percentage to be equal to the Floor Percentage (such additional shares, the "**Anti-Dilution Shares**"); *provided* that, with respect to any Anti-Dilution Shares issued as a result of the issuance of Equity Securities pursuant to the Stock Plan or other stock incentive plan of the Company, the Company will issue such Anti-Dilution Shares to the Purchaser at the earlier of (a) the end of the Company's fiscal year in which the issuances took place and (b) the closing of the next Preferred Stock financing.

5.2. For purposes of this Section 7, the following definitions shall apply:

(a) The term "**Equity Securities**" means shares of capital stock, convertible securities or warrants, options, or other rights to subscribe for, purchase or acquire from the Company any capital stock of the Company; provided that, "other rights to subscribe for, purchase or acquire" shall not include (i) preemptive or other rights to participate in new offerings of securities by the Company after the Closing, (ii) obligations under a purchase agreement for Preferred Stock to acquire additional shares of such Preferred Stock on the same terms as those purchased at an initial closing upon the passage of time or meeting (or waiver) of specified Company performance conditions or (iii) anti-dilution provisions that have not been triggered.

(b) The term "**Floor Percentage**" means 8%.

(c) The term "**Fully Diluted Shares**" means, as of a specified date, the number of shares of Common Stock then-outstanding plus the number of shares of Common Stock issuable upon exercise or conversion of then-outstanding convertible securities or warrants, options, or other rights to subscribe for, purchase or acquire from the Company any capital stock of the Company (which shall be determined without regard to whether such securities or rights are then vested, exercisable or convertible) plus, without duplication, the number of shares reserved and available for future grant under the Stock Plan or any other then-existing stock incentive plan of the Company; provided that, for clarity, "other rights to subscribe for, purchase or acquire" shall not include (i) preemptive or other rights to participate in new offerings of securities by the Company after the Closing, (ii) obligations under a purchase agreement for Preferred Stock to acquire additional shares of such Preferred Stock on the same terms as those purchased at an initial closing upon the passage of time or meeting (or waiver) of specified Company performance conditions or (iii) anti-dilution provisions that have not been triggered.

(d) The term "**Minimum Investment Event**" means one or series of financings since the date of incorporation of the Company pursuant to which the Company receives aggregate cash proceeds of $25,000,000 in exchange for the Company's capital stock.

(e) The term "**Purchaser Percentage**" means the fraction, expressed as a percentage, the numerator of which is the number of shares of Common stock held by the Purchaser and the denominator of which are the Fully Diluted Shares.

7.3 After the occurrence of the Minimum Investment Event, all rights and obligations under this Section 7 shall terminate and be of no further force and effect.

6. Miscellaneous.

6.1. Survival of Warranties. Unless otherwise set forth in this Agreement, the representations and warranties of the Company and the Purchaser contained in or made pursuant to this Agreement shall survive the execution and delivery of this Agreement and the Closing and shall in no way be affected by any investigation or knowledge of the subject matter thereof made by or on behalf of the Purchaser or the Company.

6.2. Successors and Assigns. The terms and conditions of this Agreement shall inure to the benefit of and be binding upon the respective successors and assigns of the parties. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and assigns any rights, remedies, obligations, or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement.

6.3. Governing Law. This Agreement and the legal relations among the parties shall be governed by, and construed and enforced in accordance with, the laws of the State of Delaware, without regard to its conflict of laws rules.

6.4. Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Counterparts may be delivered via facsimile, electronic mail (including pdf) or other transmission method and any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes.

6.5. Titles and Subtitles. The titles and subtitles used in this Agreement are used for convenience only and are not to be considered in construing or interpreting this Agreement.

6.6. Notices. All notices and other communications given or made pursuant to this Agreement shall be in writing and shall be deemed effectively given upon the earlier of actual receipt or: (a) personal delivery to the party to be notified, (b) when sent, if sent by electronic mail or facsimile during normal business hours of the recipient, and if not sent during normal business hours, then on the recipient's next business day, (c) five (5) days after having been sent by registered or certified mail, return receipt requested, postage prepaid, or (d) one (1) business day after deposit with a nationally recognized overnight courier, freight prepaid, specifying next business day delivery, with written verification of receipt. All communications shall be sent to the respective parties at their address as set forth on the signature page or to such e-mail address, facsimile number or address as subsequently modified by written notice given in accordance with this Subsection 11.6. If notice is given to the Company, a copy shall also be sent to Wilmer Cutler Pickering Hale and Dorr LLP, 60 State Street, Boston, MA 02109, Attention: Steven D. Singer and Gary R. Schall.

6.7. No Finder's Fees. Each party represents that it neither is nor will be obligated for any finder's fee or commission in connection with this transaction. The Purchaser agrees to indemnify and to hold harmless the Company from any liability for any commission or compensation in the nature of a finder's or broker's fee arising out of this transaction (and the costs and expenses of defending against such liability or asserted liability) for which the Purchaser or any of its officers, employees, or representatives is responsible. The Company agrees to indemnify and hold harmless each Purchaser from any liability for any commission or compensation in the nature of a finder's or broker's fee arising out of this transaction (and the costs and expenses of defending against such liability or asserted liability) for which the Company or any of its officers, employees or representatives is responsible.

6.8. Amendments and Waivers. Any term of this Agreement may be amended, terminated or waived only with the written consent of the Company and the Purchaser. Any amendment or waiver effected in accordance with this Subsection 8.8 shall be binding upon the Purchaser and each transferee of the Shares and/or any Anti-Dilution Shares, each future holder of all such Shares and/or any Anti-Dilution Shares, and the Company.

6.9. Severability. The invalidity or unenforceability of any provision hereof shall in no way affect the validity or enforceability of any other provision.

6.10. Delays or Omissions. No delay or omission to exercise any right, power or remedy accruing to any party under this Agreement, upon any breach or default of any other party under this Agreement, shall impair any such right, power or remedy of such non-breaching or non-defaulting party nor shall it be construed to be a waiver of any such breach or default, or an acquiescence therein, or of or in any similar breach or default thereafter occurring; nor shall any waiver of any single breach or default be deemed a waiver of any other breach or default theretofore or thereafter occurring. Any waiver, permit, consent or approval of any kind or character on the part of any party of any breach or default under this Agreement, or any waiver on the part of any party of any provisions or conditions of this Agreement, must be in writing and shall be effective only to the extent specifically set forth in such writing. All remedies, either under this Agreement or by law or otherwise afforded to any party, shall be cumulative and not alternative.

6.11. Entire Agreement. This Agreement constitutes the full and entire understanding and agreement between the parties with respect to the subject matter hereof, and any other written or oral agreement relating to the subject matter hereof existing between the parties are expressly canceled. For the avoidance of doubt, the provisions of this Agreement shall supersede any conflicting or inconsistent provisions of the License Agreement, and any such provision of the License Agreement shall be of no further force and effect.

6.12. Dispute Resolution. The parties (a) hereby irrevocably and unconditionally submit to the jurisdiction of the state courts of Delaware and to the jurisdiction of the United States District Court for the District of Delaware for the purpose of any suit, action or other proceeding arising out of or based upon this Agreement, (b) agree not to commence any suit, action or other proceeding arising out of or based upon this Agreement except in the state courts of Delaware or the United States District Court for the District of Delaware, and (c) hereby waive, and agree not to assert, by way of motion, as a defense, or otherwise, in any such suit, action or proceeding,

any claim that it is not subject personally to the jurisdiction of the above-named courts, that its property is exempt or immune from attachment or execution, that the suit, action or proceeding is brought in an inconvenient forum, that the venue of the suit, action or proceeding is improper or that this Agreement or the subject matter hereof may not be enforced in or by such court.

6.13. WAIVER OF JURY TRIAL. EACH PARTY HEREBY WAIVES ITS RIGHTS TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION BASED UPON OR ARISING OUT OF THIS AGREEMENT, THE OTHER TRANSACTION DOCUMENTS, THE SECURITIES OR THE SUBJECT MATTER HEREOF OR THEREOF. THE SCOPE OF THIS WAIVER IS INTENDED TO BE ALL-ENCOMPASSING OF ANY AND ALL DISPUTES THAT MAY BE FILED IN ANY COURT AND THAT RELATE TO THE SUBJECT MATTER OF THIS TRANSACTION, INCLUDING, WITHOUT LIMITATION, CONTRACT CLAIMS, TORT CLAIMS (INCLUDING NEGLIGENCE), BREACH OF DUTY CLAIMS, AND ALL OTHER COMMON LAW AND STATUTORY CLAIMS. THIS SECTION HAS BEEN FULLY DISCUSSED BY EACH OF THE PARTIES HERETO AND THESE PROVISIONS WILL NOT BE SUBJECT TO ANY EXCEPTIONS. EACH PARTY HERETO HEREBY FURTHER WARRANTS AND REPRESENTS THAT SUCH PARTY HAS REVIEWED THIS WAIVER WITH ITS LEGAL COUNSEL, AND THAT SUCH PARTY KNOWINGLY AND VOLUNTARILY WAIVES ITS JURY TRIAL RIGHTS FOLLOWING CONSULTATION WITH LEGAL COUNSEL.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the parties have executed this Restricted Stock Agreement as of the date first written above.

COMPANY:

IMARA INC.

By: _____
Name: _____
Title: _____

Address: _____
_____

PURCHASER:

H. LUNDBECK A/S

By: _____
Name: _____
Title: _____

Address: _____
_____

Exhibit G

Licensee's Code of Conduct

CODE OF BUSINESS CONDUCT AND ETHICS

This Code of Ethics and Conduct (hereafter the "Code") sets forth legal and ethical standards of conduct for directors, officers, employees and consultants of Imara, Inc. and any spin-out company of Imara (collectively "Imara"). This Code prohibits misconduct and seeks to ensure execution of all business activities in accordance with the highest standards of integrity and in full compliance with all applicable laws and regulations. Any questions regarding this Code or its application in particular situations should be directed to the President and CEO.

COMPLIANCE WITH LAWS, REGULATIONS AND POLICIES

All employees, officers, directors and consultants shall comply with all laws, rules and regulations applicable to Imara wherever it does business, as well as all internal Imara policies and procedures. All employees, officers, directors and consultants shall seek to preserve and protect free and open competition and to avoid abusive behavior that may restrain competition. The failure to comply with any applicable law, rule or regulation or with the standards outlined in Imara's internal policies and this Code is grounds for disciplinary action, up to and including termination. Certain violations of this Code may require Imara to refer the matter to the appropriate governmental or regulatory authorities for investigation.

CERTIFICATION AND TRAINING

This Code and any supporting or related materials shall be provided to each employee, officer, director and consultant upon commencement of his/her employment or other relationship with Imara and shall also be distributed annually to each employee, officer, director and consultant, all of whom shall certify annually in writing that he/she has received, read, understands and will comply with the Code. In the event that any employee, officer, director or consultant is not able to so certify, he/she shall receive training so that the individual understands the Code and can certify to compliance with it.

HONEST AND ETHICAL CONDUCT AND FAIR DEALING

Employees, officers, directors and consultants must deal honestly, ethically and fairly with all Imara suppliers, customers, competitors and employees. Statements regarding Imara activities must not be untrue, misleading, deceptive or fraudulent. Employees, officers, directors and consultants must not take unfair advantage of anyone through manipulation, concealment, abuse of privileged information, misrepresentation of material facts or any other unfair-dealing practice.

PROTECTION AND PROPER USE OF ASSETS

Employees, officers, directors and consultants shall protect all assets of Imara. Theft, carelessness and waste have a direct impact on financial performance. Imara's assets and services must be used solely for the legitimate business purposes of Imara and not for any personal benefit.

CONFLICT OF INTEREST

All employees, officers, directors and consultants must act in the best interests of Imara and shall refrain from engaging in any activity or otherwise pursing a personal interest that presents a potential conflict of interest. A potential conflict of interest occurs when a personal interest may potentially interfere, or appear to interfere, with the interests of Imara. Any potential conflict of interest should be fully disclosed and discussed with the President and CEO before any potentially conflicting action or interest is taken or pursued by an employee, officer, director or consultant.

CONFIDENTIALITY

Employees, officers, directors and consultants must maintain the confidentiality of information entrusted to them by Imara or other third-party companies, including suppliers, consultants, partners and spin-out companies, except when disclosure is authorized by a supervisor or is otherwise legally mandated. Unauthorized disclosure of any confidential information is prohibited. Additionally, all employees, officers, directors and consultants must take appropriate precautions to ensure that confidential or sensitive business information, whether it is proprietary to Imara or another company, is not communicated within Imara except to others who have a need to know such information to perform their responsibilities for Imara.

Third parties may ask for information concerning Imara and/or its members. Subject to the exceptions noted in the preceding paragraph, employees, officers, directors and consultants (other than authorized spokespersons) must not discuss internal matters with, or disseminate internal Imara information to, anyone outside Imara, except as required in the performance of their duties and after an appropriate confidentiality agreement approved by the President and CEO is in place.

MEDIA INQUIRIES

All media inquiries, whether oral, written, recorded or not recorded must be routed to the President and CEO. No employee, officer, director or consultant is authorized to speak about or on behalf of Imara or the activities of Imara, whether confidential or not confidential, to the media without prior written approval of the President and CEO.

PROMOTIONAL ACTIVITIES

All promotional activities conducted by Imara shall fully comply with all applicable laws, regulations, guidelines and industry standards. Employees, officers, directors and consultants shall (1) not offer any undue or inappropriate benefits in exchange for prescribing, recommending, purchasing, supplying or administering medical products; (2) only use promotional materials approved by Imara and that are up to date, complete, and include citations to the source of information; (3) only carry out promotion of products that have a valid market authorization in the country where the product is distributed and where Imara operates; (4) never engage in off-label promotional activities and only provide information in accordance with applicable local laws, regulations;(5) undergo appropriate promotional practices/activities compliance training as required by Imara; and (6) ensure that all samples provided to healthcare professionals are controlled and fully recorded.

CONTRACTING WITH HEALTHCARE PROFESSIONALS

Imara may contract with healthcare professionals for various services, including service on an advisory board or as a speaker on behalf of the company. Any relationship that Imara establishes with a healthcare professional for consulting services shall first be embodied in a formal, written contract that, at a minimum, sets out the nature of the consulting services to be provided and documents the need for and the professional purpose of all direct and indirect transfers of value whether in cash, in kind or otherwise made to a healthcare professional. The consulting contract shall provide that Imara will not compensate a healthcare professional for time spent traveling unless the consultant is conducting work for the company while traveling. Any compensation to a healthcare professional shall be based solely on the fair-market value of the consulting services to be provided. The consulting contract shall specify that the healthcare professional is engaged as a consultant to Imara and is subject to this Code.

Imara shall maintain systems and procedures to ensure that all transfers of value to healthcare professionals are recorded, reported or disclosed, as required under applicable laws, regulations and standards. In the event that a healthcare professional employed by Imara as a consultant or speaker also serves as a member of a committee that sets formularies or develops clinical guidelines, Imara shall require such consultant/speaker to disclose to that committee the existence and non-confidential nature of his or her relationship with the company.

SUPPORT FOR HEALTHCARE PROFESSIONALS AT CME MEETINGS AND OTHER PROFESSIONAL SCIENTIFIC CONFERENCES

Imara may provide financial assistance for scholarships or other educational funds to permit medical students, residents, fellows and other healthcare professionals in training to attend carefully selected educational conferences as long as the selection of the individuals who will receive such funds is made by the academic or training institution. For the purpose of such funding, carefully selected educational conferences means major educational, scientific or policy-making meetings of national, regional or specialty medical associations.

Except as provided above, Imara may not sponsor the participation of a healthcare professional at a scientific event or CME meeting and it will not compensate healthcare professionals for their time spent at events nor will it pay for any expenses incurred by spouses, family members or other companions of the healthcare professional. Imara shall avoid organizing or sponsoring entertainment, leisure or social activities for healthcare professional at such events. Nothing in this paragraph prevents Imara from compensating a healthcare professional who serves as a consultant to speak or present on behalf of the company at a scientific conference, as long as such compensation is at no more than fair market value and the consultant fully discloses his or her relationship with the company to the conference organizers and the audience.

GIFTS AND GRATUITIES

Employees, officers, directors and consultants may not engage, directly or indirectly, in bribery, including small amount bribes or facilitation payments, or in financial fraud of any kind. Imara may only offer only offer inexpensive informational materials or other items with a professional value for the recipient that are permitted by applicable regulations and industry standards. All employees, officers, directors and consultants must honestly and accurately report all business transactions, including all transfers of value to healthcare professionals. Accurate information is essential to Imara’s ability to meet legal and regulatory obligations and to prevent fraud and corruption.

CHARITABLE DONATIONS

Any donations of money or in-kind donations provided to charitable cause must first be approved by the President and CEO and (1) may only be made to a qualified, tax-exempt charitable organization for bona-fide purposes; (2) may not be made to obtain business advantages and; (3) must adhere to all applicable laws, regulations, guidelines and industry standards.

CLINICAL RESEARCH

Employees, officers, directors and consultants shall ensure that all clinical research activities are performed in accordance with applicable laws, regulations, guidelines and industry standards, including, without limitation, international guidelines, Good Clinical Practice (GCP) and ethical standards that meet international requirements. Furthermore, any employee, officer or consultant must be trained in relevant study procedures and applicable standards prior to participating in clinical research activities.

PHARMACOVIGILANCE

Imara shall maintain an effective pharmacovigilance system that meets applicable international and national laws, regulations, guidelines and industry standards. This system shall be designed to detect and report any suspected adverse events associated with the use of Imara products. Imara shall also maintain systems that allow it to detect and report incidences of counterfeit or suspected counterfeit products.

HUMAN RESOURCES

All activities conducted by Imara shall comply with applicable national and international laws relating to human rights and labor rights. Imara will ensure that it: (1) provides all employees with at least a minimum amount of income to meet their basic needs; (2) provides employees with the right to rest; (3) protects employees against discrimination in the workplace; (4) protects employees against coercion and degrading treatment; (5) respects employees' rights to freedom of association; and (6) upholds the effective abolition of child labor.

HEALTH, SAFETY AND ENVIRONMENT

Imara shall: (1) maintain health, safety and environment procedures that ensure compliance with applicable laws, regulations, guidelines and industry standards; and (2) ensure that all employees and consultants have the working conditions and knowledge that are required to carry out their responsibilities in a healthy and safe manner that minimizes impacts on the environment.

ANIMAL RESEARCH

Imara shall maintain animal research policies and procedures that comply with all applicable laws, regulations, guidelines and industry standards. Employees, officers and consultants who work with animals may only do so if they receive appropriate education and training.

BOOKS AND RECORDS

All books, records and accounts shall be maintained in accordance with all applicable regulations and standards and accurately reflect the true nature of the transactions they record. All financial statements must conform to generally accepted accounting rules and policies. No undisclosed or unrecorded account or fund shall be established for any purpose. No false or misleading entries shall be made in any books or records for any reason, and no disbursement of corporate funds or other corporate property shall be made without adequate supporting documentation. It is the policy of Imara to provide full, fair, accurate, timely and understandable disclosure in reports and documents filed.

DEALINGS WITH INDEPENDENT AUDITORS

No employee, officer, director or consultant may, directly or indirectly:(1) make a materially false or misleading statement to an accountant in connection with any audit, review or examination of Imara financial statements or the preparation or filing of any document or report; or (2) take any other action to coerce, manipulate, mislead or fraudulently influence any independent public or certified public accountant engaged in the performance of an audit or review of Imara financial statements.

EXCEPTIONS TO THE CODE

The policies set forth in this Code must be strictly followed. Any employee, officer, director or consultant who believes that an exception to any of these policies is warranted in an individual case must first clear the matter with the President and CEO. The President and CEO shall maintain a record of all requests for exceptions to any of these policies and the disposition of such requests. Any officer or director who seeks an exception to any of these policies must first contact the Chairman of the Board of Directors. Any waiver of this Code for officers or directors may only be made only by the Board of Directors of Imara and will be disclosed as required by law.

REPORTING AND COMPLIANCE PROCEDURES

Any employee, officer, director or consultant who becomes aware of the violation of any law, rule or regulation by Imara (or any employee, officer, director or consultant) shall promptly report the matter to the President and CEO. Imara will investigate all such reports and may report suspected violations of healthcare laws, securities laws, antitrust laws, environmental laws or any other federal, state or foreign law, rule or regulation, to the appropriate regulatory authority. Employees, officers, directors and consultants shall not discharge, demote, suspend, threaten, harass or in any other manner discriminate or retaliate against any individual who reports any such violation.

If the President and CEO receives information regarding an alleged violation of this Code, he/she shall, as appropriate: (1) evaluate such information; (2) inform the Executive Committee of the Board of Directors of the alleged violation if the alleged violation involves an Executive Officer or a Director of the Board; (3) determine whether it is necessary to conduct an informal inquiry or a formal investigation and, if so, initiate such inquiry or investigation; and (4) report the results of any such inquiry or investigation to the Board, along with a recommendation as to the actions to be taken. If the alleged violation involves an officer or a director, the results of any such

inquiry or investigation shall be reported to the Executive Committee of the Board of Directors. Employees, officers, directors and consultants are expected to cooperate fully with any inquiry or investigation by Imara regarding an alleged violation of this Code. Failure to cooperate with any such inquiry or investigation may result in disciplinary action, up to and including termination.

AMENDMENT #1 TO
EXCLUSIVE LICENSE AGREEMENT

THIS AMENDMENT #1 TO EXCLUSIVE LICENSE AGREEMENT (this "Amendment") is made as of 21 July 2016, by and between H. Lundbeck A/S, a for profit corporation organized and existing under the laws of Denmark with company registration no. (CVR) 56759913 ("Lundbeck"), and Imara, Inc., a Delaware, U.S.A. corporation ("Imara").

WHEREAS, Lundbeck and Imara are parties to that certain Exclusive License Agreement dated April 11, 2016, pursuant to which Lundbeck has granted, and Imara has received, an exclusive, royalty-bearing license under the Licensed Patent Rights to develop, make, have made, use, import, offer for sale or sell or otherwise distribute Licensed Products within the Field (the "Agreement"); and

WHEREAS, Lundbeck and Imara now desire to amend the Agreement to augment the Listed Countries thereunder.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and of other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Lundbeck and Imara hereby agree to be legally bound as follows:

1. Exhibit E of the Agreement (titled "Listed Countries") is hereby amended and replaced in its entirety with Exhibit E to this Amendment.
2. Except as expressly amended by the foregoing, the Agreement shall continue in full force and effect, including defined terms used in this Amendment that are not otherwise defined herein having the definitions set forth in the Agreement.

IN WITNESS WHEREOF, the undersigned, intending to be legally bound, have duly executed this Amendment as of 21 July 2016.

H. LUNDBECK A/S

By: /s/ Kim Andersen
Authorized Signature

Kim Andersen

Senior Vice President

IMARA, INC.

By: /s/ James McArthur
Authorized Signature

James G. McArthur

President and Chief Executive Officer

Amendment Number 2
to
Exclusive License Agreement

This Amendment Number 2 to Exclusive License Agreement (this "Agreement") dated as of October 9, 2017 (the "Date of this Agreement") is made by and between IMARA, INC., a Delaware, U.S.A. corporation ("Licensee") and having an address at 700 Technology Square, 3rd Floor, Cambridge, MA 02139, and H. LUNDBECK A/S, a for profit corporation organized and existing under the laws of Denmark with company registration no. (CVR) 56759913 ("Licensor") and having an address at Ottiliavej 9, DK-2500 Valby, Copenhagen, Denmark. Licensee and Licensor are parties to that certain Exclusive License Agreement dated as of April 11, 2016 and amended on July 21, 2016 (the "License Agreement"). Licensee and Licensor may be referred to herein individually as a "Party" or, collectively as the "Parties." All capitalized terms used herein that are not otherwise defined herein shall have their respective meanings as set forth in the License Agreement.

Recitals

WHEREAS, Licensee wishes to expand the Field in which it may exploit the license rights granted to it under the License Agreement, and Licensor is willing to expand such license grant subject to the terms and conditions of this Agreement and the License Agreement;

NOW, THEREFORE, in consideration of the premises, the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, hereby agree as follows:

1. The License Agreement is hereby amended by deleting Section 1.17 in its entirety and substituting therefor the following:

> "1.17. "Field" means, alone or in combination, the prevention, treatment or diagnosis of all (i) Hemoglobinopathy (HGP) disorders, and/or (ii) other diseases or disorders, including those directly or indirectly related to hemoglobinopathies, (e.g., Sickle Cell Disease). Notwithstanding the foregoing, or anything to the contrary in this Agreement, the prevention, treatment and/or diagnosis of disorders and/or diseases of the central nervous system (CNS), whether alone or in combination, are excluded from the Field.

2. The License Agreement is hereby amended by deleting the last two milestones set forth in the table in Section 4.3(a) in their entirety and substituting therefor the following four milestones:

[**]	US $[**]
[**]	US $[**]
[**]	US $[**]
[**]	US $[**]

* For purposes of this milestone, "[**]" shall be deemed to be by reference to a [**], and "[**]" includes [**].

3. The License Agreement is hereby amended by deleting the last two milestones set forth in the table in Section 4.3(b) in their entirety and substituting therefor the following four milestones:

[**]	US $[**]
[**]	US $[**]
[**]	US $[**]
[**]	US $[**]

* For purposes of this milestone, "[**]" shall be deemed to be by reference to a [**], and "[**]" includes [**].

4. **REPRESENTATIONS AND WARRANTIES**

Section 4.1 Representations of Authority. Each Party represents and warrants to the other that as of the Effective Date it has full right, power and authority to enter into this Agreement and to perform its respective obligations under this Agreement.

Section 4.2 Consents. Each Party represents and warrants that as of the Date of this Agreement all necessary consents, approvals and authorizations of all government authorities and other Persons required to be obtained by such Party in connection with execution, delivery and performance of this Agreement have been obtained.

Section 4.3 No Conflict. Each Party represents and warrants that, as of the Date of this Agreement, the execution and delivery of this Agreement and the amendments to the License Agreement contemplated hereby (a) do not conflict with or violate any requirement of Laws and (b) do not conflict with, violate or breach or constitute a default of, or require any consent under, any contractual obligations of such Party, except such consents as have been obtained as of the Date of this Agreement.

Section 4.4 Intellectual Property. Licensor represents and warrants to Licensee that Licensor has the right to grant to Licensee the rights and licenses under the Licensed Patent Rights granted in the License Agreement, as amended by this Agreement, and has not previously assigned, transferred, conveyed or otherwise encumbered its right, title and interest in Licensed Patent Rights in any manner inconsistent with the terms of the License Agreement, as amended by this Agreement.

Section 4.5 No Warranties. **EXCEPT AS OTHERWISE EXPRESSLY SET FORTH HEREIN OR IN THE LICENSE AGREEMENT, THE PARTIES MAKE NO REPRESENTATIONS AND EXTEND NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT, OR NON-MISAPPROPRIATION OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS, ARE MADE OR GIVEN BY OR ON BEHALF OF A PARTY. EXCEPT AS EXPRESSLY STATED IN THIS AGREEMENT OR THE LICENSE AGREEMENT, ALL REPRESENTATIONS AND WARRANTIES, WHETHER ARISING BY OPERATION OF LAW OR OTHERWISE, ARE HEREBY EXPRESSLY EXCLUDED.**

5. **MISCELLANEOUS**

Section 5.1 Entire Agreement of the Parties. This Agreement constitutes and contains the entire understanding and agreement of the Parties respecting the subject matter hereof and cancels and supersedes any and all prior negotiations, correspondence, understandings and agreements between the Parties, whether oral or written, regarding such subject matter, except for the License Agreement as amended by this Agreement.

Section 5.2 Governing Law; Language. This Agreement and all disputes arising out of or related to this Agreement shall be construed and the respective rights of the Parties determined in accordance with the laws of the State of New York, U.S.A., excluding application of any conflict of laws principles that would require application of the laws of a jurisdiction outside of New York, and will be subject to the exclusive jurisdiction of the courts of competent jurisdiction located in New York, New York. The Parties hereby expressly consent to the jurisdiction of such courts and irrevocably waive any objection to jurisdiction or venue. This Agreement and all communications related to it, or to any dispute or controversy arising out of it, shall be conducted in English. The dispute resolution provisions of the License Agreement shall apply to any dispute arising out of or relating to this Agreement.

Section 5.3 Counterparts. This Agreement may be executed in counterparts, each of which counterparts, when so executed and delivered, shall be deemed to be an original, and all of which counterparts, taken together, shall constitute one and the same instrument

Section 5.4 Effect on License Agreement. Except as expressly modified by the terms of this Agreement, the License Agreement shall remain unchanged and in full force and effect. The License Agreement, as amended by this Agreement, is hereby ratified and affirmed.

Section 5.5 Effectiveness. This Agreement, and its effect as an amendment to the License Agreement, shall be effective as of the Date of this Agreement.

[*Signature page follows*]

IN WITNESS WHEREOF, the Parties, through their duly authorized representatives, have executed this Amendment Number 2 to Exclusive License Agreement as of the date first set forth above.

H. LUNDBECK A/S

By: /s/ Kim Andersen
Name: Kim Andersen
Title: Senior Vice President

IMARA, INC.

By: /s/ James McArthur
Name: James McArthur
Title: CEO and President

Exhibit 10.8

Imara, Inc.
700 Technology Square, 3rd Floor
Cambridge, MA 02139 USA

Info@Imaratx.com
+ 1 617 231-6021

www.imaratx.com

August 12, 2019

Rahul Ballal

Dear Rahul:

On behalf of IMARA Inc., a Delaware corporation (the "**Company**"), I am very pleased to offer you this revised "**letter agreement**" with the Company. This letter agreement shall supersede, amend and restate in all respects the letter agreement between you and the Company dated April 17, 2018 (the "**Former Letter Agreement**"), *provided*, and for the avoidance of doubt, that nothing herein supersedes the Invention and Non-Disclosure Agreement or the Non-Competition and Non-Solicitation Agreement signed by you concurrently with the Former Letter Agreement (the "**Restrictive Covenant Agreements**"), which remain in effect, unaltered, in all respects.

The terms of your employment with the Company are as set forth below:

1. Position. You will be employed to serve as Chief Executive Officer of the Company. As Chief Executive Officer, you will have the duties, authorities and responsibilities that are customarily associated with such position, and such other duties, authorities and responsibilities the Board of Directors of the Company (the "**Board**") designates from time to time that are not inconsistent with such position. You will perform such duties to the Company primarily at the Company's headquarters in Cambridge, Massachusetts. You will report directly to the Board. While an employee of the Company, you will devote substantially all of your professional time and efforts to the business of the Company. Any outside professional or other business activity you engage in must be approved in advance by the Board and must not conflict with your duties to the Company.

2. Compensation.

a. *Base Salary*. Commencing on April 1, 2019, your base salary is paid at the rate of $17,708 semi-monthly (i.e. a gross aggregate amount of $425,000 per annum assuming continuing service over a 12-month period), subject to tax and other withholdings as required by law. Your salary shall be reviewed annually by the Board.

b. *Discretionary Bonus Program*. You will be eligible for an annual discretionary bonus of up to forty percent (40%) of your annualized base salary to allow you to participate in the success of the Company based upon a combination of Company achievements and your performance, both as determined in the sole discretion of the Board. Any annual bonus shall be paid no later than March 15th of the year immediately following the year to which the applicable annual bonus relates, and you must be an active employee of the Company on the date

any bonus is paid to be eligible for and to earn a bonus award. No bonus shall be considered to be earned until it is paid, as it also serves as an incentive to remain employed by the Company.

c. *Option*. The Company has granted you (i) an option to purchase 2,023,804 shares of the Company's Class A Common Stock at a price per share equal to the fair market value per share of the common stock on the date of grant, as determined by the Board (the "**Initial Option Grant**"), and (ii) an option to purchase an additional 630,814 shares of the Company's Class A Common Stock at a price per share equal to the fair market value per share of the common stock on the date of grant, as determined by the Board (the "**Milestone Option Grant**" and, together with the Initial Option Grant, the "**Option**").

The Option shall be subject to all terms and other provisions set forth in the Company's 2016 Stock Incentive Plan (as amended from time to time, the "**Plan**")) and in a separate option agreement ("**Option Agreement**"), which will provide for (i) vesting of shares subject to the Option as follows so long as you have been continuously providing services to the Company as an employee, consultant or advisor through each vesting date: (A) 25% of such shares will vest on the first anniversary of the applicable Vesting Commencement Date (as defined below) and (B) the remainder of such shares will vest in equal quarterly installments after the first anniversary of the applicable Vesting Commencement Date over the three year period thereafter; and (ii) the acceleration of vesting on all unvested shares subject to the Initial Option Grant and (if the Milestone Closing has occurred) the Milestone Option Grant if a Qualifying Termination (as defined in Section 5(b)) occurs within 12 months after a Change of Control (as defined below) (such 12-month period, the "**Change of Control Period**"), so long as you have been continuously providing services as an employee (even if on leave of absence), consultant or advisor to the Company from the commencement of your employment up to and including such Change of Control through the date of such qualifying termination without Cause or such qualifying resignation for Good Reason, and provided that you timely sign and do not revoke a Release (as defined below). To avoid doubt, if the Milestone Closing has not occurred, the vesting of the shares subject to the Milestone Option Grant shall not be subject to acceleration as described in the preceding sentence.

The "**Vesting Commencement Date(s)**" for the Option shall be as follows: (A) for the Initial Option Grant, the Vesting Commencement Date shall be March 15, 2019, and (B) for the Milestone Option Grant, the Vesting Commencement Date shall be the date of the Milestone Closing (as defined in the Series B Preferred Stock Purchase Agreement dated as of March 15, 2019 (the "**Purchase Agreement"**)). In the event that the Milestone Closing does not occur prior to September 15, 2020 (eighteen (18) months following the Initial Closing (as defined in the Purchase Agreement), then the Milestone Option Grant shall be forfeited in its entirety.

d. *Withholdings*. The Company shall withhold from any compensation or benefits payable under this letter agreement any federal, state and local income, employment or other similar taxes and withholdings as may be required to be withheld pursuant to any applicable law or regulation.

3. Benefits.

a. *Vacation & Holidays*. You will be eligible for four (4) weeks of paid vacation each year, to be accrued and used consistent with the Company's vacation policy. You will also be eligible for Company-paid holidays in accordance with Company policy.

b. *Other*. You may participate in any and all benefit programs that the Company establishes and makes available to its employees from time to time, provided that you are eligible under (and subject to all provisions of) the plan documents that govern those programs. Benefits are subject to change at any time in the Company's sole discretion. Currently, the Company pays for 80% of employee group health insurance premiums. In addition, the Company currently anticipates establishing an employee 401 (k) plan. The Company will also reimburse 100% of the parking/commuting cost of one of the following; Monthly Parking at a designated parking garage lot, Charlie Card T-Pass, or Commuter Rail.

c. *Expenses*. The Company shall reimburse you for all ordinary and reasonable out-of-pocket business expenses incurred by you in furtherance of the Company's business in accordance with the Company's policies with respect thereto as in effect from time to time. In order to be eligible for any expense reimbursement hereunder, you must (i) submit reasonable documentation evidencing the nature and amount of any such business expenses incurred by you and (ii) submit any request for reimbursement no later than ninety (90) days following the date that such business expense is incurred.

4. At-Will Employment. Your employment with the Company is and shall at all times during your employment hereunder be "at-will" employment. The Company or you may terminate your employment at any time for any reason, with or without Cause or Good Reason, and with or without notice. You agree that although your title, duties, compensation or benefits may change from time to time, such changes will not change the "at-will" nature of your employment during your tenure as an employee of the Company, and may only be changed by an express written agreement that is signed by you and an officer duly authorized by the Board (other than you).

5. Termination of Employment.

a. If you resign your employment with the Company without Good Reason or the Company terminates your employment for Cause you will receive no additional compensation other than: (i) any unpaid base salary for services rendered through the last day of your employment (the "**Termination Date**"); (ii) reimbursement of any un-reimbursed business expenses incurred as of the Termination Date in accordance with the Company's reimbursement policy; (iii) payment for any accrued but unused vacation time (if applicable) earned through the Termination Date; and (iv) all other earned payments, vested benefits or vested or earned fringe benefits to which you shall be entitled under the terms of any applicable compensation arrangement or benefit, equity or fringe benefit plan or program or grant or this letter agreement (collectively, clauses (i) through (iv) shall be referred herein as the "**Accrued Benefits**"). The Accrued Benefits will be paid to you consistent with applicable law.

b. If the Company terminates your employment for any reason other than Cause (except for termination due to your death or Disability,) or you resign for Good Reason (in either case, a "**Qualifying Termination**"), you will receive the Accrued Benefits, and, based upon satisfaction of the criteria in Section 5(d) below, including without limitation your execution and delivery of the separation and release agreement described therein and the lapse of any applicable revocation period without the release being revoked, you shall be eligible to receive the following severance benefits: (i) severance pay in the form of continuation of your base salary in effect as of the Termination Date for a period of twelve (12) months, less standard deductions, payable in accordance with the Company's then regular pay policies commencing on or before the sixtieth (60th) day following the Termination Date ("**Severance Pay**"), provided, that the first such payment shall include any amounts that would have been paid to you hereunder had the release become effective upon the Termination Date; and (ii) following the Termination Date, if you are eligible for and elect to continue your health insurance coverage pursuant to your rights under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended, or any state equivalent ("**COBRA**"), then the Company shall reimburse you for your premiums under COBRA on a monthly basis until the earlier of (x) twelve (12) months following the Termination Date, or (y) the date upon which you commence full-time employment (or employment that provides you with eligibility for healthcare benefits substantially comparable to those provided by the Company) with an entity other than the Company. Notwithstanding any of the foregoing, if the 60-day period following the Termination Date would end in a calendar year subsequent to the year in which the Termination Date occurs, the payments under this Section 5(b) will not be paid or commence before the first payroll of the subsequent calendar year. In addition, if you experience a Qualifying Termination during the Change of Control Period, and subject to Section 5(d), the Company shall pay you one hundred percent (100%) of your annual bonus target amount for the year in which the Termination Date occurred in a lump sum on the date the first installment of Severance Pay is paid.

c. If your employment terminates because of your death or Disability, then you will receive the Accrued Benefits. For purposes of this letter agreement, "**Disability**" shall be defined as your inability to have performed your material duties hereunder due to a physical or mental injury, infirmity or incapacity for a consecutive one hundred eighty (180) days (including weekends and holidays) in any 365-day period. Notwithstanding the foregoing, in the event that as a result of earlier absence because of mental or physical incapacity you incur a "separation from service" within the meaning of such term under Section 409A of the Internal Revenue Code and the rules and regulations promulgated thereunder ("**Code Section 409A**") you shall on such date automatically be terminated from employment as a Disability termination.

d. Eligibility for receipt of the severance benefits and other pay and benefits in Section 5(b) shall be conditioned on your (i) returning to the Company all of its property and confidential information that is in your possession or control, and (ii) prior to the date provided in the Release, but in no event later than the 60-day period following the Termination Date, signing and not revoking a separation and release of claims agreement in a form provided by the Company (the "**Release**"), provided, that such Release shall (A) not expand your post-termination obligations or restrictive covenants to the Company and its affiliates greater than as

described in this letter agreement and in the Restrictive Covenant Agreements, (B) not terminate any of your rights to indemnification and defense which you will have given your role at the Company, (C) not impact any rights that you may have as a stockholder in the Company, (D) not release your rights to the Accrued Benefits, and (E) contain, among other things, a general release of claims against the Company, its affiliates and each of its and their officers, directors, employees, agents and attorneys, and the following provisions:

(I) You agree that for the three (3)-year period following the Termination Date you, directly or indirectly, orally, in writing or through any medium (including, but not limited to, the press or other media, computer networks or bulletin boards, or any other form of communication) will not make any false statement, disparage or defame the goodwill or reputation of the Company, its affiliates or their respective directors, managers, officers, stockholders, members, agents and/or employees. Nothing herein shall prohibit you (i) from disclosing that you are no longer employed by the Company, (ii) from responding truthfully to subpoena, court order or other compulsory legal process, (iii) from rebutting in good faith statements made by the other party that are untrue or misleading, or (iv) providing truthful information to a government entity; and

(II) You acknowledge and reaffirm your continuing obligations as set forth in the Restrictive Covenants Agreements.

e. For all purposes of this letter agreement, the term **"Cause"** shall mean: (i) a good faith finding by the Company that you have engaged in willful misconduct or gross negligence as to a material matter in connection with your duties; (ii) any act constituting fraud with respect to the Company; (iii) the indictment for, conviction of, or a plea of guilty or *nolo contendere* to, a felony under applicable law; (iv) a good faith finding by the Company that you have engaged in material violation of a material term of this letter agreement, the Restrictive Covenants Agreements or any written Company policy made available to you; (v) your failure to attempt in good faith to (A) perform your duties in all material respects or (B) follow a clear, lawful and reasonable directive of the Board; or (vi) a material breach of a fiduciary duty owed to the Company that has caused, or could reasonably be expected to cause, a material injury to the Company; provided, that in no event shall your employment be terminated for Cause unless (A) an event or circumstance set forth in clauses (i) through (vi) has occurred and the Company provides you with written notice after Company has knowledge of the occurrence of existence of such event or circumstance, which notice reasonably identifies the event or circumstance that the Company believes constitutes Cause and (B) with respect to the events and circumstances set forth in clauses (iv) and (v) only, you fail to substantially cure the event or circumstance so identified within 30 days of the receipt of such notice, if the Board considers the situation to be reasonably correctable.

f. For all purposes of this letter agreement, the term **"Good Reason"** shall mean, each without your consent: (i) a material diminution in your authority, duties or responsibilities (other than temporarily while physically or mentally incapacitated or as required by applicable law); (ii) a material reduction by the Company in your annual base salary; (iii) relocation of your primary office at the Company's headquarters in the Cambridge, Massachusetts metropolitan

area to another location by more than twenty (20) miles; or (iv) a material breach by the Company of a material term of this letter agreement. You shall provide the Company with a written notice detailing the specific circumstances alleged to constitute Good Reason within ninety (90) days after the first occurrence of such circumstances, and the Company shall have thirty (30) days following receipt of such notice to cure such circumstances in all material respects, provided, that, no termination for Good Reason shall occur unless you end your employment within 180 days after the first occurrence of any Good Reason event.

g. For all purposes of this letter agreement, the term "**Change of Control**" shall mean: (i) any merger, reorganization, consolidation, recapitalization or other transaction or series of related transactions, including a transfer of shares of capital stock, whether or not the Company is the surviving or continuing corporation in such transaction, and whether or not the Company is a party thereto, that results in the holders of shares of capital stock immediately prior to such transaction or transactions holding, immediately after such transaction or transactions (whether by virtue of securities issued as consideration for the transaction or otherwise), less than 50% of the voting power and economic interest of the surviving, continuing or purchasing entity; or (ii) any sale, lease, exclusive license or other disposition of all or substantially all of the assets (tangible or intangible) of the Company and any subsidiaries taken as a whole.

6. Section 409A.

a. The intent of the parties is that payments and benefits under this letter agreement comply with, or be exempt from, Code Section 409A and, accordingly, to the maximum extent permitted, this letter agreement shall be interpreted to be in compliance therewith or exempt therefrom. If you notify the Company (with specificity as to the reason therefor) that you believe that any provision of this letter agreement (or of any award of compensation, including equity compensation or benefits) would cause you to incur any additional tax or interest under Code Section 409A and the Company concurs with such belief or the Company independently makes such determination, the Company shall, after consulting with you, reform such provision to try to comply with Code Section 409A through good faith modifications to the minimum extent reasonably appropriate to conform with Code Section 409A. To the extent that any provision hereof is modified in order to comply with Code Section 409A, such modification shall be made in good faith and shall, to the maximum extent reasonably possible, maintain the original intent and economic benefit to you and the Company of the applicable provision without violating the provisions of Code Section 409A.

b. A termination of employment shall not be deemed to have occurred for purposes of any provision of this letter agreement providing for the payment of any amounts or benefits upon or following a termination of employment that are considered "nonqualified deferred compensation" under Code Section 409A unless such termination is also a "separation from service" within the meaning of Code Section 409A and, for purposes of any such provision of this letter agreement, references to a "termination," "termination of employment" or like terms shall mean "separation from service." Notwithstanding any provision to the contrary in this letter agreement, no payments or benefits that are considered "nonqualified deferred

compensation" under Code Section 409A to which you otherwise become entitled under this letter agreement in connection with your termination of employment, shall be made or provided to you prior to the earlier of (i) the expiration of the six (6) month period measured from the date of your "separation from service" with the Company (as such term is defined in Code Section 409A) or (ii) the date of your death, if you are deemed at the time of such separation from service to be a "specified employee" under Code Section 409A. Upon the expiration of the applicable Code Section 409A(a)(2) deferral period, all payments and benefits deferred pursuant to this Section 6(b) (whether they would have otherwise been payable in a single sum or in installments in the absence of such deferral) shall be paid or reimbursed to you in a lump sum, and any remaining payments and benefits due under this letter agreement shall be paid or provided in accordance with the normal payment dates specified for them herein.

c. All expenses or other reimbursements under this letter agreement shall be made promptly following submission of required documentation, and in any case on or prior to the last day of the taxable year following the taxable year in which such expenses were incurred by you (provided that if any such reimbursements constitute taxable income to you, such reimbursements shall be paid no later than March 15th of the calendar year following the calendar year in which the expenses to be reimbursed were incurred), and (i) the right to reimbursement or in-kind benefits shall not be subject to liquidation or exchange for another benefit and (ii) no such reimbursement or expenses eligible for reimbursement in any taxable year shall in any way affect the expenses eligible for reimbursement in any other taxable year, provided, that the foregoing clause (ii) shall not be violated with regard to expenses reimbursed under any arrangement covered by Section 105(b) of the Internal Revenue Code solely because such expenses are subject to a limit related to the period the arrangement is in effect.

d. For purposes of Code Section 409A, your right to receive any installment payment pursuant to this letter agreement shall be treated as a right to receive a series of separate and distinct payments. Neither you nor the Company shall have the right to accelerate or defer the delivery of any payments or benefits under this letter agreement except to the extent specifically permitted or required by Section 409A. Whenever a payment under this letter agreement specifies a payment period with reference to a number of days (e.g., "payment shall be made within thirty (30) days following the date of termination"), the actual date of payment within the specified period shall be within the sole discretion of the Company. Notwithstanding any other provision of this letter agreement to the contrary, in no event shall any payment under this letter agreement that constitutes "nonqualified deferred compensation" for purposes of Code Section 409A be subject to offset, counterclaim or recoupment by any other amount payable to you unless otherwise permitted by Code Section 409A.

7. Resolution of Disputes. Any controversy or claim arising out of or relating to your employment, this letter agreement, its enforcement or interpretation, or because of an alleged breach, default, or misrepresentation in connection with any of its provisions, shall be submitted to arbitration in Boston, Massachusetts before a single arbitrator (applying Massachusetts law), in accordance with the National Rules for the Resolution of Employment Disputes then in effect of the American Arbitration Association ("**AAA**") as modified by the terms and conditions of this Section 7; provided, however, that provisional injunctive relief

(including without limitation under the Restrictive Covenants Agreements) may, but need not, be sought in a court of law before or while arbitration proceedings are pending, and any provisional injunctive relief granted by such court shall remain effective until the matter is finally determined by the arbitrator. The arbitrator shall be selected by mutual agreement of the parties or, if the parties cannot agree, by striking from a list of arbitrators supplied by AAA. The arbitrator shall issue a written opinion revealing, however briefly, the essential findings and conclusions upon which the award is based. Final resolution of any dispute through arbitration may include any remedy or relief, which the arbitrator deems just and equitable. Any award or relief granted by the arbitrator hereunder shall be final and binding on the parties hereto and may be enforced by any court of competent jurisdiction.

The parties acknowledge that they are hereby waiving any rights to trial by jury in any action, proceeding or counterclaim brought by either of the parties against the other in connection with any matter whatsoever arising out of or in any way connected with this letter agreement or your employment.

The Company shall pay the arbitrator's fees and arbitration expenses and any other costs associated with the arbitration or arbitration hearing that are unique to arbitration. The Company and you each shall separately pay its or your own deposition, witness, expert and attorneys' fees and other expenses as and to the same extent as if the matter were being held in court unless otherwise provided by law. The arbitrator shall have the sole and exclusive power and authority to decide any and all issues of or related to whether this letter agreement or any provision of this letter agreement is subject to arbitration.

8. No Inconsistent Obligations. By accepting this offer of employment, you represent and warrant to the Company that you are under no obligations or commitments, whether contractual or otherwise, that are inconsistent with your obligations set forth in this letter agreement or that would be violated by your employment by the Company. You agree that you will not take any action on behalf of the Company or cause the Company to take any action that will violate any agreement that you have with a prior employer.

9. Section 280G. Anything in this letter to the contrary notwithstanding, in the event that the amount of any compensation, payment, acceleration, benefit or distribution by the Company to or for your benefit, whether paid or payable or distributed or distributable pursuant to the terms of this letter or otherwise, calculated in a manner consistent with Section 280G of the Code and the applicable regulations thereunder (the "**Applicable Payments**"), would be subject to the excise tax imposed by Section 4999 of the Code, then the Applicable Payments shall be reduced (but not below zero) to the extent necessary so that the sum of all Applicable Payments shall not exceed the Threshold Amount (as defined below). In the event Applicable Payments are required to be reduced, the Applicable Payments shall be reduced in the following order: (1) cash payments not subject to Section 409A of the Code; (2) cash payments subject to Section 409A of the Code; (3) equity-based payments and acceleration; and (4) non-cash forms of benefits. For purposes of this letter, "**Threshold Amount**" shall mean three times your "base amount" within the meaning of Section 280G(b)(3) of the Code and the regulations promulgated thereunder less one dollar ($1.00).

10. Miscellaneous.

a. This letter agreement may be executed in counterparts, each of which shall be deemed to be an original but all of which together will constitute one and the same instrument.

b. The Company may only assign this letter agreement to a successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business and/or assets of the Company, provided, that such successor expressly agrees to assume and perform this letter agreement in the same manner and to the same extent that the Company would have been required to perform it if no such assignment had taken place, and the term "Company" shall include any such successor that assumes and agrees to perform this letter agreement, by operation of law or otherwise.

c. No provision of this letter agreement may be modified, waived or discharged unless such waiver, modification or discharge is agreed to in writing and signed by you and such officer as may be designated by the Board (other than you). No waiver by either party hereto at any time of any breach by the other party hereto of, or compliance with, any condition or provision of this letter agreement to be performed by such other party shall be deemed a waiver of similar or dissimilar provisions or conditions at the same or at any prior or subsequent time.

d. The validity, interpretation, construction and performance of this letter agreement shall be governed by the laws of the Commonwealth of Massachusetts without regard to the choice of law principles thereof.

e. This letter agreement embodies the entire agreement and understanding between the parties hereto with respect to the subject matter hereof and supersedes all prior oral or written agreements, discussions and/or understandings relating to the subject matter hereof, including without limitation the Former Letter Agreement, *provided*, and for the avoidance of doubt, that nothing herein supersedes the Restrictive Covenant Agreements, any Option Agreement(s) or the Plan, which remain in force and effect in accordance with their terms.

Please accept all of the terms as set forth herein by signing and returning this letter agreement.

Sincerely,

IMARA INC.

By: /s/ David Mott
Name: David Mott
Title: Chairman of the Board

Agreed: /s/ Rahul Ballal
Rahul Ballal
Date: August 12, 2019

Exhibit 10.9

Imara, Inc.
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www.imaratx.com

June 27, 2019

Mr. Willem Scheele

Dear Willem,

On behalf of IMARA Inc., a Delaware corporation (the "**Company**"), I am very pleased to offer you this revised "**letter agreement**" with the Company. This letter agreement shall supersede, amend and restate in all respects the letter agreement between you and the Company dated March 1, 2019 (the "**Former Letter Agreement**"), *provided*, and for the avoidance of doubt, that nothing herein supersedes the Employee Confidentiality, Assignment and Noncompetition Agreement signed by you on March 5, 2019 (the "**Restrictive Covenants Agreement**"), which remains in effect, unaltered, in all respects.

The terms of your employment with the Company are as set forth below:

1. Position. You will be employed to serve as Chief Medical Officer of the Company. As Chief Medical Officer, you will have the duties, authorities and responsibilities that are customarily associated with such position, and such other duties, authorities and responsibilities the Chief Executive Officer and the Company's Board of Directors (the "**Board**") designate from time to time that are not inconsistent with such position. You will perform such duties to the Company primarily at the Company's headquarters in Cambridge, Massachusetts. You will report directly to the Chief Executive Officer. While an employee of the Company, you will devote substantially all of your professional time and efforts to the business of the Company. Any outside professional or other business activity you engage in must be approved in advance by the Board and must not conflict with your duties to the Company.

2. Compensation.

a. *Base Salary.* Your base salary is paid at the rate of $14,791.66 semi-monthly (i.e. a gross aggregate amount of $355,000 per annum assuming continuing service over a 12-month period), subject to tax and other withholdings as required by law. Your salary shall be reviewed annually by the Board.

b. *Discretionary Bonus Program.* You are eligible for an annual discretionary bonus of up to thirty five percent (35%) of your annualized base salary to allow you to participate in the success of the Company based upon a combination of Company achievements and your performance, both as determined in the sole discretion of the Board. Any annual bonus shall be paid no later than March 15th of the year immediately following the year to which the applicable annual bonus relates, and you must be an active employee of the Company on the date any bonus

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is paid to be eligible for and to earn a bonus award. No bonus shall be considered to be earned until it is paid, as it also serves as an incentive to remain employed by the Company. Any bonus would be pro-rated for the 2019 calendar year based on your Start Date of March 15, 2019.

c. *Option.* The Company has granted you (i) an option to purchase 1,115,470 shares of the Company's Class A Common Stock at a price per share equal to the fair market value per share of the common stock on the date of grant, as determined by the Board (the "**Initial Option Grant**"), and (ii) an option to purchase an additional 189,244 shares of the Company's Class A Common Stock at a price per share equal to the fair market value per share of the common stock on the date of grant, as determined by the Board (the "**Milestone Option Grant**" and, together with the Initial Option Grant, the "**Option**").

The Option shall be subject to all terms and other provisions set forth in the Company's 2016 Stock Incentive Plan (as amended from time to time, the "**Plan**") and in a separate option agreement ("**Option Agreement**"), which will provide for (i) vesting of shares subject to the Option as follows so long as you have been continuously providing services to the Company as an employee, consultant or advisor through each vesting date: (A) 25% of such shares will vest on the first anniversary of the applicable Vesting Commencement Date (as defined below) and (B) the remainder of such shares will vest in equal quarterly installments after the first anniversary of the applicable Vesting Commencement Date over the three year period thereafter; and (ii) the acceleration of vesting on all unvested shares subject to the Initial Option Grant and (if the Milestone Closing has occurred) the Milestone Option Grant if a Qualifying Termination (as defined in Section 5(b)) occurs within 12 months after a Change of Control (as defined below) (such 12-month period, the "**Change of Control Period**"), so long as you have been continuously providing services as an employee (even if on leave of absence), consultant or advisor to the Company from the Start Date up to and including such Change of Control through the date of such qualifying termination without Cause or such qualifying resignation for Good Reason, and provided that you timely sign and do not revoke a Release (as defined below). To avoid doubt, if the Milestone Closing has not occurred, the vesting of the shares subject to the Milestone Option Grant shall not be subject to acceleration as described in the preceding sentence.

The "**Vesting Commencement Date(s)**" for the Option shall be as follows: (A) for the Initial Option Grant, the Vesting Commencement Date shall be March 15, 2019, and (B) for the Milestone Option Grant, the Vesting Commencement Date shall be the date of the Milestone Closing (as defined in the Series B Preferred Stock Purchase Agreement dated as of March 15, 2019 (the "**Purchase Agreement"**)). In the event that the Milestone Closing does not occur prior to September 15, 2020 (eighteen (18) months following the Initial Closing (as defined in the Purchase Agreement), then the Milestone Option Grant shall be forfeited in its entirety.

d. *Withholdings.* The Company shall withhold from any compensation or benefits payable under this letter agreement or the Restrictive Covenants Agreement (as applicable) any

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federal, state and local income, employment or other similar taxes and withholdings as may be required to be withheld pursuant to any applicable law or regulation.

3. Benefits.

a. *Vacation & Holidays.* You will be eligible for four (4) weeks of paid vacation each year, to be accrued and used consistent with the Company's vacation policy. You will also be eligible for Company-paid holidays in accordance with Company policy. In addition, you will be given professional time to continue your Honorary Consulship (HC) work as previously described. This will not count toward your vacation utilization.

b. *Other.* You may participate in any and all benefit programs that the Company establishes and makes available to its employees from time to time, provided that you are eligible under (and subject to all provisions of) the plan documents that govern those programs. Benefits are subject to change at any time in the Company's sole discretion. Currently, the Company pays for 80% of employee group health insurance premiums. In addition, the Company currently anticipates establishing an employee 401 (k) plan. The Company will also reimburse 100% of the parking/commuting cost of one of the following; Monthly Parking at a designated parking garage lot, Charlie Card T-Pass, or Commuter Rail.

c. *Expenses.* The Company shall reimburse you for all ordinary and reasonable out-of-pocket business expenses incurred by you in furtherance of the Company's business in accordance with the Company's policies with respect thereto as in effect from time to time. In order to be eligible for any expense reimbursement hereunder, you must (i) submit reasonable documentation evidencing the nature and amount of any such business expenses incurred by you and (ii) submit any request for reimbursement no later than ninety (90) days following the date that such business expense is incurred.

4. At-Will Employment. Your employment with the Company is and shall at all times during your employment hereunder be "at-will" employment. The Company or you may terminate your employment at any time for any reason, with or without Cause or Good Reason, and with or without notice. You agree that although your title, duties, compensation or benefits may change from time to time, such changes will not change the "at-will" nature of your employment during your tenure as an employee of the Company, and may only be changed by an express written agreement that is signed by you and an officer duly authorized by the Board (other than you).

5. Termination of Employment.

a. If you resign your employment with the Company without Good Reason or the Company terminates your employment for Cause you will receive no additional compensation other than: (i) any unpaid base salary for services rendered through the last day of your

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employment (the "**Termination Date**"); (ii) reimbursement of any un-reimbursed business expenses incurred as of the Termination Date in accordance with the Company's reimbursement policy; (iii) payment for any accrued but unused vacation time (if applicable) earned through the Termination Date; and (iv) all other earned payments, vested benefits or vested or earned fringe benefits to which you shall be entitled under the terms of any applicable compensation arrangement or benefit, equity or fringe benefit plan or program or grant or this letter agreement (collectively, clauses (i) through (iv) shall be referred herein as the "**Accrued Benefits**"). The Accrued Benefits will be paid to you consistent with applicable law.

b. If the Company terminates your employment for any reason other than Cause (except for termination due to your death or Disability) or you resign for Good Reason (in either case, a "**Qualifying Termination**"), you will receive the Accrued Benefits, and, based upon satisfaction of the criteria in Section 5(d) below, including without limitation your execution and delivery of the separation and release agreement described therein and the lapse of any applicable revocation period without the release being revoked, you shall be eligible to receive the following severance benefits: (i) severance pay in the form of continuation of your base salary in effect as of the Termination Date for a period of nine (9) months, less standard deductions, payable in accordance with the Company's then regular pay policies commencing on or before the sixtieth (60th) day following the Termination Date ("**Severance Pay**"), provided, that the first such payment shall include any amounts that would have been paid to you hereunder had the release become effective upon the Termination Date; and (ii) following the Termination Date, if you are eligible for and elect to continue your health insurance coverage pursuant to your rights under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended, or any state equivalent ("**COBRA**"), then the Company shall reimburse you for your premiums under COBRA on a monthly basis until the earlier of (x) nine (9) months following the Termination Date, or (y) the date upon which you commence full-time employment (or employment that provides you with eligibility for healthcare benefits substantially comparable to those provided by the Company) with an entity other than the Company. Notwithstanding any of the foregoing, if the 60-day period following the Termination Date would end in a calendar year subsequent to the year in which the Termination Date occurs, (i) the payments under this Section 5(b) will not be paid or commence before the first payroll of the subsequent calendar year; and (ii) any Severance Pay received in any calendar year shall be reduced by the amount of Garden Leave Pay you receive in the same such calendar year under, and as defined in, the Restrictive Covenants Agreement, provided that in no event shall the Severance Pay be reduced below $1000. In addition, if you experience a Qualifying Termination during the Change of Control Period, and subject to Section 5(d), the Company shall pay you seventy-five percent (75%) of your annual bonus target amount for the year in which the Termination Date occurred in a lump sum on the date the first installment of Severance Pay is paid.

c. If your employment terminates because of your death or Disability, then you will receive the Accrued Benefits. For purposes of this letter agreement, "**Disability**" shall be

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defined as your inability to have performed your material duties hereunder due to a physical or mental injury, infirmity or incapacity for a consecutive one hundred eighty (180) days (including weekends and holidays) in any 365-day period. Notwithstanding the foregoing, in the event that as a result of earlier absence because of mental or physical incapacity you incur a "separation from service" within the meaning of such term under Section 409A of the Internal Revenue Code and the rules and regulations promulgated thereunder ("**Code Section 409A**") you shall on such date automatically be terminated from employment as a Disability termination.

d. Eligibility for receipt of the severance benefits and other pay and benefits in Section 5(b) shall be conditioned on your (i) returning to the Company all of its property and confidential information that is in your possession or control, and (ii) prior to the date provided in the Release, but in no event later than the 60-day period following the Termination Date, signing and not revoking a separation and release of claims agreement in a form provided by the Company (the "**Release**") that contains, among other provisions, a 12-month post-employment noncompetition restriction and a seven (7) business day revocation period, provided, that such Release shall (A) not expand the scope of prohibited competitive activity greater than as described in the Restrictive Covenants Agreement, (B) not terminate any of your rights to indemnification and defense which you will have given your role at the Company, (C) not impact any rights that you may have as a stockholder in the Company, (D) not release your rights to the Accrued Benefits, and (E) contain, among other things, a general release of claims against the Company, its affiliates and each of its and their officers, directors, employees, agents and attorneys, and the following provisions:

(I) You agree that for the three (3)-year period following the Termination Date you, directly or indirectly, orally, in writing or through any medium (including, but not limited to, the press or other media, computer networks or bulletin boards, or any other form of communication) will not make any false statement, disparage or defame the goodwill or reputation of the Company, its affiliates or their respective directors, managers, officers, stockholders, members, agents and/or employees. Nothing herein shall prohibit you (i) from disclosing that you are no longer employed by the Company, (ii) from responding truthfully to subpoena, court order or other compulsory legal process, (iii) from rebutting in good faith statements made by the other party that are untrue or misleading, or (iv) providing truthful information to a government entity; and

(II) You acknowledge and reaffirm your continuing obligations as set forth in the Restrictive Covenants Agreement.

e. For all purposes of this letter agreement, the term "**Cause**" shall mean: (i) a good faith finding by the Company that you have engaged in willful misconduct or gross negligence as to a material matter in connection with your duties; (ii) any act constituting fraud with respect to the Company; (iii) the indictment for, conviction of, or a plea of guilty or *nolo contendere* to, a felony under applicable law; (iv) a good faith finding by the Company that you have engaged in

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material violation of a material term of this letter agreement, the Restrictive Covenants Agreement or any written Company policy made available to you; (v) your failure to attempt in good faith to (A) perform your duties in all material respects or (B) follow a clear, lawful and reasonable directive of the Board; or (vi) a material breach of a fiduciary duty owed to the Company that has caused, or could reasonably be expected to cause, a material injury to the Company; provided, that in no event shall your employment be terminated for Cause unless (A) an event or circumstance set forth in clauses (i) through (vi) has occurred and the Company provides you with written notice after Company has knowledge of the occurrence of existence of such event or circumstance, which notice reasonably identifies the event or circumstance that the Company believes constitutes Cause and (B) with respect to the events and circumstances set forth in clauses (iv) and (v) only, you fail to substantially cure the event or circumstance so identified within 30 days of the receipt of such notice, if the Board considers the situation to be reasonably correctable.

f. For all purposes of this letter agreement, the term "**Good Reason**" shall mean, each without your consent: (i) a material diminution in authority, duties or responsibilities of the person you are required to report to or a material diminution in your authority, duties or responsibilities (other than temporarily while physically or mentally incapacitated or as required by applicable law); (ii) a material reduction by the Company in your annual base salary; (iii) relocation of your primary office at the Company's headquarters in the Cambridge, Massachusetts metropolitan area to another location by more than twenty (20) miles; or (iv) a material breach by the Company of a material term of this letter agreement. You shall provide the Company with a written notice detailing the specific circumstances alleged to constitute Good Reason within ninety (90) days after the first occurrence of such circumstances, and the Company shall have thirty (30) days following receipt of such notice to cure such circumstances in all material respects, provided, that, no termination for Good Reason shall occur unless you end your employment within 180 days after the first occurrence of any Good Reason event.

g. For all purposes of this letter agreement, the term "**Change of Control**" shall mean: (i) any merger, reorganization, consolidation, recapitalization or other transaction or series of related transactions, including a transfer of shares of capital stock, whether or not the Company is the surviving or continuing corporation in such transaction, and whether or not the Company is a party thereto, that results in the holders of shares of capital stock immediately prior to such transaction or transactions holding, immediately after such transaction or transactions (whether by virtue of securities issued as consideration for the transaction or otherwise), less than 50% of the voting power and economic interest of the surviving, continuing or purchasing entity; or (ii) any sale, lease, exclusive license or other disposition of all or substantially all of the assets (tangible or intangible) of the Company and any subsidiaries taken as a whole.

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6. Section 409A.

a. The intent of the parties is that payments and benefits under this letter agreement and the Restrictive Covenants Agreement (as applicable) comply with, or be exempt from, Code Section 409A and, accordingly, to the maximum extent permitted, this letter agreement shall be interpreted to be in compliance therewith or exempt therefrom. If you notify the Company (with specificity as to the reason therefor) that you believe that any provision of this letter agreement (or of any award of compensation, including equity compensation or benefits) would cause you to incur any additional tax or interest under Code Section 409A and the Company concurs with such belief or the Company independently makes such determination, the Company shall, after consulting with you, reform such provision to try to comply with Code Section 409A through good faith modifications to the minimum extent reasonably appropriate to conform with Code Section 409A. To the extent that any provision hereof is modified in order to comply with Code Section 409A, such modification shall be made in good faith and shall, to the maximum extent reasonably possible, maintain the original intent and economic benefit to you and the Company of the applicable provision without violating the provisions of Code Section 409A.

b. A termination of employment shall not be deemed to have occurred for purposes of any provision of this letter agreement providing for the payment of any amounts or benefits upon or following a termination of employment that are considered "nonqualified deferred compensation" under Code Section 409A unless such termination is also a "separation from service" within the meaning of Code Section 409A and, for purposes of any such provision of this letter agreement, references to a "termination," "termination of employment" or like terms shall mean "separation from service." Notwithstanding any provision to the contrary in this letter agreement, no payments or benefits that are considered "nonqualified deferred compensation" under Code Section 409A to which you otherwise become entitled under this letter agreement or the Restrictive Covenants Agreement in connection with your termination of employment, shall be made or provided to you prior to the earlier of (i) the expiration of the six (6) month period measured from the date of your "separation from service" with the Company (as such term is defined in Code Section 409A) or (ii) the date of your death, if you are deemed at the time of such separation from service to be a "specified employee" under Code Section 409A. Upon the expiration of the applicable Code Section 409A(a)(2) deferral period, all payments and benefits deferred pursuant to this Section 6(b) (whether they would have otherwise been payable in a single sum or in installments in the absence of such deferral) shall be paid or reimbursed to you in a lump sum, and any remaining payments and benefits due under this letter agreement or the Restrictive Covenants Agreement shall be paid or provided in accordance with the normal payment dates specified for them herein.

c. All expenses or other reimbursements under this letter agreement shall be made promptly following submission of required documentation, and in any case on or prior to the last day of the taxable year following the taxable year in which such expenses were incurred by you

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(provided that if any such reimbursements constitute taxable income to you, such reimbursements shall be paid no later than March 15th of the calendar year following the calendar year in which the expenses to be reimbursed were incurred), and (i) the right to reimbursement or in-kind benefits shall not be subject to liquidation or exchange for another benefit and (ii) no such reimbursement or expenses eligible for reimbursement in any taxable year shall in any way affect the expenses eligible for reimbursement in any other taxable year, provided, that the foregoing clause (ii) shall not be violated with regard to expenses reimbursed under any arrangement covered by Section 105(b) of the Internal Revenue Code solely because such expenses are subject to a limit related to the period the arrangement is in effect.

d. For purposes of Code Section 409A, your right to receive any installment payment pursuant to this letter agreement shall be treated as a right to receive a series of separate and distinct payments. Neither you nor the Company shall have the right to accelerate or defer the delivery of any payments or benefits under this letter agreement or the Restrictive Covenants Agreement except to the extent specifically permitted or required by Section 409A. Whenever a payment under this letter agreement or the Restrictive Covenants Agreement specifies a payment period with reference to a number of days (e.g., "payment shall be made within thirty (30) days following the date of termination"), the actual date of payment within the specified period shall be within the sole discretion of the Company. Notwithstanding any other provision of this letter agreement to the contrary, in no event shall any payment under this letter agreement or the Restrictive Covenants Agreement that constitutes "nonqualified deferred compensation" for purposes of Code Section 409A be subject to offset, counterclaim or recoupment by any other amount payable to you unless otherwise permitted by Code Section 409A.

7. Resolution of Disputes. Any controversy or claim arising out of or relating to your employment, this letter agreement, its enforcement or interpretation, or because of an alleged breach, default, or misrepresentation in connection with any of its provisions, shall be submitted to arbitration in Boston, Massachusetts before a single arbitrator (applying Massachusetts law), in accordance with the National Rules for the Resolution of Employment Disputes then in effect of the American Arbitration Association ("**AAA**") as modified by the terms and conditions of this Section 7; provided, however, that provisional injunctive relief (including without limitation under the Restrictive Covenants Agreement) may, but need not, be sought in a court of law before or while arbitration proceedings are pending, and any provisional injunctive relief granted by such court shall remain effective until the matter is finally determined by the arbitrator. The arbitrator shall be selected by mutual agreement of the parties or, if the parties cannot agree, by striking from a list of arbitrators supplied by AAA. The arbitrator shall issue a written opinion revealing, however briefly, the essential findings and conclusions upon which the award is based. Final resolution of any dispute through arbitration may include any remedy or relief, which the arbitrator deems just and equitable. Any award or relief granted by the arbitrator hereunder shall be final and binding on the parties hereto and may be enforced by any court of competent jurisdiction.

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The parties acknowledge that they are hereby waiving any rights to trial by jury in any action, proceeding or counterclaim brought by either of the parties against the other in connection with any matter whatsoever arising out of or in any way connected with this letter agreement or your employment.

The Company shall pay the arbitrator's fees and arbitration expenses and any other costs associated with the arbitration or arbitration hearing that are unique to arbitration. The Company and you each shall separately pay its or your own deposition, witness, expert and attorneys' fees and other expenses as and to the same extent as if the matter were being held in court unless otherwise provided by law. The arbitrator shall have the sole and exclusive power and authority to decide any and all issues of or related to whether this letter agreement or any provision of this letter agreement is subject to arbitration.

8. No Inconsistent Obligations. By accepting this offer of employment, you represent and warrant to the Company that you are under no obligations or commitments, whether contractual or otherwise, that are inconsistent with your obligations set forth in this letter agreement or that would be violated by your employment by the Company. You agree that you will not take any action on behalf of the Company or cause the Company to take any action that will violate any agreement that you have with a prior employer.

9. Section 280G. Anything in this letter to the contrary notwithstanding, in the event that the amount of any compensation, payment, acceleration, benefit or distribution by the Company to or for your benefit, whether paid or payable or distributed or distributable pursuant to the terms of this letter or otherwise, calculated in a manner consistent with Section 280G of the Code and the applicable regulations thereunder (the "**Applicable Payments**"), would be subject to the excise tax imposed by Section 4999 of the Code, then the Applicable Payments shall be reduced (but not below zero) to the extent necessary so that the sum of all Applicable Payments shall not exceed the Threshold Amount (as defined below). In the event Applicable Payments are required to be reduced, the Applicable Payments shall be reduced in the following order: (1) cash payments not subject to Section 409A of the Code; (2) cash payments subject to Section 409A of the Code; (3) equity-based payments and acceleration; and (4) non-cash forms of benefits. For purposes of this letter, "**Threshold Amount**" shall mean three times your "base amount" within the meaning of Section 280G(b)(3) of the Code and the regulations promulgated thereunder less one dollar ($1.00).

10. Miscellaneous.

a. This letter agreement may be executed in counterparts, each of which shall be deemed to be an original but all of which together will constitute one and the same instrument.

b. The Company may only assign this letter agreement to a successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the

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business and/or assets of the Company, provided, that such successor expressly agrees to assume and perform this letter agreement in the same manner and to the same extent that the Company would have been required to perform it if no such assignment had taken place, and the term "Company" shall include any such successor that assumes and agrees to perform this letter agreement, by operation of law or otherwise.

c. No provision of this letter agreement may be modified, waived or discharged unless such waiver, modification or discharge is agreed to in writing and signed by you and such officer as may be designated by the Board (other than you). No waiver by either party hereto at any time of any breach by the other party hereto of, or compliance with, any condition or provision of this letter agreement to be performed by such other party shall be deemed a waiver of similar or dissimilar provisions or conditions at the same or at any prior or subsequent time.

d. The validity, interpretation, construction and performance of this letter agreement shall be governed by the laws of the Commonwealth of Massachusetts without regard to the choice of law principles thereof.

e. This letter agreement embodies the entire agreement and understanding between the parties hereto with respect to the subject matter hereof and supersedes all prior oral or written agreements, discussions and/or understandings relating to the subject matter hereof, including without limitation the Former Letter Agreement, *provided*, and for the avoidance of doubt, that nothing herein supersedes the Restrictive Covenants Agreement, the Plan or any Option Agreement, which remain in force and effect in accordance with their terms.

f. Please accept all of the terms as set forth herein by signing and returning this letter agreement.

Sincerely,

IMARA INC.

By: /s/ Rahul D. Ballal
Name: Rahul D. Ballal, PhD
Title: Chief Executive Officer

Agreed: /s/ Willem Scheele
Willem Scheele

Date: June 27, 2019

Exhibit 10.10

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June 27, 2019

Mr. Michael Gray

Dear Mike:

On behalf of IMARA Inc., a Delaware corporation (the "**Company**"), I am very pleased to offer you this revised "**letter agreement**" with the Company. This letter agreement shall supersede, amend and restate in all respects the letter agreement between you and the Company dated February 26, 2019 (the "**Former Letter Agreement**"), *provided*, and for the avoidance of doubt, that nothing herein supersedes the Employee Confidentiality, Assignment and Noncompetition Agreement signed by you on March 26, 2019 (the "**Restrictive Covenants Agreement**"), which remains in effect, unaltered, in all respects.

The terms of your employment with the Company are as set forth below:

1. Position. You will be employed to serve as both Chief Operating Officer (COO) and Chief Financial Officer (CFO) of the Company. As COO/CFO, you will have the duties, authorities and responsibilities that are customarily associated with such position, and such other duties, authorities and responsibilities the Chief Executive Officer and the Company's Board of Directors (the "**Board**") designate from time to time that are not inconsistent with such position. You will perform such duties to the Company primarily at the Company's headquarters in Cambridge, Massachusetts. You will report directly to the Chief Executive Officer. While an employee of the Company, you will devote substantially all of your professional time and efforts to the business of the Company. Any outside professional or other business activity you engage in must be approved in advance by the Board and must not conflict with your duties to the Company.

2. Compensation.

a. *Base Salary*. Your base salary is paid at the rate of $16,041.67 semi-monthly (i.e. a gross aggregate amount of $385,000 per annum assuming continuing service over a 12-month period), subject to tax and other withholdings as required by law. Your salary shall be reviewed annually by the Board.

b. *Discretionary Bonus Program*. You are eligible for an annual discretionary bonus of up to thirty five percent (35%) of your annualized base salary to allow you to participate in the success of the Company based upon a combination of Company achievements and your performance, both as determined in the sole discretion of the Board. Any annual bonus shall be

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paid no later than March 15th of the year immediately following the year to which the applicable annual bonus relates, and you must be an active employee of the Company on the date any bonus is paid to be eligible for and to earn a bonus award. No bonus shall be considered to be earned until it is paid, as it also serves as an incentive to remain employed by the Company. Any bonus would be pro-rated for the 2019 calendar year based on your Start Date of April 8, 2019.

c. *Option*. The Company has granted you (i) an option to purchase 1,412,928 shares of the Company's Class A Common Stock at a price per share equal to the fair market value per share of the common stock on the date of grant, as determined by the Board (the "**Initial Option Grant**"), and (ii) an option to purchase an additional 239,710 shares of the Company's Class A Common Stock at a price per share equal to the fair market value per share of the common stock on the date of grant, as determined by the Board (the "**Milestone Option Grant**" and, together with the Initial Option Grant, the "**Option**").

The Option shall be subject to all terms and other provisions set forth in the Company's 2016 Stock Incentive Plan (as amended from time to time, the "**Plan**") and in a separate option agreement ("**Option Agreement**"), which will provide for (i) vesting of shares subject to the Option as follows so long as you have been continuously providing services to the Company as an employee, consultant or advisor through each vesting date: (A) 25% of such shares will vest on the first anniversary of the applicable Vesting Commencement Date (as defined below) and (B) the remainder of such shares will vest in equal quarterly installments after the first anniversary of the applicable Vesting Commencement Date over the three year period thereafter; and (ii) the acceleration of vesting on all unvested shares subject to the Initial Option Grant and (if the Milestone Closing has occurred) the Milestone Option Grant if a Qualifying Termination (as defined in Section 5(b)) occurs within 12 months after a Change of Control (as defined below) (such 12-month period, the "**Change of Control Period**"), so long as you have been continuously providing services as an employee (even if on leave of absence), consultant or advisor to the Company from the Start Date up to and including such Change of Control through the date of such qualifying termination without Cause or such qualifying resignation for Good Reason, and provided that you timely sign and do not revoke a Release (as defined below). To avoid doubt, if the Milestone Closing has not occurred, the vesting of the shares subject to the Milestone Option Grant shall not be subject to acceleration as described in the preceding sentence.

The "**Vesting Commencement Date(s)**" for the Option shall be as follows: (A) for the Initial Option Grant, the Vesting Commencement Date shall be the Start Date, and (B) for the Milestone Option Grant, the Vesting Commencement Date shall be the date of the Milestone Closing (as defined in the Series B Preferred Stock Purchase Agreement dated as of March 15, 2019 (the "**Purchase Agreement"**)). In the event that the Milestone Closing does not occur prior to September 15, 2020 (eighteen (18) months following the Initial Closing (as defined in the Purchase Agreement), then the Milestone Option Grant shall be forfeited in its entirety.

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d. *Withholdings*. The Company shall withhold from any compensation or benefits payable under this letter agreement or the Restrictive Covenants Agreement (as applicable) any federal, state and local income, employment or other similar taxes and withholdings as may be required to be withheld pursuant to any applicable law or regulation.

3. Benefits.

a. *Vacation & Holidays*. You will be eligible for four (4) weeks of paid vacation each year, to be accrued and used consistent with the Company's vacation policy. You will also be eligible for Company-paid holidays in accordance with Company policy.

b. *Other*. You may participate in any and all benefit programs that the Company establishes and makes available to its employees from time to time, provided that you are eligible under (and subject to all provisions of) the plan documents that govern those programs. Benefits are subject to change at any time in the Company's sole discretion. Currently, the Company pays for 80% of employee group health insurance premiums. In addition, the Company currently anticipates establishing an employee 401(k) plan. The Company will also reimburse 100% of the parking/commuting cost of one of the following; Monthly Parking at a designated parking garage lot, Charlie Card T-Pass, or Commuter Rail.

c. *Expenses*. The Company shall reimburse you for all ordinary and reasonable out-of-pocket business expenses incurred by you in furtherance of the Company's business in accordance with the Company's policies with respect thereto as in effect from time to time. In order to be eligible for any expense reimbursement hereunder, you must (i) submit reasonable documentation evidencing the nature and amount of any such business expenses incurred by you and (ii) submit any request for reimbursement no later than ninety (90) days following the date that such business expense is incurred.

4. At-Will Employment. Your employment with the Company is and shall at all times during your employment hereunder be "at-will" employment. The Company or you may terminate your employment at any time for any reason, with or without Cause or Good Reason, and with or without notice. You agree that although your title, duties, compensation or benefits may change from time to time, such changes will not change the "at-will" nature of your employment during your tenure as an employee of the Company, and may only be changed by an express written agreement that is signed by you and an officer duly authorized by the Board (other than you).

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5. Termination of Employment.

a. If you resign your employment with the Company without Good Reason or the Company terminates your employment for Cause you will receive no additional compensation other than: (i) any unpaid base salary for services rendered through the last day of your employment (the "**Termination Date**"); (ii) reimbursement of any un-reimbursed business expenses incurred as of the Termination Date in accordance with the Company's reimbursement policy; (iii) payment for any accrued but unused vacation time (if applicable) earned through the Termination Date; and (iv) all other earned payments, vested benefits or vested or earned fringe benefits to which you shall be entitled under the terms of any applicable compensation arrangement or benefit, equity or fringe benefit plan or program or grant or this letter agreement (collectively, clauses (i) through (iv) shall be referred herein as the "**Accrued Benefits**"). The Accrued Benefits will be paid to you consistent with applicable law.

b. If the Company terminates your employment for any reason other than Cause (except for termination due to your death or Disability) or you resign for Good Reason (in either case, a **"Qualifying Termination"**), you will receive the Accrued Benefits, and, based upon satisfaction of the criteria in Section 5(d) below, including without limitation your execution and delivery of the separation and release agreement described therein and the lapse of any applicable revocation period without the release being revoked, you shall be eligible to receive the following severance benefits: (i) severance pay in the form of continuation of your base salary in effect as of the Termination Date for a period of nine (9) months, less standard deductions, payable in accordance with the Company's then regular pay policies commencing on or before the sixtieth (60th) day following the Termination Date ("**Severance Pay"**), provided, that the first such payment shall include any amounts that would have been paid to you hereunder had the release become effective upon the Termination Date; and (ii) following the Termination Date, if you are eligible for and elect to continue your health insurance coverage pursuant to your rights under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended, or any state equivalent ("**COBRA**"), then the Company shall reimburse you for your premiums under COBRA on a monthly basis until the earlier of (x) nine (9) months following the Termination Date, or (y) the date upon which you commence full-time employment (or employment that provides you with eligibility for healthcare benefits substantially comparable to those provided by the Company) with an entity other than the Company. Notwithstanding any of the foregoing, if the 60-day period following the Termination Date would end in a calendar year subsequent to the year in which the Termination Date occurs, (i) the payments under this Section 5(b) will not be paid or commence before the first payroll of the subsequent calendar year; and (ii) any Severance Pay received in any calendar year shall be reduced by the amount of Garden Leave Pay you receive in the same such calendar year under, and as defined in, the Restrictive Covenants Agreement, *provided* that in no event shall the Severance Pay be reduced below $1000. In addition, if you experience a Qualifying Termination during the Change of Control Period, and subject to Section 5(d), the Company shall pay you seventy-five percent (75%) of your annual bonus target amount for the year in which the Termination Date occurred in a lump sum on the date the first installment of Severance Pay is paid.

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c. If your employment terminates because of your death or Disability, then you will receive the Accrued Benefits. For purposes of this letter agreement, "**Disability**" shall be defined as your inability to have performed your material duties hereunder due to a physical or mental injury, infirmity or incapacity for a consecutive one hundred eighty (180) days (including weekends and holidays) in any 365-day period. Notwithstanding the foregoing, in the event that as a result of earlier absence because of mental or physical incapacity you incur a "separation from service" within the meaning of such term under Section 409A of the Internal Revenue Code and the rules and regulations promulgated thereunder ("**Code Section 409A**") you shall on such date automatically be terminated from employment as a Disability termination.

d. Eligibility for receipt of the severance benefits and other pay and benefits in Section 5(b) shall be conditioned on your (i) returning to the Company all of its property and confidential information that is in your possession or control, and (ii) prior to the date provided in the Release, but in no event later than the 60-day period following the Termination Date, signing and not revoking a separation and release of claims agreement in a form provided by the Company (the "**Release**") that contains, among other provisions, a 12-month post-employment noncompetition restriction and a seven (7) business day revocation period, provided, that such Release shall (A) not expand the scope of prohibited competitive activity greater than as described in the Restrictive Covenants Agreement, (B) not terminate any of your rights to indemnification and defense which you will have given your role at the Company, (C) not impact any rights that you may have as a stockholder in the Company, (D) not release your rights to the Accrued Benefits, and (E) contain, among other things, a general release of claims against the Company, its affiliates and each of its and their officers, directors, employees, agents and attorneys, and the following provisions:

(I) You agree that for the three (3)-year period following the Termination Date you, directly or indirectly, orally, in writing or through any medium (including, but not limited to, the press or other media, computer networks or bulletin boards, or any other form of communication) will not make any false statement, disparage or defame the goodwill or reputation of the Company, its affiliates or their respective directors, managers, officers, stockholders, members, agents and/or employees. Nothing herein shall prohibit you (i) from disclosing that you are no longer employed by the Company, (ii) from responding truthfully to subpoena, court order or other compulsory legal process, (iii) from rebutting in good faith statements made by the other party that are untrue or misleading, or (iv) providing truthful information to a government entity; and

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(II) You acknowledge and reaffirm your continuing obligations as set forth in the Restrictive Covenants Agreement.

e. For all purposes of this letter agreement, the term **"Cause"** shall mean: (i) a good faith finding by the Company that you have engaged in willful misconduct or gross negligence as to a material matter in connection with your duties; (ii) any act constituting fraud with respect to the Company; (iii) the indictment for, conviction of, or a plea of guilty or *nolo contendere* to, a felony under applicable law; (iv) a good faith finding by the Company that you have engaged in material violation of a material term of this letter agreement, the Restrictive Covenants Agreement or any written Company policy made available to you; (v) your failure to attempt in good faith to (A) perform your duties in all material respects or (B) follow a clear, lawful and reasonable directive of the Board; or (vi) a material breach of a fiduciary duty owed to the Company that has caused, or could reasonably be expected to cause, a material injury to the Company; provided, that in no event shall your employment be terminated for Cause unless (A) an event or circumstance set forth in clauses (i) through (vi) has occurred and the Company provides you with written notice after Company has knowledge of the occurrence of existence of such event or circumstance, which notice reasonably identifies the event or circumstance that the Company believes constitutes Cause and (B) with respect to the events and circumstances set forth in clauses (iv) and (v) only, you fail to substantially cure the event or circumstance so identified within 30 days of the receipt of such notice, if the Board considers the situation to be reasonably correctable.

f. For all purposes of this letter agreement, the term **"Good Reason"** shall mean, each without your consent: (i) a material diminution in authority, duties or responsibilities of the person you are required to report to or a material diminution in your authority, duties or responsibilities (other than temporarily while physically or mentally incapacitated or as required by applicable law); (ii) a material reduction by the Company in your annual base salary; (iii) relocation of your primary office at the Company's headquarters in the Cambridge, Massachusetts metropolitan area to another location by more than twenty (20) miles; or (iv) a material breach by the Company of a material term of this letter agreement. You shall provide the Company with a written notice detailing the specific circumstances alleged to constitute Good Reason within ninety (90) days after the first occurrence of such circumstances, and the Company shall have thirty (30) days following receipt of such notice to cure such circumstances in all material respects, provided, that, no termination for Good Reason shall occur unless you end your employment within 180 days after the first occurrence of any Good Reason event.

g. For all purposes of this letter agreement, the term "**Change of Control**" shall mean: (i) any merger, reorganization, consolidation, recapitalization or other transaction or series of related transactions, including a transfer of shares of capital stock, whether or not the Company is the surviving or continuing corporation in such transaction, and whether or not the Company is a party thereto, that results in the holders of shares of capital stock immediately

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prior to such transaction or transactions holding, immediately after such transaction or transactions (whether by virtue of securities issued as consideration for the transaction or otherwise), less than 50% of the voting power and economic interest of the surviving, continuing or purchasing entity; or (ii) any sale, lease, exclusive license or other disposition of all or substantially all of the assets (tangible or intangible) of the Company and any subsidiaries taken as a whole.

6. Section 409A.

a. The intent of the parties is that payments and benefits under this letter agreement and the Restrictive Covenants Agreement (as applicable) comply with, or be exempt from, Code Section 409A and, accordingly, to the maximum extent permitted, this letter agreement shall be interpreted to be in compliance therewith or exempt therefrom. If you notify the Company (with specificity as to the reason therefor) that you believe that any provision of this letter agreement (or of any award of compensation, including equity compensation or benefits) would cause you to incur any additional tax or interest under Code Section 409A and the Company concurs with such belief or the Company independently makes such determination, the Company shall, after consulting with you, reform such provision to try to comply with Code Section 409A through good faith modifications to the minimum extent reasonably appropriate to conform with Code Section 409A. To the extent that any provision hereof is modified in order to comply with Code Section 409A, such modification shall be made in good faith and shall, to the maximum extent reasonably possible, maintain the original intent and economic benefit to you and the Company of the applicable provision without violating the provisions of Code Section 409A.

b. A termination of employment shall not be deemed to have occurred for purposes of any provision of this letter agreement providing for the payment of any amounts or benefits upon or following a termination of employment that are considered "nonqualified deferred compensation" under Code Section 409A unless such termination is also a "separation from service" within the meaning of Code Section 409A and, for purposes of any such provision of this letter agreement, references to a "termination," "termination of employment" or like terms shall mean "separation from service." Notwithstanding any provision to the contrary in this letter agreement, no payments or benefits that are considered "nonqualified deferred compensation" under Code Section 409A to which you otherwise become entitled under this letter agreement or the Restrictive Covenants Agreement in connection with your termination of employment, shall be made or provided to you prior to the earlier of (i) the expiration of the six (6) month period measured from the date of your "separation from service" with the Company (as such term is defined in Code Section 409A) or (ii) the date of your death, if you are deemed at the time of such separation from service to be a "specified employee" under Code Section 409A. Upon the expiration of the applicable Code Section 409A(a)(2) deferral period, all payments and benefits deferred pursuant to this Section 6(b) (whether they would have otherwise been payable in a single sum or in installments in the absence of such deferral) shall be paid or reimbursed to you

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in a lump sum, and any remaining payments and benefits due under this letter agreement or the Restrictive Covenants Agreement shall be paid or provided in accordance with the normal payment dates specified for them herein.

c. All expenses or other reimbursements under this letter agreement shall be made promptly following submission of required documentation, and in any case on or prior to the last day of the taxable year following the taxable year in which such expenses were incurred by you (provided that if any such reimbursements constitute taxable income to you, such reimbursements shall be paid no later than March 15th of the calendar year following the calendar year in which the expenses to be reimbursed were incurred), and (i) the right to reimbursement or in-kind benefits shall not be subject to liquidation or exchange for another benefit and (ii) no such reimbursement or expenses eligible for reimbursement in any taxable year shall in any way affect the expenses eligible for reimbursement in any other taxable year, provided, that the foregoing clause (ii) shall not be violated with regard to expenses reimbursed under any arrangement covered by Section 105(b) of the Internal Revenue Code solely because such expenses are subject to a limit related to the period the arrangement is in effect.

d. For purposes of Code Section 409A, your right to receive any installment payment pursuant to this letter agreement shall be treated as a right to receive a series of separate and distinct payments. Neither you nor the Company shall have the right to accelerate or defer the delivery of any payments or benefits under this letter agreement or the Restrictive Covenants Agreement except to the extent specifically permitted or required by Section 409A. Whenever a payment under this letter agreement or the Restrictive Covenants Agreement specifies a payment period with reference to a number of days (e.g., "payment shall be made within thirty (30) days following the date of termination"), the actual date of payment within the specified period shall be within the sole discretion of the Company. Notwithstanding any other provision of this letter agreement to the contrary, in no event shall any payment under this letter agreement or the Restrictive Covenants Agreement that constitutes "nonqualified deferred compensation" for purposes of Code Section 409A be subject to offset, counterclaim or recoupment by any other amount payable to you unless otherwise permitted by Code Section 409A.

7. Resolution of Disputes. Any controversy or claim arising out of or relating to your employment, this letter agreement, its enforcement or interpretation, or because of an alleged breach, default, or misrepresentation in connection with any of its provisions, shall be submitted to arbitration in Boston, Massachusetts before a single arbitrator (applying Massachusetts law), in accordance with the National Rules for the Resolution of Employment Disputes then in effect of the American Arbitration Association ("**AAA**") as modified by the terms and conditions of this Section 7; provided, however, that provisional injunctive relief (including without limitation under the Restrictive Covenants Agreement) may, but need not, be sought in a court of law before or while arbitration proceedings are pending, and any provisional injunctive relief

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granted by such court shall remain effective until the matter is finally determined by the arbitrator. The arbitrator shall be selected by mutual agreement of the parties or, if the parties cannot agree, by striking from a list of arbitrators supplied by AAA. The arbitrator shall issue a written opinion revealing, however briefly, the essential findings and conclusions upon which the award is based. Final resolution of any dispute through arbitration may include any remedy or relief, which the arbitrator deems just and equitable. Any award or relief granted by the arbitrator hereunder shall be final and binding on the parties hereto and may be enforced by any court of competent jurisdiction.

The parties acknowledge that they are hereby waiving any rights to trial by jury in any action, proceeding or counterclaim brought by either of the parties against the other in connection with any matter whatsoever arising out of or in any way connected with this letter agreement or your employment.

The Company shall pay the arbitrator's fees and arbitration expenses and any other costs associated with the arbitration or arbitration hearing that are unique to arbitration. The Company and you each shall separately pay its or your own deposition, witness, expert and attorneys' fees and other expenses as and to the same extent as if the matter were being held in court unless otherwise provided by law. The arbitrator shall have the sole and exclusive power and authority to decide any and all issues of or related to whether this letter agreement or any provision of this letter agreement is subject to arbitration.

8. No Inconsistent Obligations. By accepting this offer of employment, you represent and warrant to the Company that you are under no obligations or commitments, whether contractual or otherwise, that are inconsistent with your obligations set forth in this letter agreement or that would be violated by your employment by the Company. You agree that you will not take any action on behalf of the Company or cause the Company to take any action that will violate any agreement that you have with a prior employer.

9. Section 280G. Anything in this letter to the contrary notwithstanding, in the event that the amount of any compensation, payment, acceleration, benefit or distribution by the Company to or for your benefit, whether paid or payable or distributed or distributable pursuant to the terms of this letter or otherwise, calculated in a manner consistent with Section 280G of the Code and the applicable regulations thereunder (the "**Applicable Payments**"), would be subject to the excise tax imposed by Section 4999 of the Code, then the Applicable Payments shall be reduced (but not below zero) to the extent necessary so that the sum of all Applicable Payments shall not exceed the Threshold Amount (as defined below). In the event Applicable Payments are required to be reduced, the Applicable Payments shall be reduced in the following order: (1) cash payments not subject to Section 409A of the Code; (2) cash payments subject to Section 409A of the Code; (3) equity-based payments and acceleration; and (4) non-cash forms of benefits. For purposes of this letter, "**Threshold Amount**" shall mean three times your "base amount" within the meaning of Section 280G(b)(3) of the Code and the regulations promulgated thereunder less one dollar ($1.00).

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10. Miscellaneous.

a. This letter agreement may be executed in counterparts, each of which shall be deemed to be an original but all of which together will constitute one and the same instrument.

b. The Company may only assign this letter agreement to a successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business and/or assets of the Company, provided, that such successor expressly agrees to assume and perform this letter agreement in the same manner and to the same extent that the Company would have been required to perform it if no such assignment had taken place, and the term "Company" shall include any such successor that assumes and agrees to perform this letter agreement, by operation of law or otherwise.

c. No provision of this letter agreement may be modified, waived or discharged unless such waiver, modification or discharge is agreed to in writing and signed by you and such officer as may be designated by the Board (other than you). No waiver by either party hereto at any time of any breach by the other party hereto of, or compliance with, any condition or provision of this letter agreement to be performed by such other party shall be deemed a waiver of similar or dissimilar provisions or conditions at the same or at any prior or subsequent time.

d. The validity, interpretation, construction and performance of this letter agreement shall be governed by the laws of the Commonwealth of Massachusetts without regard to the choice of law principles thereof.

e. This letter agreement embodies the entire agreement and understanding between the parties hereto with respect to the subject matter hereof and supersedes all prior oral or written agreements, discussions and/or understandings relating to the subject matter hereof, including without limitation the Former Letter Agreement, *provided*, and for the avoidance of doubt, that nothing herein supersedes the Restrictive Covenants Agreement, the Plan or any Option Agreement, which remain in force and effect in accordance with their terms.

f. Please accept all of the terms as set forth herein by signing and returning this letter agreement.

Sincerely,

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By: /s/ Rahul D. Ballal
Name: Rahul D. Ballal, PhD
Title: Chief Executive Officer

Agreed: /s/ Michael Gray
Michael Gray

Date: June 27, 2019

Exhibit 10.11

INDEMNIFICATION AGREEMENT

THIS INDEMNIFICATION AGREEMENT (the "**Agreement**") is made and entered into as of [ ] between IMARA Inc., a Delaware corporation (the "**Company**"), and [ ] ("**Indemnitee**").

WITNESSETH THAT:

WHEREAS, highly competent persons have become more reluctant to serve corporations as directors or in other capacities unless they are provided with adequate protection through insurance or adequate indemnification against inordinate risks of claims and actions against them arising out of their service to and activities on behalf of the corporation;

WHEREAS, the Board of Directors of the Company (the "**Board**") has determined that, in order to attract and retain qualified individuals, the Company will attempt to maintain on an ongoing basis, at its sole expense, liability insurance to protect persons serving the Company and its subsidiaries from certain liabilities. Although the furnishing of such insurance has been a customary and widespread practice among United States-based corporations and other business enterprises, the Company believes that, given current market conditions and trends, such insurance may be available to it in the future only at higher premiums and with more exclusions. At the same time, directors, officers, and other persons in service to corporations or business enterprises are being increasingly subjected to expensive and time-consuming litigation relating to, among other things, matters that traditionally would have been brought only against the Company or business enterprise itself. The Certificate of Incorporation of the Company requires indemnification of the officers and directors of the Company. Indemnitee may also be entitled to indemnification pursuant to the General Corporation Law of the State of Delaware ("**DGCL**"). The Certificate of Incorporation and the DGCL expressly provide that the indemnification provisions set forth therein are not exclusive, and thereby contemplate that contracts may be entered into between the Company and members of the Board, officers and other persons with respect to indemnification;

WHEREAS, the uncertainties relating to such insurance and to indemnification have increased the difficulty of attracting and retaining such persons;

WHEREAS, the Board has determined that the increased difficulty in attracting and retaining such persons is detrimental to the best interests of the Company's stockholders and that the Company should act to assure such persons that there will be increased certainty of such protection in the future;

WHEREAS, it is reasonable, prudent and necessary for the Company contractually to obligate itself to indemnify, and to advance expenses on behalf of, such persons to the fullest extent permitted by applicable law so that they will serve or continue to serve the Company free from undue concern that they will not be so indemnified;

WHEREAS, this Agreement is a supplement to and in furtherance of the Certificate of Incorporation of the Company and any resolutions adopted pursuant thereto, and shall not be deemed a substitute therefor, nor to diminish or abrogate any rights of Indemnitee thereunder;

WHEREAS, Indemnitee does not regard the protection available under the Company's Certificate of Incorporation and insurance as adequate in the present circumstances, and may not be willing to serve as an officer or director without adequate protection, and the Company desires Indemnitee to serve in such capacity. Indemnitee is willing to serve, continue to serve and to take on additional service for or on behalf of the Company on the condition that he be so indemnified; and

WHEREAS, Indemnitee has certain rights to indemnification and/or insurance provided by [ ] which Indemnitee and [ ] intend to be secondary to the primary obligation of the Company to indemnify Indemnitee as provided herein, with the Company's acknowledgement and agreement to the foregoing being a material condition to Indemnitee's willingness to serve on the Board.

NOW, THEREFORE, in consideration of Indemnitee's agreement to serve as a director from and after the date hereof, the parties hereto agree as follows:

1. Indemnity of Indemnitee. The Company hereby agrees to hold harmless and indemnify Indemnitee to the fullest extent permitted by law, as such may be amended from time to time. In furtherance of the foregoing indemnification, and without limiting the generality thereof.

(a) Proceedings Other Than Proceedings by or in the Right of the Company. Indemnitee shall be entitled to the rights of indemnification provided in this Section 1(a) if, by reason of his Corporate Status (as hereinafter defined), the Indemnitee is, or is threatened to be made, a party to or participant in any Proceeding (as hereinafter defined) other than a Proceeding by or in the right of the Company. Pursuant to this Section 1(a), Indemnitee shall be indemnified against all Expenses (as hereinafter defined), judgments, penalties, fines and amounts paid in settlement actually and reasonably incurred by him, or on his behalf, in connection with such Proceeding or any claim, issue or matter therein, if the Indemnitee acted in good faith and in a manner the Indemnitee reasonably believed to be in or not opposed to the best interests of the Company, and with respect to any criminal Proceeding, had no reasonable cause to believe the Indemnitee's conduct was unlawful.

(b) Proceedings by or in the Right of the Company. Indemnitee shall be entitled to the rights of indemnification provided in this Section 1(b) if, by reason of his Corporate Status, the Indemnitee is, or is threatened to be made, a party to or participant in any Proceeding brought by or in the right of the Company. Pursuant to this Section 1(b), Indemnitee shall be indemnified against all Expenses actually and reasonably incurred by the Indemnitee, or on the Indemnitee's behalf, in connection with such Proceeding if the Indemnitee acted in good faith and in a manner the Indemnitee reasonably believed to be in or not opposed to the best interests of the Company; provided, however, if applicable law so provides, no indemnification against such Expenses shall be made in respect of any claim, issue or matter in such Proceeding as to which Indemnitee shall have been adjudged to be liable to the Company unless and to the extent that the Court of Chancery of the State of Delaware shall determine that such indemnification may be made.

(c) Indemnification for Expenses of a Party Who is Wholly or Partly Successful. Notwithstanding any other provision of this Agreement, to the extent that Indemnitee

is, by reason of his Corporate Status, a party to and is successful, on the merits or otherwise, in any Proceeding, he shall be indemnified to the maximum extent permitted by law, as such may be amended from time to time, against all Expenses actually and reasonably incurred by him or on his behalf in connection therewith. If Indemnitee is not wholly successful in such Proceeding but is successful, on the merits or otherwise, as to one or more but less than all claims, issues or matters in such Proceeding, the Company shall indemnify Indemnitee against all Expenses actually and reasonably incurred by him or on his behalf in connection with each successfully resolved claim, issue or matter. For purposes of this Section 1(c) and without limitation, the termination of any claim, issue or matter in such a Proceeding by dismissal, with or without prejudice, shall be deemed to be a successful result as to such claim, issue or matter.

(d) Indemnification of Appointing Stockholder. If (i) Indemnitee is or was affiliated with one or more venture capital funds that has invested in the Company (an "**Appointing Stockholder**"), and (ii) the Appointing Stockholder is, or is threatened to be made, a party to or a participant in any Proceeding, and (iii) the Appointing Stockholder's involvement in the Proceeding (A) arises primarily out of, or relates to, any action taken by the Company that was approved by the Company's Board [and]/[or] (B) arises out of facts or circumstances that are the same or substantially similar to the facts and circumstances that form the basis of claims that have been, could have been or could be brought against the Indemnitee in a Proceeding, regardless of whether the legal basis of the claims against the Indemnitee and the Appointing Stockholder are the same or similar, then the Appointing Stockholder shall be entitled to all of the indemnification rights and remedies under this Agreement pursuant to this Agreement as if the Appointing Stockholder were the Indemnitee.

2. Additional Indemnity. In addition to, and without regard to any limitations on, the indemnification provided for in Section 1 of this Agreement, the Company shall and hereby does indemnify and hold harmless Indemnitee against all Expenses, judgments, penalties, fines and amounts paid in settlement actually and reasonably incurred by him or on his behalf if, by reason of his Corporate Status, he is, or is threatened to be made, a party to or participant in any Proceeding (including a Proceeding by or in the right of the Company), including, without limitation, all liability arising out of the negligence or active or passive wrongdoing of Indemnitee. The only limitation that shall exist upon the Company's obligations pursuant to this Agreement shall be that the Company shall not be obligated to make any payment to Indemnitee that is finally determined (under the procedures, and subject to the presumptions, set forth in Sections 6 and 7 hereof) to be unlawful.

3. Contribution.

(a) Whether or not the indemnification provided in Sections 1 and 2 hereof is available, in respect of any threatened, pending or completed action, suit or proceeding in which the Company is jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding), the Company shall pay, in the first instance, the entire amount of any judgment or settlement of such action, suit or proceeding without requiring Indemnitee to contribute to such payment and the Company hereby waives and relinquishes any right of contribution it may have against Indemnitee. The Company shall not enter into any settlement of any action, suit or proceeding in which the Company is jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding) unless such settlement provides for a full and final release of all claims asserted against Indemnitee.

(b) Without diminishing or impairing the obligations of the Company set forth in the preceding subparagraph, if, for any reason, Indemnitee shall elect or be required to pay all or any portion of any judgment or settlement in any threatened, pending or completed action, suit or proceeding in which the Company is jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding), the Company shall contribute to the amount of Expenses, judgments, fines and amounts paid in settlement actually and reasonably incurred and paid or payable by Indemnitee in proportion to the relative benefits received by the Company and all officers, directors or employees of the Company, other than Indemnitee, who are jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding), on the one hand, and Indemnitee, on the other hand, from the transaction or events from which such action, suit or proceeding arose; provided, however, that the proportion determined on the basis of relative benefit may, to the extent necessary to conform to law, be further adjusted by reference to the relative fault of the Company and all officers, directors or employees of the Company other than Indemnitee who are jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding), on the one hand, and Indemnitee, on the other hand, in connection with the transaction or events that resulted in such expenses, judgments, fines or settlement amounts, as well as any other equitable considerations which applicable law may require to be considered. The relative fault of the Company and all officers, directors or employees of the Company, other than Indemnitee, who are jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding), on the one hand, and Indemnitee, on the other hand, shall be determined by reference to, among other things, the degree to which their actions were motivated by intent to gain personal profit or advantage, the degree to which their liability is primary or secondary and the degree to which their conduct is active or passive.

(c) The Company hereby agrees to fully indemnify and hold Indemnitee harmless from any claims of contribution which may be brought by officers, directors, or employees of the Company, other than Indemnitee, who may be jointly liable with Indemnitee.

(d) To the fullest extent permissible under applicable law, if the indemnification provided for in this Agreement is unavailable to Indemnitee for any reason whatsoever, the Company, in lieu of indemnifying Indemnitee, shall contribute to the amount incurred by Indemnitee, whether for judgments, fines, penalties, excise taxes, amounts paid or to be paid in settlement and/or for Expenses, in connection with any claim relating to an indemnifiable event under this Agreement, in such proportion as is deemed fair and reasonable in light of all of the circumstances of such Proceeding in order to reflect (i) the relative benefits received by the Company and Indemnitee as a result of the event(s) and/or transaction(s) giving cause to such Proceeding and/or (ii) the relative fault of the Company (and its directors, officers, employees and agents) and Indemnitee in connection with such event(s) and/or transaction(s).

4. Indemnification for Expenses of a Witness. Notwithstanding any other provision of this Agreement, to the extent that Indemnitee is, by reason of his Corporate Status, a witness, or is made (or asked) to respond to discovery requests, in any Proceeding to which Indemnitee is not a party, he shall be indemnified against all Expenses actually and reasonably incurred by him or on his behalf in connection therewith.

5. Advancement of Expenses. Notwithstanding any other provision of this Agreement, the Company shall advance all Expenses incurred by or on behalf of Indemnitee in connection with any Proceeding by reason of Indemnitee's Corporate Status within thirty (30) days after the receipt by the Company of a statement or statements from Indemnitee requesting such advance or advances from time to time, whether prior to or after final disposition of such Proceeding. Such statement or statements shall reasonably evidence the Expenses incurred by Indemnitee and shall include or be preceded or accompanied by a written undertaking by or on behalf of Indemnitee to repay any Expenses advanced if it shall ultimately be determined that Indemnitee is not entitled to be indemnified against such Expenses. Any advances and undertakings to repay pursuant to this Section 5 shall be unsecured and interest free.

6. Procedures and Presumptions for Determination of Entitlement to Indemnification. It is the intent of this Agreement to secure for Indemnitee rights of indemnity that are as favorable as may be permitted under the DGCL and public policy of the State of Delaware. Accordingly, the parties agree that the following procedures and presumptions shall apply in the event of any question as to whether Indemnitee is entitled to indemnification under this Agreement:

(a) To obtain indemnification under this Agreement, Indemnitee shall submit to the Company a written request, including therein or therewith such documentation and information as is reasonably available to Indemnitee and is reasonably necessary to determine whether and to what extent Indemnitee is entitled to indemnification. The Secretary of the Company shall, promptly upon receipt of such a request for indemnification, advise the Board in writing that Indemnitee has requested indemnification. Notwithstanding the foregoing, any failure of Indemnitee to provide such a request to the Company, or to provide such a request in a timely fashion, shall not relieve the Company of any liability that it may have to Indemnitee unless, and to the extent that, such failure actually and materially prejudices the interests of the Company.

(b) Upon written request by Indemnitee for indemnification pursuant to the first sentence of Section 6(a) hereof, a determination with respect to Indemnitee's entitlement thereto shall be made in the specific case by one of the following four methods, which shall be at the election of the Board (1) by a majority vote of the disinterested directors, even though less than a quorum, (2) by a committee of disinterested directors designated by a majority vote of the disinterested directors, even though less than a quorum, (3) if there are no disinterested directors or if the disinterested directors so direct, by independent legal counsel in a written opinion to the Board, a copy of which shall be delivered to the Indemnitee, or (4) if so directed by the Board, by the stockholders of the Company. For purposes hereof, disinterested directors are those members of the Board who are not parties to the action, suit or proceeding in respect of which indemnification is sought by Indemnitee.

(c) If the determination of entitlement to indemnification is to be made by Independent Counsel pursuant to Section 6(b) hereof, the Independent Counsel shall be selected as provided in this Section 6(c). The Independent Counsel shall be selected by the Board. Indemnitee may, within ten (10) days after such written notice of selection shall have been given, deliver to the Company a written objection to such selection; provided, however, that such objection may be asserted only on the ground that the Independent Counsel so selected does not meet the requirements of "**Independent Counsel**" as defined in Section 13 of this Agreement, and the objection shall set forth with particularity the factual basis of such assertion. Absent a proper

and timely objection, the person so selected shall act as Independent Counsel. If a written objection is made and substantiated, the Independent Counsel selected may not serve as Independent Counsel unless and until such objection is withdrawn or a court has determined that such objection is without merit. If, within twenty (20) days after submission by Indemnitee of a written request for indemnification pursuant to Section 6(a) hereof, no Independent Counsel shall have been selected and not objected to, either the Company or Indemnitee may petition the Court of Chancery of the State of Delaware or other court of competent jurisdiction for resolution of any objection which shall have been made by the Indemnitee to the Company's selection of Independent Counsel and/or for the appointment as Independent Counsel of a person selected by the court or by such other person as the court shall designate, and the person with respect to whom all objections are so resolved or the person so appointed shall act as Independent Counsel under Section 6(b) hereof. The Company shall pay any and all reasonable fees and expenses of Independent Counsel incurred by such Independent Counsel in connection with acting pursuant to Section 6(b) hereof, and the Company shall pay all reasonable fees and expenses incident to the procedures of this Section 6(c), regardless of the manner in which such Independent Counsel was selected or appointed.

(d) In making a determination with respect to entitlement to indemnification hereunder, the person or persons or entity making such determination shall presume that Indemnitee is entitled to indemnification under this Agreement. Anyone seeking to overcome this presumption shall have the burden of proof and the burden of persuasion by clear and convincing evidence. Neither the failure of the Company (including by its directors or independent legal counsel) to have made a determination prior to the commencement of any action pursuant to this Agreement that indemnification is proper in the circumstances because Indemnitee has met the applicable standard of conduct, nor an actual determination by the Company (including by its directors or independent legal counsel) that Indemnitee has not met such applicable standard of conduct, shall be a defense to the action or create a presumption that Indemnitee has not met the applicable standard of conduct.

(e) Indemnitee shall be deemed to have acted in good faith if Indemnitee's action is based on the records or books of account of the Enterprise (as hereinafter defined), including financial statements, or on information supplied to Indemnitee by the officers of the Enterprise in the course of their duties, or on the advice of legal counsel for the Enterprise or on information or records given or reports made to the Enterprise by an independent certified public accountant or by an appraiser or other expert selected with reasonable care by the Enterprise. In addition, the knowledge and/or actions, or failure to act, of any director, officer, agent or employee of the Enterprise shall not be imputed to Indemnitee for purposes of determining the right to indemnification under this Agreement. Whether or not the foregoing provisions of this Section 6(e) are satisfied, it shall in any event be presumed that Indemnitee has at all times acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the Company. Anyone seeking to overcome this presumption shall have the burden of proof and the burden of persuasion by clear and convincing evidence.

(f) If the person, persons or entity empowered or selected under Section 6 to determine whether Indemnitee is entitled to indemnification shall not have made a determination within sixty (60) days after receipt by the Company of the request therefor, the requisite determination of entitlement to indemnification shall be deemed to have been made and Indemnitee shall be entitled to such indemnification absent (i) a misstatement by Indemnitee of a

material fact, or an omission of a material fact necessary to make Indemnitee's statement not materially misleading, in connection with the request for indemnification, or (ii) a prohibition of such indemnification under applicable law; provided, however, that such sixty (60) day period may be extended for a reasonable time, not to exceed an additional thirty (30) days, if the person, persons or entity making such determination with respect to entitlement to indemnification in good faith requires such additional time to obtain or evaluate documentation and/or information relating thereto; and provided further, that the foregoing provisions of this Section 6(f) shall not apply if the determination of entitlement to indemnification is to be made by the stockholders pursuant to Section 6(b) of this Agreement and if (A) within fifteen (15) days after receipt by the Company of the request for such determination, the Board or the Disinterested Directors, if appropriate, resolve to submit such determination to the stockholders for their consideration at an annual meeting thereof to be held within seventy five (75) days after such receipt and such determination is made thereat, or (B) a special meeting of stockholders is called within fifteen (15) days after such receipt for the purpose of making such determination, such meeting is held for such purpose within sixty (60) days after having been so called and such determination is made thereat.

(g) Indemnitee shall cooperate with the person, persons or entity making such determination with respect to Indemnitee's entitlement to indemnification, including providing to such person, persons or entity upon reasonable advance request any documentation or information which is not privileged or otherwise protected from disclosure and which is reasonably available to Indemnitee and reasonably necessary to such determination. Any Independent Counsel, member of the Board or stockholder of the Company shall act reasonably and in good faith in making a determination regarding the Indemnitee's entitlement to indemnification under this Agreement. Any costs or expenses (including attorneys' fees and disbursements) incurred by Indemnitee in so cooperating with the person, persons or entity making such determination shall be borne by the Company (irrespective of the determination as to Indemnitee's entitlement to indemnification) and the Company hereby indemnifies and agrees to hold Indemnitee harmless therefrom.

(h) The Company acknowledges that a settlement or other disposition short of final judgment may be successful if it permits a party to avoid expense, delay, distraction, disruption and uncertainty. In the event that any action, claim or proceeding to which Indemnitee is a party is resolved in any manner other than by adverse judgment against Indemnitee (including, without limitation, settlement of such action, claim or proceeding with or without payment of money or other consideration) it shall be presumed that Indemnitee has been successful on the merits or otherwise in such action, suit or proceeding. Anyone seeking to overcome this presumption shall have the burden of proof and the burden of persuasion by clear and convincing evidence.

(i) The termination of any Proceeding or of any claim, issue or matter therein, by judgment, order, settlement or conviction, or upon a plea of nolo contendere or its equivalent, shall not (except as otherwise expressly provided in this Agreement) of itself adversely affect the right of Indemnitee to indemnification or create a presumption that Indemnitee did not act in good faith and in a manner which he reasonably believed to be in or not opposed to the best interests of the Company or, with respect to any criminal Proceeding, that Indemnitee had reasonable cause to believe that his conduct was unlawful.

7. Remedies of Indemnitee.

(a) In the event that (i) a determination is made pursuant to Section 6 of this Agreement that Indemnitee is not entitled to indemnification under this Agreement, (ii) advancement of Expenses is not timely made pursuant to Section 5 of this Agreement, (iii) no determination of entitlement to indemnification is made pursuant to Section 6(b) of this Agreement within ninety (90) days after receipt by the Company of the request for indemnification, (iv) payment of indemnification is not made pursuant to this Agreement within ten (10) days after receipt by the Company of a written request therefor, or (v) payment of indemnification is not made within ten (10) days after a determination has been made that Indemnitee is entitled to indemnification or such determination is deemed to have been made pursuant to Section 6 of this Agreement, Indemnitee shall be entitled to an adjudication in an appropriate court of the State of Delaware, or in any other court of competent jurisdiction, of Indemnitee's entitlement to such indemnification. Indemnitee shall commence such proceeding seeking an adjudication within one hundred eighty (180) days following the date on which Indemnitee first has the right to commence such proceeding pursuant to this Section 7(a). The Company shall not oppose Indemnitee's right to seek any such adjudication.

(b) In the event that a determination shall have been made pursuant to Section 6(b) of this Agreement that Indemnitee is not entitled to indemnification, any judicial proceeding commenced pursuant to this Section 7 shall be conducted in all respects as a de novo trial on the merits, and Indemnitee shall not be prejudiced by reason of the adverse determination under Section 6(b).

(c) If a determination shall have been made pursuant to Section 6(b) of this Agreement that Indemnitee is entitled to indemnification, the Company shall be bound by such determination in any judicial proceeding commenced pursuant to this Section 7, absent (i) a misstatement by Indemnitee of a material fact, or an omission of a material fact necessary to make Indemnitee's misstatement not materially misleading in connection with the application for indemnification, or (ii) a prohibition of such indemnification under applicable law.

(d) In the event that Indemnitee, pursuant to this Section 7, seeks a judicial adjudication of his rights under, or to recover damages for breach of, this Agreement, or to recover under any directors' and officers' liability insurance policies maintained by the Company, the Company shall pay on his behalf, in advance, any and all expenses (of the types described in the definition of Expenses in Section 13 of this Agreement) actually and reasonably incurred by him in such judicial adjudication, regardless of whether Indemnitee ultimately is determined to be entitled to such indemnification, advancement of expenses or insurance recovery.

(e) The Company shall be precluded from asserting in any judicial proceeding commenced pursuant to this Section 7 that the procedures and presumptions of this Agreement are not valid, binding and enforceable and shall stipulate in any such court that the Company is bound by all the provisions of this Agreement. The Company shall indemnify Indemnitee against any and all Expenses and, if requested by Indemnitee, shall (within ten (10) days after receipt by the Company of a written request therefore) advance, to the extent not prohibited by law, such expenses to Indemnitee, which are incurred by Indemnitee in connection with any action brought by Indemnitee for indemnification or advance of Expenses from the Company under this

Agreement or under any directors' and officers' liability insurance policies maintained by the Company, regardless of whether Indemnitee ultimately is determined to be entitled to such indemnification, advancement of Expenses or insurance recovery, as the case may be.

(f) Notwithstanding anything in this Agreement to the contrary, no determination as to entitlement to indemnification under this Agreement shall be required to be made prior to the final disposition of the Proceeding.

8. Non-Exclusivity; Survival of Rights; Insurance; Primacy of Indemnification; Subrogation.

(a) The rights of indemnification as provided by this Agreement shall not be deemed exclusive of any other rights to which Indemnitee may at any time be entitled under applicable law, the Certificate of Incorporation, the By-laws, any agreement, a vote of stockholders, a resolution of directors of the Company, or otherwise. No amendment, alteration or repeal of this Agreement or of any provision hereof shall limit or restrict any right of Indemnitee under this Agreement in respect of any action taken or omitted by such Indemnitee in his Corporate Status prior to such amendment, alteration or repeal. To the extent that a change in the DGCL, whether by statute or judicial decision, permits greater indemnification than would be afforded currently under the Certificate of Incorporation, By-laws and this Agreement, it is the intent of the parties hereto that Indemnitee shall enjoy by this Agreement the greater benefits so afforded by such change. No right or remedy herein conferred is intended to be exclusive of any other right or remedy, and every other right and remedy shall be cumulative and in addition to every other right and remedy given hereunder or now or hereafter existing at law or in equity or otherwise. The assertion or employment of any right or remedy hereunder, or otherwise, shall not prevent the concurrent assertion or employment of any other right or remedy.

(b) To the extent that the Company maintains an insurance policy or policies providing liability insurance for directors, officers, employees, or agents or fiduciaries of the Company or of any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise that such person serves at the request of the Company, Indemnitee shall be covered by such policy or policies in accordance with its or their terms to the maximum extent of the coverage available for any director, officer, employee, agent or fiduciary under such policy or policies. If, at the time of the receipt of a notice of a claim pursuant to the terms hereof, the Company has directors' and officers' liability insurance in effect, the Company shall give prompt notice of the commencement of such proceeding to the insurers in accordance with the procedures set forth in the respective policies. The Company shall thereafter take all necessary or desirable action to cause such insurers to pay, on behalf of the Indemnitee, all amounts payable as a result of such proceeding in accordance with the terms of such policies.

(c) The Company hereby acknowledges that Indemnitee has certain rights to indemnification, advancement of expenses and/or insurance provided by [ ] (collectively, the "**Fund Indemnitors**"). The Company hereby agrees (i) that it is the indemnitor of first resort *(i.e.*, its obligations to Indemnitee are primary and any obligation of the Fund Indemnitors to advance expenses or to provide indemnification for the same expenses or liabilities incurred by Indemnitee are secondary), (ii) that it shall be required to advance the full amount of expenses incurred by Indemnitee and shall be liable for the full amount of all Expenses, judgments,

penalties, fines and amounts paid in settlement to the extent legally permitted and as required by the terms of this Agreement and the Certificate of Incorporation or Bylaws of the Company (or any other agreement between the Company and Indemnitee), without regard to any rights Indemnitee may have against the Fund Indemnitors, and (iii) that it irrevocably waives, relinquishes and releases the Fund Indemnitors from any and all claims against the Fund Indemnitors for contribution, subrogation or any other recovery of any kind in respect thereof. The Company further agrees that no advancement or payment by the Fund Indemnitors on behalf of Indemnitee with respect to any claim for which Indemnitee has sought indemnification from the Company shall affect the foregoing and the Fund Indemnitors shall have a right of contribution and/or be subrogated to the extent of such advancement or payment to all of the rights of recovery of Indemnitee against the Company. The Company and Indemnitee agree that the Fund Indemnitors are express third party beneficiaries of the terms of this Section 8(c).

(d) Except as provided in paragraph (c) above, in the event of any payment under this Agreement, the Company shall be subrogated to the extent of such payment to all of the rights of recovery of Indemnitee (other than against the Fund Indemnitors), who shall execute all papers required and take all action necessary to secure such rights, including execution of such documents as are necessary to enable the Company to bring suit to enforce such rights.

(e) Except as provided in paragraph (c) above, the Company shall not be liable under this Agreement to make any payment of amounts otherwise indemnifiable hereunder if and to the extent that Indemnitee has otherwise actually received such payment under any insurance policy, contract, agreement or otherwise.

(f) Except as provided in paragraph (c) above, the Company's obligation to indemnify or advance Expenses hereunder to Indemnitee who is or was serving at the request of the Company as a director, officer, employee or agent of any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise shall be reduced by any amount Indemnitee has actually received as indemnification or advancement of expenses from such other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise.

9. Exception to Right of Indemnification. Notwithstanding any provision in this Agreement, the Company shall not be obligated under this Agreement to make any indemnity in connection with any claim made against Indemnitee:

(a) for which payment has actually been made to or on behalf of Indemnitee under any insurance policy or other indemnity provision, except with respect to any excess beyond the amount paid under any insurance policy or other indemnity provision, provided, that the foregoing shall not affect the rights of Indemnitee or the Fund Indemnitors set forth in Section 8(c) above; or

(b) for an accounting of profits made from the purchase and sale (or sale and purchase) by Indemnitee of securities of the Company within the meaning of Section 16(b) of the Securities Exchange Act of 1934, as amended, or similar provisions of state statutory law or common law; or

(c) in connection with any Proceeding (or any part of any Proceeding) initiated by Indemnitee, including any Proceeding (or any part of any Proceeding) initiated by Indemnitee against the Company or its directors, officers, employees or other indemnitees, unless (i) the Board authorized the Proceeding (or any part of any Proceeding) prior to its initiation, (ii) the Company provides the indemnification, in its sole discretion, pursuant to the powers vested in the Company under applicable law [or (iii) the Proceeding is to enforce Indemnitee's rights under this Agreement and an adjudication is made in favor of Indemnitee in accordance with Section 7(a) of this Agreement].

10. Duration of Agreement. All agreements and obligations of the Company contained herein shall continue during the period Indemnitee is an officer or director of the Company (or is or was serving at the request of the Company as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise) and [for a period of five (5) years thereafter and] shall continue thereafter so long as Indemnitee shall be subject to any Proceeding (or any proceeding commenced under Section 7 hereof) by reason of his Corporate Status, whether or not he is acting or serving in any such capacity at the time any liability or expense is incurred for which indemnification can be provided under this Agreement. This Agreement shall be binding upon and inure to the benefit of and be enforceable by the parties hereto and their respective successors (including any direct or indirect successor by purchase, merger, consolidation or otherwise to all or substantially all of the business or assets of the Company), assigns, spouses, heirs, executors and personal and legal representatives.

11. Security. To the extent requested by Indemnitee and approved by the Board, the Company may at any time and from time to time provide security to Indemnitee for the Company's obligations hereunder through an irrevocable bank line of credit, funded trust or other collateral. Any such security, once provided to Indemnitee, may not be revoked or released without the prior written consent of the Indemnitee.

12. Enforcement.

(a) The Company expressly confirms and agrees that it has entered into this Agreement and assumes the obligations imposed on it hereby in order to induce Indemnitee to serve as an officer or director of the Company, and the Company acknowledges that Indemnitee is relying upon this Agreement in serving as an officer or director of the Company.

(b) This Agreement constitutes the entire agreement between the parties hereto with respect to the subject matter hereof and supersedes all prior agreements and understandings, oral, written and implied, between the parties hereto with respect to the subject matter hereof.

(c) The Company shall not seek from a court, or agree to, a "bar order" which would have the effect of prohibiting or limiting the Indemnitee's rights to receive advancement of expenses under this Agreement.

13. Definitions. For purposes of this Agreement:

(a) "**Corporate Status**" describes the status of a person who is or was a director, officer, employee, agent or fiduciary of the Company or of any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise that such person is or was serving at the express written request of the Company.

(b) "**Disinterested Director**" means a director of the Company who is not and was not a party to the Proceeding in respect of which indemnification is sought by Indemnitee.

(c) "**Enterprise**" shall mean the Company and any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise that Indemnitee is or was serving at the express written request of the Company as a director, officer, employee, agent or fiduciary.

(d) "**Expenses**" shall include all reasonable attorneys' fees, retainers, court costs, transcript costs, fees of experts, witness fees, travel expenses, duplicating costs, printing and binding costs, telephone charges, postage, delivery service fees and all other disbursements or expenses of the types customarily incurred in connection with prosecuting, defending, preparing to prosecute or defend, investigating, participating, or being or preparing to be a witness in a Proceeding, or responding to, or objecting to, a request to provide discovery in any Proceeding. Expenses also shall include Expenses incurred in connection with any appeal resulting from any Proceeding and any federal, state, local or foreign taxes imposed on the Indemnitee as a result of the actual or deemed receipt of any payments under this Agreement, including without limitation the premium, security for, and other costs relating to any cost bond, supersede as bond, or other appeal bond or its equivalent. Expenses, however, shall not include amounts paid in settlement by Indemnitee or the amount of judgments or fines against Indemnitee.

(e) "**Independent Counsel**" means a law firm, or a member of a law firm, that is experienced in matters of corporation law and neither presently is, nor in the past five years has been, retained to represent (i) the Company or Indemnitee in any matter material to either such party (other than with respect to matters concerning Indemnitee under this Agreement, or of other indemnitees under similar indemnification agreements), or (ii) any other party to the Proceeding giving rise to a claim for indemnification hereunder. Notwithstanding the foregoing, the term "Independent Counsel" shall not include any person who, under the applicable standards of professional conduct then prevailing, would have a conflict of interest in representing either the Company or Indemnitee in an action to determine Indemnitee's rights under this Agreement. The Company agrees to pay the reasonable fees of the Independent Counsel referred to above and to fully indemnify such counsel against any and all Expenses, claims, liabilities and damages arising out of or relating to this Agreement or its engagement pursuant hereto.

(f) "**Proceeding**" includes any threatened, pending or completed action, suit, arbitration, alternate dispute resolution mechanism, investigation, inquiry, administrative hearing or any other actual, threatened or completed proceeding, whether brought by or in the right of the Company or otherwise and whether civil, criminal, administrative or investigative, in which Indemnitee was, is or will be involved as a party or otherwise, by reason of his or her Corporate Status, by reason of any action taken by him or of any inaction on his part while acting in his or her Corporate Status; in each case whether or not he is acting or serving in any such capacity at the time any liability or expense is incurred for which indemnification can be provided under this Agreement; including one pending on or before the date of this Agreement, but excluding one initiated by an Indemnitee pursuant to Section 7 of this Agreement to enforce his rights under this Agreement.

14. Severability. The invalidity or unenforceability of any provision hereof shall in no way affect the validity or enforceability of any other provision. Further, the invalidity or unenforceability of any provision hereof as to either Indemnitee or Appointing Stockholder shall in no way affect the validity or enforceability of any provision hereof as to the other. Without limiting the generality of the foregoing, this Agreement is intended to confer upon Indemnitee and Appointing Stockholder indemnification rights to the fullest extent permitted by applicable laws. In the event any provision hereof conflicts with any applicable law, such provision shall be deemed modified, consistent with the aforementioned intent, to the extent necessary to resolve such conflict.

15. Modification and Waiver. No supplement, modification, termination or amendment of this Agreement shall be binding unless executed in writing by both of the parties hereto. No waiver of any of the provisions of this Agreement shall be deemed or shall constitute a waiver of any other provisions hereof (whether or not similar) nor shall such waiver constitute a continuing waiver.

16. Notice By Indemnitee. Indemnitee agrees promptly to notify the Company in writing upon being served with or otherwise receiving any summons, citation, subpoena, complaint, indictment, information or other document relating to any Proceeding or matter which may be subject to indemnification covered hereunder. The failure to so notify the Company shall not relieve the Company of any obligation which it may have to Indemnitee under this Agreement or otherwise unless and only to the extent that such failure or delay materially prejudices the Company.

17. Notices. All notices and other communications given or made pursuant to this Agreement shall be in writing and shall be deemed effectively given (a) upon personal delivery to the party to be notified, (b) when sent by confirmed electronic mail or facsimile if sent during normal business hours of the recipient, and if not so confirmed, then on the next business day, (c) five (5) days after having been sent by registered or certified mail, return receipt requested, postage prepaid, or (d) one (1) day after deposit with a nationally recognized overnight courier, specifying next day delivery, with written verification of receipt. All communications shall be sent:

(a) To Indemnitee at the address set forth below Indemnitee signature hereto.

(b) To the Company at:

700 Technology Square
3rd Floor
Cambridge, MA 02139
Attention: Chief Executive Officer

or to such other address as may have been furnished to Indemnitee by the Company or to the Company by Indemnitee, as the case may be.

18. Counterparts. This Agreement may be executed in two (2) or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same the same instrument. Counterparts may be delivered via facsimile, electronic mail (including pdf or any electronic signature complying with the U.S. federal ESIGN Act of 2000, *e.g.*, www.docusign.com) or other transmission method and any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes.

19. Headings. The headings of the paragraphs of this Agreement are inserted for convenience only and shall not be deemed to constitute part of this Agreement or to affect the construction thereof.

20. Governing Law and Consent to Jurisdiction. This Agreement and the legal relations among the parties shall be governed by, and construed and enforced in accordance with, the laws of the State of Delaware, without regard to its conflict of laws rules. The Company and Indemnitee hereby irrevocably and unconditionally (i) agree that any action or proceeding arising out of or in connection with this Agreement shall be brought only in the Chancery Court of the State of Delaware (the "**Delaware Court**"), and not in any other state or federal court in the United States of America or any court in any other country, (ii) consent to submit to the exclusive jurisdiction of the Delaware Court for purposes of any action or proceeding arising out of or in connection with this Agreement, (iii) appoint, to the extent such party is not otherwise subject to service of process in the State of Delaware, irrevocably The Corporation Trust Company, Corporation Trust Center, Wilmington, Delaware, 19801 as its agent in the State of Delaware as such party's agent for acceptance of legal process in connection with any such action or proceeding against such party with the same legal force and validity as if served upon such party personally within the State of Delaware, (iv) waive any objection to the laying of venue of any such action or proceeding in the Delaware Court, and (v) waive, and agree not to plead or to make, any claim that any such action or proceeding brought in the Delaware Court has been brought in an improper or inconvenient forum.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties hereto have executed this Indemnification Agreement on and as of the day and year first above written.

COMPANY

By: _____
Name:
Title:

INDEMNITEE

_____
[Name]

Address:

_____

_____

_____

_____

[Signature Page to Indemnification Agreement]

Exhibit 10.13

Execution Version

OFFICE LEASE AGREEMENT

BY AND BETWEEN

COLUMBIA REIT — 116 HUNTINGTON, LLC

a Delaware limited liability company

AND

IMARA INC.

a Delaware corporation

116 Huntington Avenue

Boston, Massachusetts 02116

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OFFICE LEASE AGREEMENT

THIS OFFICE LEASE AGREEMENT (this "**Lease**") is dated as of May 20, 2019 (the "**Execution Date**"), by and between **COLUMBIA REIT — 116 HUNTINGTON, LLC**, a Delaware limited liability company ("**Landlord**"), and **IMARA INC.**, a Delaware corporation ("**Tenant**").

ARTICLE I
DEFINITIONS

BASIC DEFINITIONS:

1.1 **Anticipated Occupancy Date:** August 1, 2019.

1.2 **Base Rent**: the annual amount payable as set forth in the following table:

Lease Year	Rate Per Rentable Square Foot	Monthly Installment	Annual Installment*
1**	$ 63.00	$22,102.50	$265,230.00
2	$ 64.26	$22,544.55	$270,534.60
3	$ 65.55	$22,997.13	$275,965.50
4	$ 66.86	$23,456.72	$281,480.60
5	$ 68.20	$23,926.83	$287,122.00
6***	$ 69.56	$24,403.97	$292,847.60

* *Based on twelve (12) full calendar months.*
** *Subject to abatement as set forth in Section 4.2.*
*** *Partial Lease Year.*

1.3 **Base Rent Annual Escalation Percentage:** two percent (2%).

1.4 **Broker(s):** Cushman & Wakefield U.S., Inc. ("**Landlord's Broker**"); and Newmark Knight Frank ("**Tenant's Broker**").

1.5 **Building**: a fifteen (15) story (above grade) building deemed to contain two hundred seventy-two thousand six hundred twenty-nine (272,629) square feet of total rentable area ("**Total Area**") located at 116 Huntington Avenue, Boston, Massachusetts 02116, which includes the entirety of the office and commercial space of the Building.

1.6 **Building Hours**: 8:00 a.m. to 6:00 p.m. Monday through Friday (excluding Holidays) and 9:00 a.m. to 1:00 p.m. on Saturday (excluding Holidays), subject to provisions in Section 14.1 of this Lease.

1.7 **Expiration Date**: 11:59 p.m. (local time at the Building) on the last day of the Lease Term.

1.8 **Guarantor**(s): not applicable.

1.9 **Holidays**: All holidays recognized by the United States federal government.

1.10 **Improvements Allowance:** Eighty-Four Thousand Two Hundred Dollars ($84,200.00), which is the product of Twenty Dollars ($20.00) multiplied by the rentable area of the Premises.

1.11 **Landlord Notice Address**: Columbia REIT — 116 Huntington, LLC, c/o Columbia Property Trust, Inc., 1170 Peachtree Street, N.E., Suite 600, Atlanta, Georgia 30309, Attention: Asset Manager — East Region; with copy to Columbia Property Trust, Inc., 801 Pennsylvania Ave., N.W., Suite 505, Washington, DC 20004, Attention: Mark Witschorik; and copy to the property manager (currently Jones Lang LaSalle Americas, Inc. at 116 Huntington Avenue, Boston, Massachusetts 02116, Attention: Management Office); and copy to Stroock & Stroock & Lavan, 1875 K Street, N.W., Suite 800, Washington, D.C. 20004, Attention: Jeffrey R. Keitelman, Esq.

1.12 **Landlord Payment Address**:

Via Mail:
Columbia REIT — 116 Huntington, LLC
P.O. Box 28973
New York, NY 10087-8973

Via Overnight Delivery:
JPMorgan Chase-Lockbox Processing
Lockbox: Columbia REIT — 116 Huntington, LLC,
#28973
4 Chase Metrotech Center- 7th Floor East
Brooklyn, NY 11245

Via Wire or Electronic Funds Transfer:
Bank Name — J.P. Morgan Chase
Bank Address — NY, NY
ABA # — 021000021
Account Name — Columbia REIT — 116 Huntington, LLC
Account # — 676335511

At Landlord's option upon at least thirty (30) days' written notice, Tenant shall make all payments by means of electronic transfer of funds or in such other manner as Landlord may from time to time specify in writing.

1.13 **Lease Commencement Date**: 12:01 a.m. (local time at the Building) on the earlier of: (a) the Delivery Date (as defined in Section 3.3); or (b) the date on which Tenant commences business operations in the Premises, subject to Section 3.3. Notwithstanding the foregoing, Tenant shall not have any right to commence use of the Premises unless the same are vacant and delivered to Tenant by Landlord.

1.14 **Lease Term**: sixty-two (62) months commencing on the Lease Commencement Date, subject to Section 3.1.

1.15 **Move In Period**: the period commencing on the fourteenth (14th) day prior to the projected Lease Commencement Date (as reasonably determined by Landlord) and continuing through the day before the Lease Commencement Date; provided that no access whatsoever shall be permitted unless Tenant shall deliver to Landlord written evidence specifying that Tenant is then carrying all insurance required by this Lease to be carried by Tenant and its contractors.

1.16 [Reserved]

1.17 **Parking Space Allotment**: The right to park, on an unreserved and nonexclusive basis, subject to the provisions of Article XXIV, up to one (1) passenger automobiles in the Parking Facilities (based on one (1) permit for each four thousand three (4,500) square feet of rentable area in the Premises, rounded up).

1.18 **Premises**: deemed to contain four thousand two hundred ten (4,210) square feet of rentable area located on a portion of the sixth (6th) floor of the Building, as more particularly designated on **Exhibit A**. The rentable area of the Premises and the Building has been determined by the Building's architect and as of the date hereof is in accordance with the BOMA Standard Method for Measuring Floor Area in Office Buildings (ANSI Z65.1-1996) calculation methodology with accompanying guidelines. In addition, the rentable area of the Building and the Premises (and, accordingly, any other item in this Lease varying with square footage) is subject to adjustment by Landlord due to changes in the measurement, layout, configuration or building amenities of the Building.

1.19 [Reserved]

1.20 **Security Deposit Amount**: Eighty-Eight Thousand Four Hundred Ten Dollars ($88,410.00), subject to reduction as set forth in Section 11.4.

1.21 **Tenant Notice Address**: 700 Technology Square, Cambridge, Massachusetts 02139, Attn: CFO, until Tenant has commenced beneficial use of the Premises; and 116 Huntington Avenue, Boston, Massachusetts 02116, Attn: CFO, after Tenant has commenced beneficial use of the Premises.

1.22 **Tenant's Proportionate Share**: 1.544% for each of Operating Charges and Real Estate Taxes.

1.23 **Operating Charges Base Year**: calendar year 2019.

1.24 **Real Estate Taxes Base Year**: July 1, 2019 through June 30, 2020 (i.e., City of Boston Fiscal Year 2020.

ADDITIONAL DEFINITIONS:

1.25 **ADA**: the Americans with Disabilities Act and the regulations promulgated thereunder, as the same may be amended from time to time.

1.26 **Affiliate of Tenant**: (i) a corporation, partnership, limited liability company, limited liability partnership, or other business entity (collectively, a "**successor corporation**") into or with which Tenant shall be merged or consolidated, or to which substantially all of the assets of, or control of, Tenant may be transferred or sold, provided that if Tenant is not the surviving corporation, partnership, limited liability company, limited liability partnership or other business entity in such merger or consolidation, or if Tenant transfers all or substantially all of its assets, then in either case such successor corporation either (a) shall have a net worth at least equal to the net worth of Tenant as of the date hereof, or (b) if the net worth is less than the net worth of Tenant as of the date hereof, shall be strong enough financially and creditworthy enough, as reasonably determined by Landlord taking into account the fact that the original Tenant under this Lease is not being released, to perform its obligations under this Lease, and provided that the successor corporation shall assume in writing all of the obligations and liabilities of Tenant under this Lease (without relieving Tenant therefrom) and the proposed use of the Premises is in compliance with Article VI; or (ii) a corporation or other business entity (a "**related corporation**") which shall control, be controlled by or be under common control with Tenant, and provided that such related corporation shall assume in writing all of the obligations and liabilities of Tenant under this Lease (without relieving Tenant therefrom) and the proposed use of the Premises is in compliance with Article VI. For purposes of this paragraph, "**control**" shall be deemed to be ownership of more than fifty percent (50%) of the stock or other voting interest of the controlled corporation or other business entity.

1.27 **Agents**: any agent, officer, employee, subtenant, assignee, contractor, client, family member, licensee, customer, invitee or guest of a party.

1.28 **Alterations**: any structural or other alterations, decorations, additions, installations, demolitions, improvements or other changes.

1.29 **Approved Space Plan**: a space plan, approved by both Landlord and Tenant, drawn to scale, which shall include, as Landlord deems reasonably necessary in order to complete Schedule II attached hereto, all partition types and locations; all doors and hardware requirements; all light fixtures and exit lights; all finish materials including glass, wall and floor finishes; all special ceiling conditions; all cabinetry and millwork with elevations and details; all modifications to existing base building HVAC equipment, all electrical receptacles; all data and voice locations; all floor load requirements, and the seating capacity of all conference rooms and furniture workstation areas; and all other information necessary for the Landlord to define the scope of Schedules I and II to **Exhibit B**. All plans shall be prepared by a licensed architect reasonably approved by Landlord and in a form sufficient to secure approvals of applicable governmental authorities.

1.30 **Bankruptcy Code**: Title 11 of the United States Code, as amended.

1.31 **Building Structure and Systems**: the exterior and common area walls, main lobby in the Building, slab floors, exterior windows, load bearing elements, foundations, roof and common areas that form a part of the Building, and the Building's standard mechanical, electrical, HVAC and plumbing systems, pipes and conduits that are provided by or on behalf of Landlord (or any predecessor) in the operation of the Building.

1.32 **Cabling**: telephone, computer and other communications and data systems and cabling.

1.33 **Case**: a formal proceeding in which Tenant is the subject debtor under the Bankruptcy Code.

1.34 **Common Areas**: those common and public areas and facilities of the Building and improvements to the Land which are from time to time provided by Landlord for the use or benefit of tenants in the Building or for use or benefit by the public in general, including (a) access corridors, elevator foyers and core bathrooms, to the extent the same are not located on floors of the Building fully leased to a single tenant and included in such tenant's premises, and (b) Building-wide mailrooms, fire rooms, vending areas, health and fitness facilities, janitorial areas and other similar facilities of the Building, and (c) any and all non-exclusive grounds, parks, landscaped areas, plazas, outside sitting areas, sidewalks, pedestrian ways, loading docks, and (d) generally all other common and public improvements on the Land.

1.35 **Construction Drawings:** the architectural, mechanical and engineering working drawings that define the total scope of work to be performed by Landlord or Tenant, as applicable, pursuant to **Exhibit B** in sufficient detail to secure required permits from the local jurisdiction and that include, without limitation: key plan; all legends and schedules; construction plan; reflected ceiling plan; telephone and electrical outlet location plan; finish plan; and all architectural details, elevations and specifications necessary to construct the Premises.

1.36 **Cosmetic Changes**: those minor, non-structural Alterations of a decorative nature consistent with a first-class office building for which a building permit is not required and which cost (including installation) in the aggregate less than Twenty Five Thousand Dollars ($25,000) per project or series of related projects, such as painting, carpeting and hanging pictures.

1.37 **Costs**: any costs, damages, claims, liabilities, expenses (including reasonable attorneys' fees), losses, penalties and court costs.

1.38 **Default Rate**: the greater of twelve percent (12%) per annum or the rate per annum which is five (5) whole percentage points higher than the Prime Rate.

1.39 **Environmental Default**: any of the following by Tenant or any Agent of Tenant: a violation of an Environmental Law; a release, spill or discharge of a Hazardous Material on or from the Premises, the Land or the Building; an environmental condition requiring responsive action; or an emergency environmental condition.

1.40 **Environmental Law**: any present and future Law and any amendments (whether common law, statute, rule, order, regulation or otherwise), permits and other requirements or guidelines of governmental authorities applicable to the Building or the Land and relating to the environment and environmental conditions or to any Hazardous Material (including CERCLA, 42 U.S.C. § 9601 et seq., the Resource Conservation and Recovery Act of 1976, 42 U.S.C. § 6901 et seq., the Hazardous Materials Transportation Act, 49 U.S.C. § 1801 et seq., the Federal Water Pollution Control Act, 33 U.S.C. § 1251 et seq., the Clean Air Act, 42 U.S.C. § 7401 et seq., the Toxic Substances Control Act, 15 U.S.C. § 2601 et seq., the Safe Drinking Water Act,

42 U.S.C. § 300f et seq., the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. § 1101 et seq., the Occupational Safety and Health Act, 29 U.S.C. § 651 et seq., and any so-called "Super Fund" or "Super Lien" law, any Law requiring the filing of reports and notices relating to hazardous substances, environmental laws administered by the Environmental Protection Agency, and any similar state and local Laws, all amendments thereto and all regulations, orders, decisions, and decrees now or hereafter promulgated thereunder concerning the environment, industrial hygiene or public health or safety).

1.41 **Event of Bankruptcy**: the occurrence with respect to any of Tenant, any Guarantor or any other person liable for Tenant's obligations hereunder (including any general partner of Tenant) of any of the following: (a) such person becoming insolvent, as that term is defined in the Bankruptcy Code or Insolvency Laws; (b) appointment of a receiver or custodian for any property of such person, or the institution of a foreclosure or attachment action upon any property of such person; (c) filing by such person of a voluntary petition under the provisions of the Bankruptcy Code or Insolvency Laws; (d) filing of an involuntary petition against such person as the subject debtor under the Bankruptcy Code or Insolvency Laws, which either (1) is not dismissed within sixty (60) days after filing, or (2) results in the issuance of an order for relief against the debtor; (e) such person making or consenting to an assignment for the benefit of creditors or a composition of creditors; (f) such person knowingly submitting (either before or after execution hereof) to Landlord any financial statement containing any material inaccuracy or omission; or (g) an admission by Tenant or any Guarantor of its inability to pay debts as they become due.

1.42 **Event of Default**: any of the following: (a) Tenant's failure to make when due any payment of the Base Rent, additional rent or other sum, which failure shall continue for a period of three (3) days after Landlord sends Tenant written notice thereof (except that Tenant shall not be entitled to any notice and cure period for the third and each subsequent such failure during any twelve month period during the Lease Term); (b) an Event of Bankruptcy; (c) Tenant's dissolution or liquidation; (d) any Environmental Default; (e) any sublease, assignment or mortgage not permitted by Article VII; (f) Tenant's failure to comply with any provision of Article 11; (g) Tenant's failure to perform or observe any covenant or condition of this Lease not otherwise specifically described above in this definition of "Event of Default," which failure shall continue for a period of twenty (20) days after Landlord sends Tenant written notice thereof (except that Tenant shall not be entitled to any notice and cure period for the third and each subsequent such failure during any twelve month period during the Lease Term); provided, however, that if such cure cannot reasonably be effected within such twenty (20) day period and Tenant begins such cure promptly within such twenty (20) day period and is pursuing such cure in good faith and with diligence and continuity, then, except in the event of an emergency, Tenant shall have such additional time (not to exceed ninety (90) days in total) as is reasonably necessary to effect such cure.

1.43 **Final Construction Drawings**: the Construction Drawings as approved (or deemed approved pursuant to **Exhibit B**) by both Landlord and Tenant.

1.44 **Hazardous Materials**: (a) asbestos and any asbestos containing material and any substance that is then defined or listed in, or otherwise classified pursuant to, any Environmental Law or any other applicable Law as a "hazardous substance," "hazardous material," "hazardous

waste," "infectious waste," "toxic substance," "toxic pollutant" or any other formulation intended to define, list, or classify substances by reason of deleterious properties such as ignitability, corrosivity, reactivity, carcinogenicity, toxicity, reproductive toxicity, or Toxicity Characteristic Leaching Procedure (TCLP) toxicity, (b) any petroleum and drilling fluids, produced waters, and other wastes associated with the exploration, development or production of crude oil, natural gas, or geothermal resources, (c) toxic mold, mildew or any substance that reasonably can be expected to give rise to toxic mold or mildew, or (d) any petroleum product, polychlorinated biphenyls, urea formaldehyde, radon gas, radioactive material (including any source, special nuclear, or by-product material), medical waste, chlorofluorocarbon, lead or lead-based product, and any other substance whose presence could be detrimental to the Building or the Land or hazardous to health or the environment.

1.45 **including**: including, but not limited to; including, without limitation; and words of similar import.

1.46 **Insolvency Laws**: the insolvency Laws of any state.

1.47 **Landlord Insured Parties**: Landlord's Representatives, the managing agent of the Building and the holder of any Mortgage, in each case of whom Landlord shall have given notice to Tenant, and any other party that Landlord may reasonably designate in writing from time to time.

1.48 **Landlord's Representatives**: Landlord's affiliates, shareholders, partners, directors, officers, employees, agents and representatives.

1.49 **Landlord's Work**: As defined in **Exhibit B**.

1.50 **Laws**: all present and future laws, ordinances (including zoning ordinances and land use requirements), regulations, orders and recommendations (including those made by any public or private agency having authority over insurance rates).

1.51 **Lease Year**: a period of twelve (12) consecutive months commencing on the Lease Commencement Date, and each successive twelve (12) month period thereafter; provided, however, that if the Lease Commencement Date is not the first day of a month, then the second Lease Year shall commence on the first day of the month following the month in which the first anniversary of the Lease Commencement Date occurs (e.g., if the Lease Commencement Date is September 15, 2019, the second Lease Year will begin October 1, 2020).

1.52 **Mortgages**: all mortgages, deeds of trust, deeds to secure debt, ground leases or other security instruments which may now or hereafter encumber any portion of the Building or the Land.

1.53 **Operating Charges**: all actual expenses, charges and fees incurred by or on behalf of Landlord in connection with the management, operation, ownership, maintenance, servicing, insuring and repair of the Building (which is deemed to include the site upon which the Building is constructed (which site is sometimes referred to herein as the "**Land**"), the roof of the Building and any physical extensions therefrom, any driveways, sidewalks, landscaping and parking facilities in the Building or on the Land, and all other areas, facilities, improvements

and appurtenances relating to any of the foregoing) including the following: (1) electricity with respect to the Common Areas and the Building systems (as reasonably determined by Landlord), gas, water, HVAC (including chilled condenser water), sewer and other utility and service costs, charges and fees (including any tap fees and connection and switching fees) of every type and nature; (2) premiums, deductibles (which deductibles are consistent with deductibles incurred by landlords of comparable first class buildings in Back Bay submarket of Boston) and other charges for insurance; (3) management fees of not more than three percent (3%) of the adjusted gross revenues of the Building (plus amounts that would have been received had there been no rental abatements or other concessions); (4) costs of service, equipment rental, access control, landscaping and maintenance contracts; (5) maintenance, repair and (subject to the limitations on capital expenditures set forth below) replacement expenses and supplies; (6) depreciation/amortization for capital expenditures made by Landlord to reduce operating expenses or to comply with Laws imposed after the date hereof, which shall be charged in annual installments over the useful life of the items for which such costs are incurred (provided that in the case of capital expenditures reasonably estimated to reduce operating expenses as reasonably determined by an engineer or other qualified party, Landlord shall have the right to amortize such expenses in annual installments equal to the projected annual savings) together with interest, each calendar year such costs are charged to Operating Charges, on the unamortized balance at an interest rate of two percent (2%) in excess of the Prime Rate in effect on January 1 of each calendar year; (7) charges for janitorial and cleaning services and supplies; (8) any business, professional or occupational license tax payable by Landlord with respect to the Building and any association fees; (9) [reserved]; (10) sales, use and personal property taxes payable in connection with tangible personal property and services purchased for and used in connection with the Building; (11) reasonable third party accounting and audit fees relating to the determination of Operating Charges (and tenants' proportionate shares thereof) and the preparation of statements required by tenant leases; (12) expenses incurred in connection with concierge services provided to the Building (if any); (13) the fair market rental value of any management office (of reasonable and customary size) in the Building; (14) special assessments, fees, penalties and other charges and costs for transit, transit encouragement traffic reduction programs, or any similar purpose; (15) all costs of operating, maintaining, repairing and replacing equipment in any portion of any fitness facility, roof deck, function room, conference facility or other amenity of the Building (to the extent not offset by separate membership or usage fees imposed by Landlord); (16) payments or assessments required in connection with a reciprocal easement or similar agreement to which the Landlord or the Building is bound; (17) any other expense reasonably incurred by Landlord in arm's-length transactions in connection with maintaining, repairing or operating the Building; (18) costs and expenses for the maintenance and operation of parking areas and facilities and other parking arrangements for the Building for any transportation demand management program therefor, and for the maintenance and operation of shuttle bus and other transportation programs or facilities therefor; (19) all costs (including all fringe benefits, workers' compensation insurance premiums and payroll taxes) of employees at or below the level of property manager that are exclusively employed at the Building; and (20) all common area expenses and any and all other operating, management and other amounts imposed under private assessments and allocable to the Building. Notwithstanding any provision contained in this Lease to the contrary, Operating Charges shall not include: (i) Real Estate Taxes; (ii) principal or interest payments on any Mortgage; (iii) the costs of special services and utilities separately charged to particular tenants of the Building;

(iv) base rent or percentage rent payments under any ground lease; (v) advertising and promotional expenses directly relating to leasing; (vi) costs for which Landlord is reimbursed by insurance proceeds or from tenants of the Building (other than such tenants' regular contributions to Operating Charges) or any other source; (vii) costs directly and solely related to the maintenance and operation of the entity that constitutes the Landlord, such as accounting fees incurred solely for the purpose of reporting Landlord's financial condition; (viii) costs of repairs, replacements or other work occasioned by fire, windstorm or other casualty, or the exercise by governmental authorities of the right of eminent domain (except for the deductible under any insurance carried by Landlord); (ix) leasing commissions, attorney's fees, costs, disbursements and other expenses incurred by Landlord or its agents in connection with negotiations for leases with tenants, other occupants or prospective tenants or other occupants of the Building, and similar costs incurred in connection with disputes with and/or enforcement of any leases with tenants, other occupants, or prospective tenants or other occupants of the Building; (x) tenant allowances, tenant concessions, and other costs and expenses (including permit, license and inspection fees) incurred in connection with completing, fixturing, furnishing, renovating or otherwise improving, decorating or redecorating leased premises for tenants or other occupants, or vacant, leasable space in the Building, including space planning/interior architecture fees and/or engineering for same; (xi) costs or expenses (including fines, penalties and legal fees) incurred due to the violation (as compared to compliance costs) by Landlord, its agents or employees, any tenant (other than Tenant) or other occupant of the Building of any terms and conditions of this Lease or of the leases of other tenants in the Building, and/or of any valid applicable Laws that would not have been incurred but for such violation by Landlord, its agent or employee, tenant, or other occupant, it being intended that each party shall be responsible for the costs resulting from its violation of such leases and Law (provided that reasonable attorneys' fees to enforce rules and regulations for the Building shall be included in Operating Charges); (xii) penalties for any late payment by Landlord, including taxes and equipment leases; (xiii) compensation paid to clerks, attendants or other persons in commercial concessions (such as a snack bar, restaurant or newsstand, but not including Building amenities such as the fitness facility and the Parking Facilities, or any roof deck, function room, or conference facility); (xiv) Landlord's contributions to charitable organizations; (xv) costs of correcting defects, including any allowances for same, in the original construction of the Building; (xvi) costs in connection with services (including electricity), items or other benefits of a material type which are not available to Tenant without specific charge therefor, but which are provided to another tenant or occupant of the Building, whether or not such other tenant or occupant is specifically charged therefor by Landlord; (xvii) costs or expenses for the purchase or leasing of sculpture, paintings or other works of art, other than normal building decorations customary in projects comparable to the Building; and (xviii) reserves of any kind; and (xix) costs arising from the presence of Hazardous Materials in, about or below the Land or the Building (including any Hazardous Materials brought to, deposited on or disposed of at the Building by Landlord or its employees, agents, or contractors, but excluding those Hazardous Materials utilized in connection with the operation, maintenance and repair of the Building in the ordinary course and those brought, deposited or disposed of by Tenant or Tenant's Agents with respect to its use or occupancy of space in the Building).

1.54 **Parking Facilities**: the parking areas in the garage adjacent to the Building, including such valet arrangements, if any, as may be provided or permitted pursuant thereto.

1.55 **Prime Rate**: the prime rate published in the Money Rates section of the Wall Street Journal.

1.56 [Reserved]

1.57 **Proposed Sublease Commencement Date**: the anticipated commencement date of the proposed assignment, subletting or other transaction.

1.58 **Proposed Sublet Space**: the area proposed to be assigned, sublet or otherwise encumbered.

1.59 **Proposed Sublet Term**: the term for which the Proposed Sublet Space is proposed to be assigned, sublet or otherwise encumbered.

1.60 **Real Estate Taxes**: (1) all of the real estate taxes and assessments imposed upon or with respect to the Building or Landlord's interest therein; (2) any assessment, tax, fee, levy or charge in addition to, or in substitution, partially or totally, of any assessment, tax, fee, levy or charge previously included within the definition of real property tax, it being acknowledged by Tenant and Landlord that assessments, taxes, fees, levies and charges may be imposed by governmental agencies for such services as (without limitation) fire protection, street, sidewalk and road maintenance, refuse removal and for other governmental services formerly provided without charge to property owners or occupants, and Real Estate Taxes shall also include any governmental or private assessments or the contribution by the Building towards a governmental or private cost-sharing agreement for the purpose of augmenting or improving the quality of services and amenities normally provided by governmental agencies; (3) any assessment, tax, fee, levy, or charge allocable to or measured by the area of the Premises, or the rent or additional rent payable hereunder, including, without limitation, any business or gross income tax, gross receipts tax or excise tax with respect to the receipt of such rent, or upon or with respect to the possession, leasing, operating, management, maintenance, alteration, repair, use or occupancy by Tenant of the Premises, or any portion thereof; and (4) reasonable expenses (including reasonable attorneys' and consultants' fees and court costs, provided that attorneys' fees may be on a contingent fee basis) incurred in reviewing, protesting or seeking a reduction or abatement of, or defending or otherwise participating in any challenge to, real estate taxes, whether or not such protest or reduction is ultimately successful (provided, however, that such review, protest, or reduction attempt is undertaken in good faith by Landlord with the reasonable expectation to reduce Real Estate Taxes for the Building). Real Estate Taxes shall not include any inheritance, estate, gift, franchise, corporation, net income or net profits tax assessed against Landlord from the operation of the Building, or any interest charges or penalties incurred as a result of Landlord's failure to timely pay Real Estate Taxes (provided that if the taxing authority permits a taxpayer to elect to pay in installments, then, for purposes of determining the amount of Real Estate Taxes, if Landlord so elects to pay in installments, all interest charges shall be deemed Real Estate Taxes).

1.61 **Reconciliation Statement**: a reasonably detailed written statement showing (1) Tenant's Proportionate Share of the amount by which (A) Operating Charges incurred during the immediately preceding calendar year exceeded the Operating Charges Base Amount (as defined in Section 5.2(a)) (not including utilities or insurance costs), (B) utility costs incurred during the

immediately preceding calendar year exceeded utility costs incurred during the Operating Charges Base Year, (C) insurance costs incurred during the immediately preceding calendar year exceeded insurance costs incurred during the Operating Charges Base Year, and (D) Real Estate Taxes for the immediately preceding calendar year exceeded the Real Estate Taxes Base Amount (as defined in Section 5.3(a)), as applicable; and (2) the aggregate amount of Tenant's estimated payments made on account of Operating Charges, including utility costs, insurance costs, and Real Estate Taxes during such year, as applicable.

1.62 **Structural and System Alterations**: any Alteration that will or may necessitate any changes, replacements or additions to the load-bearing or exterior walls, non-drop ceilings, partitions (load-bearing or non-demising), columns or floor, or to the fire protection, water, sewer, electrical, mechanical, plumbing, HVAC or other base building systems, of the Premises or the Building.

1.63 **Tenant Items**: all non-Building standard supplemental heating, ventilation and air conditioning equipment and systems serving exclusively the Premises and any special tenant areas, facilities and finishes, any special fire protection equipment, any telecommunications, security, data, computer and similar equipment, cabling and wiring, kitchen/galley equipment and fixtures, all other furniture, furnishings, equipment and systems of Tenant and all Alterations.

1.64 **Tenant's Sublease Request Notice**: a notice to Landlord containing: the identity of a proposed assignee, subtenant or other party and its business; the terms of the proposed assignment, subletting or other transaction (including a copy of the proposed document for same); the Proposed Sublease Commencement Date; the Proposed Sublet Space; the Proposed Sublet Term, financial statements for the prior two (2) years certified by an authorized officer of the proposed assignee, subtenant or other party, or by a certified public accounting firm, or other evidence of financial responsibility of such proposed assignee, subtenant or other party; and a certification executed by Tenant and such party stating whether or not any premium or other consideration is being paid for the assignment, sublease or other transaction.

1.65 **Trustee**: a trustee-in-bankruptcy of Tenant under a Case.

ARTICLE II
PREMISES

2.1 Tenant leases the Premises from Landlord for the term and upon the conditions and covenants set forth in this Lease. Except as may otherwise be expressly provided in this Lease, the lease of the Premises does not include the right to use the roof, mechanical rooms, electrical closets, janitorial closets, telephone rooms, parking areas or non-common or non-public areas of any portion of the Building, whether or not any such areas are located within the Premises. However, Tenant shall have the non-exclusive right to use: (1) the plenums, risers, electrical closets, telephone rooms, ducts or pipes on or serving the floor on which the Premises are located (other than those installed for another tenant's exclusive use and provided Tenant shall have such utilization in no greater proportion than the ratio by which the square feet of rentable area in the Premises compares to the square feet of rentable area in the Building) in accordance with plans and specifications to be approved by Landlord in its sole discretion; (2)

the Parking Facilities in accordance with Article XXIV; and (3) any mechanical rooms, electrical closets and telephone rooms located within the Premises, for the purpose for which they were intended, but only with Landlord's prior consent (except to the extent that such rooms and closets contain no system, wiring or other item related to either the Building Structure and Systems or to a structure or system of any tenant or occupant other than Tenant, in which case no such prior consent of Landlord shall be required for use by Tenant's on-site, properly licensed and trained technicians) and strictly in accordance with Landlord's rules, regulations and requirements in connection therewith.

ARTICLE III
TERM

3.1 (a) All of the provisions of this Lease shall be in full force and effect from and after the Execution Date. The Lease Term shall commence on the Lease Commencement Date and expire at 11:59 P.M. on the Expiration Date. If the Lease Commencement Date is not the first day of a month, then the Lease Term shall be the period set forth in Section 1.14 plus the partial month in which the Lease Commencement Date occurs. The Lease Term shall also include any properly exercised renewal or extension of the term of this Lease.

(b) Provided no Event of Default by Tenant has occurred under this Lease, Tenant shall have the right to install in the Premises, during the Move In Period only, Tenant's Cabling and other furniture, furnishings, inventory, equipment, or trade fixtures, subject to all applicable terms and conditions of this Lease. At Tenant's request from time to time Landlord will inform Tenant of Landlord's good faith determination of the projected Lease Commencement Date. Neither Tenant nor any Agent of Tenant shall enter the Premises during those times that Landlord determines such entry will unreasonably interfere with activities of Landlord or Landlord's Agents, and, in such event, Landlord shall notify Tenant of specific times during which Tenant may make such entry. Any and all activity by Tenant or any Agent of Tenant prior to the Lease Commencement Date shall be coordinated with Landlord and its general contractor to ensure that such activity does not interfere with any other work. If Landlord determines that any such interference is occurring, then Landlord shall have the right to require the removal of the offending party from the Premises (with Tenant having no right to assert that the Lease Commencement Date or Tenant's other obligations are affected thereby). During the Move In Period, neither Tenant nor any of its Agents shall unreasonably delay or otherwise inhibit work being performed by Landlord or Landlord's Agents. Notwithstanding anything in this Lease to the contrary: (a) Landlord shall have no responsibility with respect to any items placed in the Premises by Tenant or any Agent of Tenant prior to the Lease Commencement Date; and (b) all of the provisions of this Lease (including all insurance, indemnity and utility provisions (except, with respect to utility consumption during the Move-In Period, Tenant shall only be responsible for excess utilities or utilities used outside of Building Hours)) shall apply during the Move In Period, except that during such period (i) Tenant shall not be obligated to pay Base Rent or Tenant's Proportionate Share of increases in Operating Charges and Real Estate Taxes and (ii) Landlord shall not be obligated to provide any utility, service or other item in excess of those customarily provided to or for the benefit of a premises in order for Landlord to perform its building standard initial improvement work thereto.

3.2 Promptly after the Lease Commencement Date is ascertained, Landlord and Tenant shall execute the certificate attached to this Lease as **Exhibit D**. Failure to execute said certificate shall not affect the commencement or expiration of the Lease Term.

3.3 (a) The date that Landlord delivers the Premises to Tenant in the Delivery Condition is hereby referred to as the "**Delivery Date**"; provided, however, that the Delivery Date shall be extended by one (1) day for each full day that Landlord is unable to deliver the Premises in compliance with all Laws (including the ADA), which failure prohibits the lawful occupancy or Premises or prohibits Tenant from conducting its business operations in the Premises. It is presently anticipated that the Delivery Date will occur on or about the Anticipated Occupancy Date; provided, however, that if the Delivery Date does not occur by such date, then, except as provided in this Section 3.3, Landlord shall not have any liability whatsoever, and this Lease shall not be rendered void or voidable, as a result thereof.

(b) If the Delivery Date does not occur on or before the thirtieth (30th) day following the Anticipated Occupancy Date, then, provided no Event of Default by Tenant has occurred, and Tenant has delivered to Landlord the insurance certificates required pursuant to Article XIII, Landlord shall grant to Tenant, as its sole and exclusive remedy, a rent abatement equal to one hundred percent (100%) of the per diem Base Rent payable during the first Lease Year for each day of such delay; provided that to the extent that such delay is attributable to any of the factors or causes described in Section 25.19 (i.e., force majeure conditions) not to exceed sixty (60) days, or any delays caused by Tenant or any Agent of Tenant, including those specified in Section 6(b) of Exhibit B, then Tenant shall not be entitled to any such rent abatement.

(c) If the Delivery Date does not occur on or before the one hundredth (100th) day following the Anticipated Occupancy Date (the "**Outside Delivery Date**"), then, provided no Event of Default exists under this Lease and except as otherwise provided below, Tenant shall have the right, as its sole and exclusive remedy (subject to subsection (b) above), to terminate this Lease by delivering written notice of the exercise of such right to Landlord. Such right of termination may be exercised by Tenant only during the period commencing on the business day following the Outside Delivery Date and continuing through the tenth (10th) business day thereafter, and if such right is not exercised by Tenant by said tenth (10th) business day, such right shall thereafter lapse and be of no further force or effect. If this Lease is terminated pursuant to this subsection, then neither party shall have any further obligations or liability hereunder to the other party; provided, however, that Landlord shall promptly refund any and all security deposits or advance rent previously deposited by Tenant with Landlord in accordance with the provisions of this Lease. Notwithstanding the foregoing, the Outside Delivery Date shall be extended on a day-for-day basis for each day the Delivery Date is delayed as a result of any of the factors or causes described in Section 25.19 for up to sixty (60) days, or any delay caused by Tenant or any Agent of Tenant (including those specified in Section 6(b) of Exhibit B).

3.4 Landlord hereby grants to Tenant the conditional right, exercisable at Tenant's option, to renew the Lease Term, with respect to all of the Premises, for one (1) term of five (5) years (the "**Renewal Term**"). If exercised, and if the conditions applicable thereto have been satisfied, the Renewal Term shall commence immediately following the Expiration Date. The rights of renewal herein granted to Tenant shall be subject to, and shall be exercised in accordance with, the following terms and conditions:

(a) Tenant shall exercise its right of renewal with respect to the Renewal Term by giving Landlord written notice (the "**Renewal Option Notice**") of such election not earlier than twelve (12) months nor later than nine (9) months prior to the expiration of the then-current Lease Term. The parties shall then have thirty (30) days after Landlord's timely receipt of such notice (the "**Negotiation Period**") in which to agree on the annual base rent, escalation factor and additional rent which shall be payable during the Renewal Term. The parties shall attempt in good faith to agree upon an annual base rent payable for the first year of the Renewal Term which would equal one hundred percent (100%) of the applicable fair market rent taking into account the Market Items (as defined below) for renewal transactions. The term "Market Items" shall mean, if then applicable, rent abatements, brokerage commissions, construction allowances for standard and above-standard construction. Among the factors to be considered by the parties during such negotiations shall be the general office rental market in the Back Bay submarket of Boston, the rental rates then-being quoted by Landlord to comparable tenants for comparable space in the Building and comparable buildings, and the rents being charged to similar tenants in similar office space in multi-tenanted, multi-story, first-class office buildings. If during the Negotiation Period the parties agree on such annual base rent, escalation factor and additional rent, then they shall promptly execute an amendment to the Lease stating the terms so agreed upon. If during the Negotiation Period the parties are unable, for any reason whatsoever, to agree on such annual base rent, escalation factor (if any) and additional rent payable, then within five (5) business days after the last day of the Negotiation Period, the parties shall each appoint a real estate broker who shall be licensed in the Commonwealth of Massachusetts and who specializes in the field of commercial office space leasing in Boston, Massachusetts, has at least ten (10) years of experience and is recognized within the field as being reputable and ethical. Such two individuals shall each determine, within ten (10) business days after their appointment, such annual base rent, escalation factor (if any) and additional rent. If such individuals do not agree on such items, then the two individuals shall, within five (5) business days, render separate written reports of their determinations and together appoint a third similarly qualified individual. The third individual shall, within ten (10) business days after his or her appointment, select either Landlord's broker's determination or Tenant's broker's determination (this being the third broker's sole function) as being closest to the applicable fair market annual base rent, escalation factor (if any) and additional rent and shall notify the parties of such selection. The third broker's decision shall be final and conclusive, and binding on Landlord and Tenant. Landlord and Tenant shall each bear the cost of its broker and shall share equally the cost of the third broker. Upon determination of the annual base rent, escalation factor and concessions payable pursuant to this Section, the parties shall promptly execute an amendment to the Lease stating the rent and additional terms so determined.

(b) If the Renewal Option Notice is not given timely, then Tenant's right of renewal with respect to the Renewal Term shall lapse and be of no further force or effect.

(c) If an uncured Event of Default by Tenant exists on the date Tenant sends its Renewal Option Notice or at the time the Renewal Term is to commence, then, at Landlord's election, the Renewal Term shall not commence and the term of this Lease shall expire at the expiration of the Lease Term.

(d) If at any time thirty percent (30%) or more of the square feet of rentable area of the entire Premises has been subleased or assigned (other than to an Affiliate pursuant to Section 7.2(b)), or if the Lease has been terminated with respect to such portion of the Premises, then Tenant's rights pursuant to this Section shall lapse and be of no further force or effect.

(e) Tenant's right of renewal under this Section may be exercised only by Tenant or an Affiliate-assignee pursuant to Section 7.2(b) hereof, and may not be exercised by or for the benefit of any other transferee, sublessee or assignee of Tenant (other than Affiliate).

(f) The Renewal Term may be exercised only with respect to all of the then-current Premises.

ARTICLE IV
BASE RENT

4.1 From and after the Lease Commencement Date, Tenant shall pay the Base Rent in equal monthly installments in advance on the first day of each month during a Lease Year.

4.2 Notwithstanding the foregoing, provided no Event of Default by Tenant has occurred under this Lease, Landlord grants to Tenant an abatement of the Base Rent otherwise payable hereunder during the first Lease Year, which amount shall be credited toward the monthly installments of Base Rent payable for the first two (2) full calendar months of the Lease Term commencing on the Lease Commencement Date (the "**Abatement Period**"). Concurrently with Tenant's execution of this Lease, Tenant shall pay an amount equal to one (1) monthly installment of the Base Rent payable during the first Lease Year, which amount shall be credited toward the monthly installment of Base Rent payable for the first full calendar month of the Lease Term following the Abatement Period. If the Lease Commencement Date is not the first day of a month, then the Base Rent from the Lease Commencement Date until the first day of the following month shall be prorated on a per diem basis at the rate of one thirtieth (1/30th) of the monthly installment of the Base Rent payable during the first Lease Year, and Tenant shall pay such prorated installment of the Base Rent on the day following the expiration of the Abatement Period.

4.3 All sums payable by Tenant under this Lease shall be paid to Landlord in legal tender of the United States, without setoff, deduction or demand (except as expressly set forth in this Lease), at the Landlord Payment Address, or to such other party or such other address as Landlord may designate in writing. Landlord's acceptance of rent after it shall have become due and payable shall not excuse a delay upon any subsequent occasion or constitute a waiver of any of Landlord's rights hereunder. If any sum payable by Tenant under this Lease is paid by check which is returned due to insufficient funds, stop payment order, or otherwise, then: (a) such event shall be treated as a failure to pay such sum when due; and (b) in addition to all other rights and remedies of Landlord hereunder, Landlord shall be entitled (i) to impose a returned check charge of Fifty Dollars ($50.00) to cover Landlord's administrative expenses and overhead for processing, and (ii) to require that all future payments be remitted by wire transfer, money order, or cashier's or certified check.

4.4 Landlord and Tenant agree that no rental or other payment for the use or occupancy of the Premises is or shall be based in whole or in part on the net income or profits derived by any person or entity from the Building or the Premises. Tenant will not enter into any sublease, license, concession or other agreement for any use or occupancy of the Premises which provides for a rental or other payment for such use or occupancy based in whole or in part on the net income or profits derived by any person or entity from the Premises so leased, used or occupied. Nothing in the foregoing sentence, however, shall be construed as permitting or constituting Landlord's approval of any sublease, license, concession, or other use or occupancy agreement not otherwise approved by Landlord in accordance with the provisions of Article VII.

ARTICLE V
OPERATING CHARGES AND REAL ESTATE TAXES

5.1 For purposes of this Article V, the term "**Building**" shall be deemed to include the **Land**, the roof of the Building and any physical extensions therefrom, any driveways, sidewalks, landscaping, alleys and parking facilities in the Building or on the Land, and all other areas, facilities, improvements and appurtenances relating to any of the foregoing. If the Building is operated as part of a complex of buildings or in conjunction with other buildings or parcels of land, Landlord shall prorate the common expenses and costs with respect to each such building or parcel of land in its sole but reasonable judgment.

5.2 (a) From and after the day following the expiration of the Operating Charges Base Year, subject to Section 5.4 below, Tenant shall pay as additional rent Tenant's Proportionate Share of the amount by which Operating Charges for each calendar year falling entirely or partly within the Lease Term exceed a base amount (the "**Operating Charges Base Amount**") equal to the Operating Charges incurred during the Operating Charges Base Year; provided, however, that for purposes of determining Tenant's Proportionate Share of increases in Operating Charges, increases in Operating Charges in the aggregate shall not include increases in utility costs and insurance costs, and (x) Tenant shall pay its Proportionate Share of the amount by which utility costs for each calendar year falling entirely or partly within the Lease Term exceed the utility costs incurred during the Operating Charges Base Year, and (y) Tenant shall pay its Proportionate Share of the amount by which insurance costs for each calendar year falling entirely or partly within the Lease Term exceed the insurance costs incurred during the Operating Charges Base Year. Tenant's Proportionate Share with respect to Operating Charges set forth in Article I has been calculated to be that percentage which is equal to a fraction, the numerator of which is the number of square feet of rentable area in the Premises as set forth in the definition of the term "Premises" in Article I, and the denominator of which is the number of square feet of Total Area. In the event that after the Operating Charges Base Year, Landlord introduces a new service or amenity that is not customarily offered by landlords of comparable-class office buildings in the Market Area (or that is customarily offered by landlords of comparable-class office buildings in the Market Area during the Operating Charges Base Year, but is not offered by Landlord during the Operating Charges Base Year) and that results in an Operating Charge that was not included in the Operating Charges Base Amount, then such Operating Charge shall be added to the Operating Charges Base Amount, such that Tenant shall only be obligated to pay for Tenant's Proportionate Share of increases over such new Operating Charge.

(b) If the average occupancy rate for the Building during any calendar year during the Lease Term (including the Operating Charges Base Year) is less than ninety-five percent (95%), or if any tenant is separately paying for (or does not require) janitorial or other utilities or services furnished to its premises, then Landlord shall include in Operating Charges for such year all additional expenses, as reasonably estimated by Landlord, which would have been incurred during such year if such average occupancy rate had been ninety-five percent (95%) and if Landlord paid for such utilities or services furnished to such premises.

(c) Tenant shall make estimated monthly payments to Landlord on account of Tenant's Proportionate Share of the amount by which (i) Operating Charges (excluding utilities and insurance) that are expected to be incurred during each calendar year would exceed the Operating Charges Base Amount, (ii) utility costs that are expected to be incurred during each calendar year would exceed the utility costs incurred during the Operating Charges Base Year, and (iii) insurance costs that are expected to be incurred during each calendar year would exceed the insurance costs incurred during the Operating Charges Base Year. At the beginning of each calendar year after the Lease Commencement Date, Landlord shall submit a reasonably detailed written statement setting forth Landlord's reasonable estimate of Tenant's Proportionate Share thereof. Tenant shall pay to Landlord on the first day of each month following receipt of such statement, until Tenant's receipt of the succeeding annual statement, an amount equal to one twelfth (1/12) of each such share (estimated on an annual basis without proration pursuant to Section 5.4). If Landlord does not provide Tenant with an updated estimate in any calendar year during the Lease Term, Tenant shall continue to pay monthly installments based on the most recent estimate(s) until Landlord provides Tenant with the new estimate. Not more than twice during any calendar year, Landlord may revise Landlord's estimate and adjust Tenant's monthly payments to reflect Landlord's revised estimate. Within one hundred twenty (120) days after the end of each calendar year, or as soon thereafter as is feasible, Landlord shall submit a Reconciliation Statement for Operating Charges. If such Reconciliation Statement indicates that the aggregate amount of such estimated payments exceeds Tenant's actual liability, then Landlord shall credit the net overpayment toward Tenant's next installment(s) of rent due under this Lease, or, if the Lease Term has expired or will expire before such credit can be fully applied, or if Tenant is not otherwise liable to Landlord for further payment, Landlord shall reimburse Tenant for the amount of such overpayment within thirty (30) days. If such statement indicates that Tenant's actual liability exceeds the aggregate amount of such estimated payments, then Tenant shall pay the amount of such excess as additional rent.

5.3 (a) From and after the day following the day following the expiration of the Real Estate Taxes Base Year, Tenant shall pay as additional rent Tenant's Proportionate Share of the amount by which Real Estate Taxes for each calendar year falling entirely or partly within the Lease Term exceed a base amount (the "**Real Estate Taxes Base Amount**") equal to the Real Estate Taxes incurred during the Real Estate Taxes Base Year. Tenant's Proportionate Share with respect to Real Estate Taxes set forth in Article I has been calculated to be that percentage which is equal to a fraction, the numerator of which is the number of square feet of rentable area in the Premises as set forth in Article I above, and the denominator of which is the number of square feet of Total Area. Tenant shall not initiate or participate in any contest of Real Estate Taxes without Landlord's prior written consent.

(b) Tenant shall make estimated monthly payments to Landlord on account of Tenant's Proportionate Share of the amount by which Real Estate Taxes that are expected to be incurred during each calendar year would exceed the Real Estate Taxes Base Amount. At the beginning of each calendar year after the Lease Commencement Date, Landlord shall submit a reasonably detailed written statement setting forth Landlord's reasonable estimate of Tenant's Proportionate Share thereof. Tenant shall pay to Landlord on the first day of each month following receipt of such statement, until Tenant's receipt of the succeeding annual statement, an amount equal to one twelfth (1/12) of such share (estimated on an annual basis without proration pursuant to Section 5.4). If Landlord does not provide Tenant with an updated estimate in any calendar year during the Lease Term, Tenant shall continue to pay monthly installments based on the most recent estimate(s) until Landlord provides Tenant with the new estimate. Not more than twice during any calendar year, Landlord may revise Landlord's estimate and adjust Tenant's monthly payments to reflect Landlord's revised estimate. Within one hundred twenty (120) days after the end of each calendar year, or as soon thereafter as is feasible, Landlord shall submit a Reconciliation Statement for Real Estate Taxes. If such Reconciliation Statement indicates that the aggregate amount of such estimated payments exceeds Tenant's actual liability, then Landlord shall credit the net overpayment toward Tenant's next installment(s) of rent due under this Lease, or, if the Lease Term hereof has expired or will expire before such credit can be fully applied, of if Tenant is not otherwise liable for further payment, Landlord shall reimburse Tenant for the amount of such overpayment within thirty (30) days. If such statement indicates that Tenant's actual liability exceeds the aggregate amount of such estimated payments, then Tenant shall pay the amount of such excess as additional rent.

5.4 If Tenant's obligations under this Article I commence or expire on a day other than the first day or the last day of a calendar year, respectively, then Tenant's liabilities pursuant to this Article for such calendar year shall be the amount that Tenant would have owed hereunder for the full calendar year had such calendar year fallen entirely within the Lease Term, multiplied by a fraction, the numerator of which is the number of days during such calendar year falling within the Lease Term, and the denominator of which is three hundred sixty five (365).

ARTICLE VI
USE OF PREMISES

6.1 Tenant shall use and occupy the Premises solely for general (non-medical and non-governmental) office purposes compatible with first class office buildings in the Building's submarket, and for no other use or purpose. Tenant shall not use or occupy the Premises for any unlawful purpose, or in any manner that will violate the certificate of occupancy for the Premises or the Building, or that will constitute waste, nuisance or unreasonable annoyance to Landlord or any other tenant or user of the Building, or in any manner that will increase the number of parking spaces required for the Building or its full occupancy as required by law. Landlord at its expense (subject to reimbursement pursuant to Article V, if and to the extent permitted thereby) shall comply with all Laws to the extent the same apply directly to the Building Structure and Systems and Common Areas as a whole; provided, however, that to the extent any non-compliance is a result of the particular use or occupancy of the Premises (as opposed to office use generally), or any negligence or willful misconduct by of Tenant or any Agent of Tenant, or if any improvements made by Landlord to comply with such Laws benefit solely the Premises, then such compliance shall be at Tenant's cost. Following Landlord's delivery of the Premises

in accordance with all applicable Laws, Tenant shall comply with all Laws concerning the use, occupancy and condition of the Premises and all machinery, equipment, furnishings, fixtures and improvements therein, all in a timely manner at Tenant's sole expense. If any Law requires an occupancy or use permit or license for the Premises or the operation of the business conducted therein, then Tenant shall obtain and keep current such permit or license at Tenant's expense and shall promptly deliver a copy thereof to Landlord. Without limiting the generality of any of the foregoing: Tenant, at its expense, shall install and maintain fire extinguishers and other fire protection devices as may be required with respect to Tenant's use of the Premises from time to time by any agency having jurisdiction thereof and/or the underwriters insuring the Building; and Tenant at its sole cost and expense shall be solely responsible for taking any and all measures which are required to comply with the ADA concerning the Premises (including suite entry doors and related items) and the business conducted therein. Any Alterations made or constructed by or for Tenant for the purpose of complying with the ADA or which otherwise require compliance with the ADA shall be done in accordance with this Lease; provided, that Landlord's consent to such Alterations shall not constitute either Landlord's assumption, in whole or in part, of Tenant's responsibility for compliance with the ADA, or representation or confirmation by Landlord that such Alterations comply with the provisions of the ADA. Use of the Premises is subject to all covenants, conditions and restrictions of record. Tenant shall not use any space in the Building or the Land for the sale of goods to the public at large or for the sale at auction of goods or property of any kind. Tenant shall not conduct any operations, sales, promotions, advertising or special events outside the Premises, in the Building or on the Land.

6.2 Tenant shall pay before delinquency any business, rent or other taxes or fees that are now or hereafter levied, assessed or imposed upon Tenant's use or occupancy of the Premises, the conduct of Tenant's business at the Premises, or Tenant's equipment, fixtures, furnishings, inventory or personal property. If any such tax or fee is enacted or altered so that such tax or fee is levied against Landlord or so that Landlord is responsible for collection or payment thereof, then Tenant shall pay as additional rent the amount of such tax or fee. In addition to Base Rent and other charges to be paid by Tenant hereunder, Tenant shall reimburse Landlord upon demand for any and all taxes or assessments payable by Landlord by applicable Laws, whether or not now customary or within the contemplation of the parties hereto, to the extent not included in Real Estate Taxes: (a) upon, measured by or reasonably attributable to the cost or value of Tenant's equipment, furniture, fixtures and other personal property located in the Premises or by the cost or value of any improvements made in or to the Premises by Tenant regardless of whether title to such improvements shall be in Tenant or Landlord; (b) upon or measured by the rental, parking fees and other charges payable hereunder in the nature of a sales tax upon rent, fees or other charges or a so-called "rent tax" or as a substitute for or in lieu of any increase in any taxes now in effect in connection with the payment of rent or other charges for the use, occupancy, possession or tenancy of the demised premises for each month or portion thereof during the term of this Lease, but not federal or state income taxes of Landlord; and (c) upon this transaction or any document to which Tenant is a party creating or transferring an interest in the Premises. Tenant agrees to pay all sales taxes and rent taxes in the manner and in accordance with the requirements of applicable Laws. If the applicable taxing authority shall require Landlord or Landlord's agent to collect any sales taxes or rent taxes for or on behalf of the applicable taxing authority, then such sales taxes or rent taxes shall be paid by Tenant to Landlord or Landlord's agent monthly with the rent payments and other charges required to be paid hereunder, in accordance with the requirements of the applicable taxing authority. In the

event that it shall not be lawful for Tenant so to reimburse Landlord, the monthly rental payable to Landlord under this Lease shall be revised to net Landlord the same net rental after imposition of any such tax upon Landlord as would have been payable to Landlord if such tax had not been imposed.

6.3 Tenant shall not allow, cause or permit any Hazardous Materials to be generated, used, treated, released, stored or disposed of in or about the Building or the Land, provided that Tenant may use and store normal and reasonable quantities of standard cleaning and office materials in the Premises as may be reasonably necessary for Tenant to conduct normal general office use operations in the Premises so long as such materials are properly, safely and lawfully stored, used and disposed of by Tenant and the quantity of same does not equal or exceed a "reportable quantity" as defined in 40 C.F.R. 302 and 305, as amended. At the expiration or earlier termination of this Lease, with respect to conditions existing on account of Tenant's use or occupancy of the Premises or any action or inaction of Tenant or any Agent of Tenant (it being understood that the term "inaction" as used in this Section shall not impose upon Tenant any obligation to remove Hazardous Materials existing in the Premises as of the Lease Commencement Date which were introduced into the Premises by anyone other than Tenant or any Agent of Tenant, unless such condition is knowingly aggravated as a result of Tenant's use or occupancy of the Premises), Tenant shall surrender the Premises to Landlord free of Hazardous Materials and in compliance with all Environmental Laws. Tenant shall: (i) give Landlord immediate verbal and follow up written notice of any actual or threatened Environmental Default with respect to conditions existing on account of Tenant's use or occupancy of the Premises or any action or inaction of Tenant or any Agent of Tenant, which Environmental Default Tenant shall cure in accordance with all Environmental Laws and only after Tenant has obtained Landlord's prior written consent, which shall not be unreasonably withheld, conditioned or delayed; and (ii) promptly deliver to Landlord copies of any notices or other items received from or submitted to any governmental or quasi-governmental agency, or any claim instituted or threatened by any third party, concerning the Premises, the occupancy or use thereof, or the existence or potential existence of Hazardous Materials therein. Upon any Environmental Default, in addition to all other rights available to Landlord under this Lease, at law or in equity, Landlord shall have the right but not the obligation to immediately enter the Premises, to supervise and approve any actions taken by Tenant to address the Environmental Default, and, if Tenant fails to immediately address same in accordance with this Lease, to perform, with respect to conditions existing on account of Tenant's use or occupancy of the Premises or any action or inaction of Tenant or any Agent of Tenant, at Tenant's sole cost and expense, any lawful action necessary to address same.

ARTICLE VII
ASSIGNMENT AND SUBLETTING

7.1 Except as otherwise expressly provided in this Lease, Tenant shall not assign, transfer or otherwise encumber, including an assignment or transfer by operation of law (collectively, "**assign**") this Lease or all or any of Tenant's rights hereunder or interest herein, or sublet or permit anyone to use or occupy (collectively, "**sublet**") the Premises or any part thereof, without obtaining the prior written consent of Landlord, which consent may be withheld or granted in Landlord's sole discretion (subject to the remainder of this Article VII). Notwithstanding any of the foregoing to the contrary, provided no Event of Default exists under

this Lease, and subject to Landlord's rights and Tenant's obligations pursuant to Sections 7.3, 7.4 and 7.5 below, Landlord shall not unreasonably withhold, condition or delay its consent to any proposed subletting of the entire or any portion of the Premises or assignment of the Lease in its entirety. For purposes of the immediately preceding sentence, it shall be reasonable for Landlord to withhold its consent if, for example: (i) the proposed subtenant or assignee is engaged in a business, or the Premises will be used in a manner, that is inconsistent with the first class image of the Building; or (ii) Landlord is not reasonably satisfied with the financial condition of the proposed subtenant or assignee, taking into account Tenant's continuing primary liability under this Lease; or (iii) the proposed use of the Premises is not in compliance with Article VI or is not compatible with the other uses within, and the terms of other leases with respect to, the Building; or (iv) the proposed subtenant or assignee is a governmental or quasi- governmental agency; or (v) the holders of Mortgages encumbering the Building shall fail to consent (Landlord hereby agreeing to use commercially reasonable efforts to obtain such consent if Landlord approves such transaction); or (vi) the proposed subtenant or assignee is either (A) an existing tenant of the Building (or any parent, subsidiary or affiliate thereof) if Landlord has adequate space available in the Building for a comparable term, or (B) for a period of one hundred eighty (180) days following the submission of a written proposal for the lease of space (and thereafter if a mutual agreement such as a letter of intent is executed within such period), any other person or entity with which Landlord is in the process of negotiating for the rental of space in the Building; or (vii) either such assignment or sublease or any consideration payable to Landlord in connection therewith adversely affects the real estate investment trust qualification tests applicable to Landlord or Landlord's Representatives pursuant to Section 856(c) of the Internal Revenue Code of 1986, as amended from time to time. Any attempted assignment, transfer or other encumbrance of this Lease or all or any of Tenant's rights hereunder or interest herein, and any sublet or permission to use or occupy the Premises or any part thereof not in accordance with this Article VII, shall, at Landlord's election, be void and of no force or effect. Any assignment or subletting, Landlord's consent thereto, the listing or posting of any name other than Tenant's, or Landlord's collection or acceptance of rent from any assignee or subtenant shall not be construed either (x) as waiving or releasing Tenant from any of its liabilities or obligations under this Lease as a principal and not as a guarantor or surety, for all of which liabilities and obligations Tenant shall remain fully liable hereunder, or (y) as relieving Tenant or any assignee or subtenant from the obligation of obtaining Landlord's prior written consent to any subsequent assignment or subletting. As security for this Lease, Tenant hereby assigns to Landlord the rent due from any assignee or subtenant of Tenant. During any period that there exists an uncured Event of Default under this Lease, Tenant hereby authorizes each such assignee or subtenant to pay said rent directly to Landlord upon receipt of notice from Landlord specifying same. Landlord's collection of such rent shall not be construed as an acceptance of such assignee or subtenant as a tenant. Tenant shall not mortgage, pledge, hypothecate or encumber (collectively "**mortgage**") this Lease. Tenant shall pay to Landlord an administrative fee equal to five hundred dollars ($500) plus all other reasonable, out-of-pocket, third party expenses (including reasonable attorneys' fees and accounting costs) incurred by Landlord in connection with Tenant's request for Landlord to give its consent to any assignment, subletting, or mortgage, and Landlord's receipt of such sum shall be a condition to Landlord providing such consent. Any sublease, assignment or mortgage shall, at Landlord's option, be effected on forms reasonably approved by Landlord. Tenant shall deliver to Landlord a fully executed copy of each agreement evidencing a sublease, assignment or mortgage, and Landlord's consent thereto, within ten (10) days after execution thereof.

7.2 (a) If Tenant is or becomes a partnership or a limited liability company, then any event (whether voluntary, concurrent or related) resulting in a dissolution of Tenant, any withdrawal or change (whether voluntary, involuntary or by operation of law) of the partners or members, as applicable, owning a controlling interest in Tenant (including each general partner or manager, as applicable), or any structural or other change having the effect of limiting the liability of the partners shall be deemed a prohibited assignment of this Lease subject to the provisions of this Article. If Tenant is or becomes a corporation or a partnership with a corporate general partner, then any event (whether voluntary, concurrent or related) resulting in a dissolution, merger, consolidation or other reorganization of Tenant (or such corporate general partner), or the sale or transfer or relinquishment of the interest of shareholders who, as of the date of this Lease, own a controlling interest of the capital stock of Tenant (or such corporate general partner), shall be deemed a prohibited assignment of this Lease subject to the provisions of this Article; provided, however, that if Tenant is a corporation whose stock is traded through a national or regional exchange or over the counter market, then the foregoing portion of this sentence shall be applicable only if such event has or is intended to have the effect of limiting liability under this Lease.

(b) Notwithstanding anything contained in this Article VII to the contrary, provided no Event of Default exists hereunder, Tenant may, upon not less than ten (10) days' prior written notice to Landlord (which notice shall contain a written certificate from Tenant signed by an authorized representative of Tenant, containing a representation as to the true, correct and complete legal and beneficial relationship of Tenant and the proposed assignee, transferee or subtenant) but without Landlord's prior written consent and without being subject to Landlord's rights and Tenant's obligations set forth in Sections 7.4 and 7.5 below, assign or transfer its entire interest in this Lease or sublease the entire or any portion of the Premises to an Affiliate of Tenant. In the event of any such assignment or subletting, Tenant shall remain fully liable as a primary obligor for the payment of all rent and other charges required hereunder and for the performance of all obligations to be performed by Tenant hereunder. Notwithstanding the foregoing, if Tenant structures an assignment or sublease to an entity that meets the definition of an Affiliate of Tenant for the purpose of circumventing the restrictions on subleases and assignments provided elsewhere in this Article VII, then such subtenant or assignee shall conclusively be deemed not to be an Affiliate of Tenant and subject to all such restrictions. If the transaction in question is subject to regulatory or contractual confidentiality requirements, the ten (10) day notice period set forth above shall not apply but Tenant shall notify Landlord of said transfer or sublease to an Affiliate of Tenant within ten (10) days following the date of transfer or sublease.

7.3 If at any time during the Lease Term Tenant desires to assign or sublet all or part of this Lease or the Premises and the same is subject to Landlord's consent, then in connection with Tenant's request to Landlord for Landlord's consent where required, Tenant shall give to Landlord a Tenant's Sublease Request Notice, which shall specify the Proposed Sublet Space and the Proposed Sublet Term, evidence of financial responsibility of such proposed assignee, subtenant or other party in light of the financial obligation being assigned to such party, and a certification executed by Tenant and such party stating whether or not any premium or other consideration is being paid for the assignment, sublease or other transaction.

7.4 Except as set forth in Section 7.2(b) concerning Affiliates, Landlord shall have the right in its sole and absolute discretion to terminate this Lease with respect to the Proposed Sublet Space for the Proposed Sublet Term by sending Tenant written notice of such termination within twenty (20) days after Landlord's receipt of Tenant's Sublease Request Notice. Notwithstanding any of the foregoing to the contrary, if Landlord sends Tenant a written notice pursuant to the preceding sentence indicating Landlord's intention to terminate this Lease with respect to the Proposed Sublet Space, then Tenant shall have the right, for a period of five (5) business days after receipt of such notice, to withdraw (by written notice to Landlord) Tenant's Sublease Request Notice. If the Proposed Sublet Space does not constitute the entire Premises and/or if the Proposed Sublet Term does not constitute the entire remaining term hereof, and if Landlord so terminates, then (a) Tenant shall tender the Proposed Sublet Space to Landlord on the Proposed Sublease Commencement Date and such space shall thereafter be deleted from the Premises for the Proposed Sublet Term, and (b) as to that portion of the Premises (if any) which is not part of the Proposed Sublet Space, this Lease shall remain in full force and effect except that Base Rent and additional rent shall be reduced pro rata, and (c) if applicable, as of the expiration of the Proposed Sublet Term, Landlord shall return the Proposed Sublet Space to Tenant in its then as-is condition for the remainder of the term hereof. Landlord shall perform any and all construction and other work required to permit the operation of the Proposed Sublet Space separate from the balance of the Premises, in which event Tenant shall pay to Landlord as additional rent fifty percent (50%) of the costs and expenses incurred by Landlord in connection therewith. If the Proposed Sublet Space constitutes the entire Premises and the Proposed Sublet Term constitutes the entire remaining term hereof, and Landlord so terminates, then Tenant shall tender the Proposed Sublet Space to Landlord, and this Lease shall terminate, on the Proposed Sublease Commencement Date.

7.5 If any sublease or assignment (whether by operation of law or otherwise, including an assignment pursuant to the Bankruptcy Code or any Insolvency Law) provides that the subtenant or assignee thereunder is to pay any amount in excess of the sum of (a) the rent and other charges due under this Lease plus (b) the reasonable out-of-pocket expenses (excluding, however, any costs attributable to vacancy periods or "downtime") reasonably incurred by Tenant in connection with the procurement of such sublease, assignment or other transfer (which expenses shall be amortized on a straight-line basis over the initial sublease term for the purposes hereof), then, whether such net excess be in the form of an increased monthly or annual rental, a lump sum payment, payment for the sale, transfer or lease of Tenant's fixtures, leasehold improvements, furniture and other personal property, or any other form of payment having the effect of a "disguised" rental payment (and if the subleased or assigned space does not constitute the entire Premises, the existence of such excess shall be determined on a pro rata basis), Tenant shall pay to Landlord, along with Base Rent, fifty percent (50%) of any such net excess or other premium, which amount shall be calculated and paid by Tenant to Landlord on a monthly basis as additional rent. Notwithstanding the foregoing, Landlord is not intending to receive any amounts considered to be based on the net income or profits of Tenant or any subtenant. Acceptance by Landlord of any payments due under this Section shall not be deemed to constitute approval by Landlord of any sublease or assignment, nor shall such acceptance waive any rights of Landlord hereunder. Landlord shall have the right to inspect and audit Tenant's books and records relating to any sublease or assignment.

7.6 All restrictions and obligations imposed pursuant to this Lease on Tenant shall be deemed to extend to any subtenant, assignee, licensee, concessionaire or other occupant or transferee (provided that Landlord's consent to any further assignments of the Lease or further sublet of any portion of the Premises shall be at Landlord's sole and absolute discretion), and Tenant shall cause such person to comply with such restrictions and obligations. Any assignee shall be deemed to have assumed obligations as if such assignee had originally executed this Lease and at Landlord's request shall execute promptly a document confirming such assumption. Each sublease is subject to the condition that if the Lease Term is terminated or Landlord succeeds to Tenant's interest in the Premises by voluntary surrender or otherwise, at Landlord's option the subtenant shall be bound to Landlord for the balance of the term of such sublease and shall attorn to and recognize Landlord as its landlord under the then executory terms of such sublease.

7.7 Notwithstanding anything to the contrary in this Lease, if Tenant or any proposed subtenant or assignee claims that Landlord has unreasonably withheld or delayed its consent or otherwise has breached or acted unreasonably under this Article VII, the sole remedies shall be a suit for contract damages (other than damages for injury to, or interference with, Tenant's business including, without limitation, loss of profits, however occurring) or a declaratory judgment and an injunction for the relief sought, and Tenant hereby waives the provisions of any statute, and all other remedies, including, without limitation, any right at law or equity to terminate this Lease, on its own behalf and, to the extent permitted under all applicable Laws, on behalf of the proposed subtenant or assignee.

ARTICLE VIII
MAINTENANCE AND REPAIRS

8.1 During the Lease Term and subject to Landlord's obligations as set forth in Section 8.2 below, Tenant, at Tenant's sole cost and expense, shall promptly make all repairs and replacements, and perform all maintenance, in and to the Premises to keep the Premises in good operating condition and repair, in a clean, safe and tenantable condition, and otherwise in accordance with all Laws and the requirements of this Lease. Tenant shall likewise maintain all fixtures, furnishings and equipment located in, or exclusively serving, the Premises and make all required repairs and replacements thereto. Tenant shall also maintain, repair and replace, at Tenant's sole cost and expense, the Tenant Items and shall keep in force customary maintenance and service contracts therefor. Tenant shall give Landlord prompt written notice of any defects or damage to the structure of, or equipment or fixtures in, the Building or any part thereof, or any mold or moisture condition, of which Tenant has knowledge. Tenant shall suffer no waste or injury to any part of the Premises, and shall, at the expiration or earlier termination of the Lease Term, surrender the Premises in an order and condition equal to or better than that on the Lease Commencement Date, except for ordinary wear and tear and as otherwise provided in Article XIII or Article XVII. Except as otherwise provided in Article XVII, all injury, breakage and damage to the Premises and to any other part of the Building or the Land caused by any act or omission of Tenant or any Agent of Tenant, shall be repaired by and at Tenant's expense, except that if either an emergency condition exists or the Lease Term has expired or Tenant fails to

commence and diligently prosecute to completion repair of any such injury, breakage or damage within a reasonable period (not to exceed ten (10) days) following Tenant's receipt of notice from Landlord, then Landlord shall have the right at Landlord's option, after notifying Tenant in writing of its intention to exercise its rights pursuant to this Section 8.1, to make any such repair and to charge Tenant for all costs and expenses incurred in connection therewith, together with Landlord's standard administrative fee. Landlord shall provide and install replacement tubes for Building standard fluorescent light fixtures (subject to reimbursement pursuant to Article V). All other bulbs and tubes for the Premises shall be provided and installed at Tenant's expense (including Landlord's standard administrative fee); provided that if Tenant elects to supply the bulbs or tubes to Landlord, then Landlord shall provide the labor involved for such replacement at Tenant's expense (including Landlord's standard administrative fee).

8.2 Except as otherwise provided in this Lease and subject to normal wear and tear, Landlord at its expense (subject to reimbursement pursuant to Article V if and to the extent permitted thereby) shall keep the Common Areas and the Building Structure and Systems, clean and in good operating condition and, promptly after becoming aware of any item needing repair or replacement, will make such repair or replacement. Notwithstanding any of the foregoing to the contrary: (a) maintenance and repair of all Tenant Items shall be the sole responsibility of Tenant and shall be deemed not to be a part of the Building Structure and Systems; and (b) Landlord shall have no obligation to make any repairs whatsoever brought about by any act or omission of Tenant or any Agent of Tenant. To the fullest extent permitted by Law, Tenant hereby waives all rights to make repairs at the expense of Landlord or in lieu thereof to vacate the Premises as may be provided by any Law. Landlord has no obligation and has made no promise to alter, remodel, improve, repair, decorate or paint the Premises or any part thereof, except as specifically and expressly herein set forth.

ARTICLE IX
ALTERATIONS

9.1 The initial improvement of the Premises under this Lease (i.e., "Landlord's Work," as defined in **Exhibit B**) shall be accomplished by Landlord or its designated contractor(s) in accordance with **Exhibit B**. Landlord shall deliver the Premises and Tenant shall accept the Premises in its "as is" condition as of the Lease Commencement Date, provided that Landlord shall deliver the Premises (i) vacant, in broom clean condition, and free of prior tenants and furniture, fixtures, equipment and personal belongings of a prior tenant, and (ii) with Landlord's Work substantially complete and (collectively, the "**Delivery Condition**"). It is understood and agreed that the preceding sentence is not intended to waive or limit Landlord's obligation to deliver the Premises in compliance with all applicable Laws (including the ADA). Landlord is under no obligation to make any Alterations in or to the Premises or the Building except as may be otherwise expressly provided in this Lease, including **Exhibit B** to this Lease. Upon Tenant's written request, Landlord shall use commercially reasonable to enforce any warranties or guaranties obtained in connection with Landlord's Work.

9.2 Tenant shall not make or permit anyone to make any Alterations in or to the Premises or the Building without the prior written consent of Landlord, which consent may be withheld or granted in Landlord's sole and absolute discretion with respect to Structural and System Alterations and any Alterations which are visible from the exterior of the Premises, and

which consent shall not be unreasonably withheld, conditioned or delayed with respect to all other Alterations. Notwithstanding the foregoing, Tenant shall have the right to make Cosmetic Changes within the Premises without first obtaining the consent of Landlord. All Alterations made by Tenant shall be made: (a) in a good, workerlike, first class and prompt manner; (b) using new or comparable materials only; (c) by a contractor reasonably approved in writing by Landlord; (d) on days and at times reasonably approved in writing by Landlord; (e) if architectural and/or engineering plans are required for such Alterations, under the supervision of an architect reasonably approved in writing by Landlord; (f) in accordance with plans and specifications reasonably acceptable to Landlord, approved in writing at Landlord's standard charge; (g) in accordance with all Laws, this Lease, and Landlord's then-current construction rules and regulations; (h) after Tenant and its contractors have complied with the insurance requirements set forth in this Lease, and any additional insurance to be obtained by Tenant's contractors and subcontractors as reasonably required by Landlord; and (i) upon request, after Tenant has delivered to Landlord documentation reasonably satisfactory to Landlord evidencing Tenant's financial ability to complete the Alterations in accordance with the provisions of this Lease (including, at Landlord's reasonable request, a payment or performance bond). If any lien (or a petition to establish such lien) is filed in connection with any Alteration made by or on behalf of Tenant, such lien (or petition) shall be discharged by Tenant within ten (10) days thereafter, at Tenant's sole cost and expense, by the payment thereof or by the filing of a bond reasonably acceptable to Landlord. If Landlord gives its consent to the making of any Alteration, such consent shall not be deemed to be an agreement or consent by Landlord to subject its interest in the Premises or the Building to any liens which may be filed in connection therewith. Tenant acknowledges that any Alterations are accomplished for Tenant's account and at Tenant's sole cost and expense, Landlord having no obligation or responsibility in respect thereof. Landlord's approval of any plans and drawings (and changes thereto) regarding any Alterations or any contractor or subcontractor performing such Alterations shall not constitute Landlord's representation that such approved plans, drawings, changes or Alterations comply with Laws. Any deficiency in design or construction, although same had prior approval of Landlord, shall be solely the responsibility of Tenant. All Alterations involving structural, electrical, mechanical or plumbing work, the heating, ventilation and air conditioning system of the Premises or the Building, fire and life safety systems, the roof of the Building, or any areas outside of the Premises shall, at Landlord's election, be performed by Landlord's designated contractor or subcontractor at Tenant's expense (provided the cost therefor is competitive). In connection with any Alteration, Landlord shall be paid a construction supervision fee in an amount equal to three percent (3%) of the total cost of such Alteration. Promptly after the completion of an Alteration for which architectural and/or engineering plans were required, or which includes Cabling, Tenant at its expense shall deliver to Landlord three (3) sets of accurate as built (or record) drawings and CAD drawings showing such Alteration in place. In addition, on Landlord's request, Tenant shall certify the names of all contractors and subcontractors who did work on the Alterations and shall provide final lien waives from all such contractors and subcontractors and any other documentation customarily provided in the State in which the Building is located to extinguish liens. All contractors and subcontractors shall be required to procure and maintain insurance against such risks, in such amounts, and with such companies as Landlord may reasonably require. Certificates of such insurance, with evidence of the payment of premiums therefor, must be received by Landlord before any work is commenced. All contracts between Tenant and a contractor must explicitly require the contractor to (a) name

Landlord and the Landlord Insured Parties as additional insureds and (b) indemnify and hold harmless Landlord and the Landlord Insured Parties. Notwithstanding anything contained in this Lease to the contrary, the performance of any Alterations pursuant to the provisions of this Article IX or of any other provisions of this Lease or the Exhibits hereto shall not be done in a manner which would violate any union contracts affecting the Building, or by which Landlord is bound, or create any work stoppage, picketing, labor disruption, disharmony or dispute or any interference with the business of Landlord or any tenant or occupant of the Building. Tenant shall immediately stop the performance of any Alterations or other activity if Landlord notifies Tenant that continuing such Alteration or activity would violate any union contracts affecting the Building, or by which Landlord is bound, or create any work stoppage, picketing, labor disruption, disharmony or dispute or any interference with the business of Landlord or any tenant or occupant of the Building.

9.3 If any Alterations that require Landlord's consent are made without the prior written consent of Landlord, then Landlord shall have the right, at Tenant's expense, to remove such Alterations and restore the Premises and the Building to their condition prior to the commencement of the unauthorized Alterations. All Alterations to the Premises or the Building made by either party shall immediately become the property of Landlord and shall remain upon and be surrendered with the Premises as a part thereof at the expiration or earlier termination of the Lease Term; provided, however, that (a) subject to any applicable Landlord's lien thereon, Tenant shall remove from the Premises, prior to the expiration or earlier termination of the Lease Term, (i) all personal property of Tenant, including without limitation movable furniture, furnishings and equipment installed in the Premises solely at the expense of Tenant ("**Personal Property**"), and (ii) all Cabling installed by or for Tenant anywhere in the Building, and (b) Tenant shall remove at its expense all Alterations and other items in the Premises or the Building which Landlord designates in writing for removal. Landlord shall make such designation promptly after receipt of a written request for such determination by Tenant given with Tenant's request for Landlord's approval of such Alteration. Notwithstanding the foregoing, Tenant shall not be required to remove: (x) Alterations (other than Cabling) consisting of standard buildout items that are typically installed by similar tenants in multi tenanted, multi-story, first class office buildings (such as partitions, but not interior staircases, for example), unless so indicated by Landlord at the time required above; and (y) any initial Alteration made by Landlord in initially finishing and completing the Premises in accordance with **Exhibit B** (i.e., Landlord's Work). If such removal causes damage or injury to the Premises or the Building, then Landlord shall have the right, at Tenant's expense, to repair all damage and injury to the Premises or the Building caused by such removal as aforesaid. Tenant expressly agrees that if any of Tenant's Personal Property is not removed by Tenant prior to the earlier of (i) the expiration (or earlier termination) of the Lease Term or (ii) the termination of Tenant's right of possession of the Premises, the same shall, at Landlord's option, be deemed abandoned or become the property of Landlord surrendered with the Premises as a part thereof; provided, however, that Landlord shall have the right at Tenant's expense to remove from the Premises any or all such items or to require Tenant to do the same, except as otherwise provided in this Section. If Tenant fails to return the Premises to Landlord as required by this Section, then Tenant shall pay to Landlord, all costs (including a construction management fee) incurred by Landlord in effectuating such return.

ARTICLE X
SIGNS

10.1 Landlord will, in connection with Tenant's initial occupancy of the Premises and at Landlord's expense, (i) list the name of Tenant in the Building lobby directory, if any, based on Tenant's pro-rata share of rentable square feet leased in the Building, (ii) provide Building standard suite entry signage next to one suite entry door; and (iii) provide Building standard directional signage in the elevator lobby on the sixth (6th) floor of the Building. Tenant shall not place, inscribe, paint, affix or otherwise display any sign, advertisement, picture, lettering or notice of any kind on any part of the exterior or interior of the Building (including windows and doors), or on any part of the interior of the Premises which can be seen from outside the Premises, without the prior written approval of Landlord, which may be granted or withheld in Landlord's sole and absolute discretion. If any such item that has not been approved by Landlord is so displayed, then Landlord shall have the right to remove such item at Tenant's expense. Landlord reserves the right to install and display signs, advertisements and notices on any part of the exterior or interior of the Building; provided, however that Landlord shall not affix, install, or display signs on the interior of the Premises.

ARTICLE XI
SECURITY DEPOSIT

11.1 Simultaneously with Tenant's execution of this Lease, Tenant shall deposit with Landlord the Security Deposit Amount as a security deposit for the performance by Tenant of all of Tenant's obligations, covenants, conditions and agreements under this Lease. Landlord shall not be required to maintain such security deposit in a separate account. Tenant shall not be entitled to interest on the security deposit. Within forty-five (45) days after the later of the expiration or earlier termination of the Lease Term or Tenant's vacating the Premises, Landlord shall return such security deposit to Tenant, less such portion thereof as Landlord shall have appropriated to satisfy any of Tenant's obligations under this Lease or to satisfy an Event of Default (or such other event which, with the giving of notice or the passage of time or both, would constitute an Event of Default) under this Lease. If Tenant fails to pay rent or other charges due hereunder, or otherwise defaults with respect to any provision of this Lease, Landlord shall have the right, but shall not be obligated, to use, apply or retain all or any portion of the Security Deposit for the payment of any rent or other charge in default or for the payment of any other sum to which Landlord may become obligated by reason of Tenant's default, to repair damages to the Premises caused by Tenant, to clean the Premises upon expiration or termination, or to compensate Landlord for any loss or damage which Landlord may suffer thereby, including, but not limited to, damages recoverable following termination of this Lease by reason of an Event of Default as herein provided, and any and all amounts Landlord may spend or become obligated to spend, or for the compensation of Landlord for any losses incurred, by reason of such event. If any portion of the security deposit (in whatever form) is so used or applied, then within three (3) business days after Landlord gives written notice to Tenant of such use or application, Tenant shall deposit with Landlord cash in an amount sufficient to restore the security deposit to the original Security Deposit Amount, and Tenant's failure to do so shall constitute an Event of Default under this Lease.

11.2 If and so long as Landlord transfers the security deposit to any purchaser or other transferee of Landlord's interest in the Building, then Tenant shall look only to such purchaser or transferee for the return of the security deposit, and Landlord shall be released from all liability to Tenant for the return of such security deposit. Tenant acknowledges that the holder of any Mortgage shall not be liable for the return of any security deposit made by Tenant hereunder unless such holder actually receives such security deposit. Tenant shall not pledge, mortgage, assign or transfer the security deposit or any interest therein.

11.3 Tenant shall deliver to Landlord a clean, unconditional, irrevocable letter of credit in lieu of the cash security deposit. Such letter of credit shall be: (a) in form and substance satisfactory to Landlord in its sole and absolute discretion (with the following criteria at a minimum); (b) at all times in the stated face amount of not less than the Security Deposit Amount, and shall on its face state that multiple and partial draws are permitted and either (i) that partial draws will not cause a corresponding reduction in the stated face amount of the letter of credit or (ii) that, within five (5) business days after any such partial draw, the issuer will notify Landlord in writing that the letter of credit will not be reinstated to its full amount in which event Landlord shall have the right to immediately draw on the remainder of the letter of credit and hold the proceeds as a cash security deposit (it being understood that the total security deposit on hand, whether in cash or letter of credit form, shall at all times be not less than the total Security Deposit Amount as so defined); (c) issued by a commercial bank acceptable to Landlord from time to time and located in the Boston metropolitan area for the account of Tenant, and its permitted successors and assigns under this Lease; (d) made payable to, and expressly transferable and assignable one or more times at no charge by, the owner from time to time of the Building or its lender (which transfer/assignment shall be conditioned only upon the execution of a reasonable and customary written document in connection therewith), whether or not the original account party of the letter of credit continues to be the tenant under this Lease by virtue of a change in name or structure, merger, assignment, transfer or otherwise; (e) payable at sight upon presentment to a Boston metropolitan area branch of the issuer of a simple sight draft stating only that Landlord is permitted to draw on the letter of credit under the terms of the Lease and setting forth the amount that Landlord is drawing; (f) of a term not less than one year, and shall on its face state that the same shall be renewed automatically, without the need for any further written notice or amendment, for successive minimum one year periods, unless the issuer notifies Landlord in writing, at least thirty (30) days prior to the expiration date thereof, that such issuer has elected not to renew the letter of credit (which will thereafter entitle Landlord to draw on the letter of credit); and (g) at least thirty (30) days prior to the then current expiration date of such letter of credit, either (1) renewed (or automatically and unconditionally extended) from time to time through the forty-fifth (45th) day after the expiration of the Lease Term, or (2) replaced by Tenant with cash, or another letter of credit meeting the requirements of this Section, in the full amount of the Security Deposit Amount. Tenant shall cooperate with Landlord to effect any modifications, transfers or replacements of the letter of credit requested by Landlord in order to assure that Landlord is at all times fully secured by a valid letter of credit that may be drawn upon by Landlord, its successors and assigns. Notwithstanding anything in this Lease to the contrary, any cure or grace period provided in connection with an Event of Default shall not apply to any of the foregoing requirements of the letter of credit, and, specifically, if any of the aforesaid requirements are not complied with timely, then an immediate Event of Default shall occur and Landlord shall have the right to immediately draw upon the letter of credit without notice to Tenant and apply the proceeds to the security deposit. Each letter of credit shall be

issued by a commercial bank that has a credit rating with respect to certificates of deposit, short term deposits or commercial paper of at least A-2 (or equivalent) by Moody's Investors Service, Inc., or at least P-2 (or equivalent) by Standard & Poor's Corporation, and shall be otherwise acceptable to Landlord in its sole and absolute discretion. If the issuer's credit rating is reduced below A-2 (or equivalent) by Moody's Investors Service, Inc. or below P-2 (or equivalent) by Standard & Poor's Corporation, or if the financial condition of such issuer changes in any other materially adverse way, then Landlord shall have the right to require that Tenant obtain from a different issuer a substitute letter of credit that complies in all respects with the requirements of this Section, and Tenant's failure to obtain such substitute letter of credit within ten (10) days following Landlord's written demand therefor (with no other notice or cure or grace period being applicable thereto, notwithstanding anything in this Lease to the contrary) shall entitle Landlord to immediately draw upon the then existing letter of credit in whole or in part, without notice to Tenant, and hold the proceeds as a cash security deposit. In the event the issuer of any letter of credit held by Landlord is insolvent or is placed into receivership or conservatorship by the Federal Deposit Insurance Corporation, or any successor or similar entity, or if a trustee, receiver or liquidator is appointed for the issuer, then, effective as of the date of such occurrence, said letter of credit shall be deemed to not meet the requirements of this Section, and, within ten (10) days thereof, Tenant shall replace such letter of credit with other collateral acceptable to Landlord in its sole and absolute discretion (and Tenant's failure to do so shall, notwithstanding anything in this Lease to the contrary, constitute an Event of Default for which there shall be no notice or grace or cure periods being applicable thereto other than the aforesaid ten (10) day period). Any failure or refusal of the issuer to honor the letter of credit shall be at Tenant's sole risk and shall not relieve Tenant of its obligations hereunder with respect to the security deposit.

11.4 Provided that, (i) as of the first day of the third (3rd) calendar year following the expiration of the Abatement Period (the "**Reduction Date**"), no default on the part of Tenant under this Lease shall have theretofore occurred, and (ii) within the sixty (60) day period immediately preceding such Reduction Date, Landlord shall have reviewed Tenant's then most recent statements (Tenant hereby agreeing to deliver Tenant's most recent audited financial statements and well as financial statements for Tenant, certified by Tenant, prepared within sixty (60) days of such delivery, to Landlord with Tenant's request for Landlord's review and approval of same), which financial statements shall show that Tenant's net worth has not declined from Tenant's net worth as of the Execution Date, Tenant shall have the right to request that the amount of the Security Deposit be reduced by the sum of Forty-Four Thousand Two Hundred Five Dollars ($44,205.00) upon written notice to Landlord. If all of the aforesaid conditions are met, Landlord shall so reduce the amount of the Security Deposit. If the Security Deposit has been provided in letter of credit form, such reduction shall occur by means of delivery by Tenant to Landlord of a substitute letter of credit in such amount (or an acceptable amendment to the existing letter of credit) and in strict conformity with the terms of Section 11.3. Notwithstanding anything in this Lease to the contrary, in no event during the Lease Term shall the amount of the Security Deposit ever be less than an amount equal to two (2) full monthly installment of Base Rent payable under this Lease with respect to the first Lease Year.

ARTICLE XII
INSPECTION

12.1 Subject to the provisions of this Section 12.1, Tenant shall permit Landlord, its agents and representatives, and the holder of any Mortgage, to enter the Premises at any time and from time to time, without charge therefor and without diminution of the rent payable by Tenant, in order to examine, inspect or protect the Premises and the Building, to make such alterations and/or repairs as in the sole but reasonable judgment of Landlord may be deemed necessary or desirable, or to exhibit the same to brokers, prospective tenants (during the last nine (9) months of the Lease Term), lenders, purchasers and others. Except in the event of an emergency, Landlord shall (i) give Tenant reasonable advance notice (which may be oral or email notice to Tenant's office manager at the Premises) of any such entry and permit Tenant to have a representative present at such time; and (ii) minimize disruption to Tenant's normal business operations in the Premises in connection with any such entry (but same shall not prohibit Landlord from performing maintenance and repairs during business hours provided that Landlord shall use commercially reasonable efforts to minimize any interference to Tenant's business operations in the Premises, and that Landlord shall have no obligation to employ overtime or other premium pay labor or other costs in connection therewith).

ARTICLE XIII
INSURANCE

13.1 Tenant shall not conduct or permit to be conducted any activity, or place or permit to be placed any equipment or other item in or about the Premises or the Building which will in any way increase the rate of property insurance or other insurance on the Building. If any increase in the rate of property or other insurance is due to any activity, equipment or other item of Tenant, then (whether or not Landlord has consented to such activity, equipment or other item) Tenant shall pay as additional rent due hereunder the amount of such increase. The statement of any applicable insurance company or insurance rating organization (or other organization exercising similar functions in connection with the prevention of fire or the correction of hazardous conditions) that an increase is due to any such activity, equipment or other item shall be conclusive evidence thereof.

13.2 (a) Throughout the Lease Term, Tenant shall obtain and maintain the following insurance coverages written with companies with an A.M. Best A-, VII or better rating and S&P rating of at least A-:

(i) Commercial General Liability ("**CGL**") insurance (written on an occurrence basis) with limits not less than One Million Dollars ($1,000,000) combined single limit per occurrence, Two Million Dollar ($2,000,000) annual general aggregate (on a per location basis), Two Million Dollars ($2,000,000) products/completed operations aggregate, One Million Dollars ($1,000,000) personal and advertising injury liability, Fifty Thousand Dollars ($50,000) fire damage legal liability, and Five Thousand Dollars ($5,000) medical payments. CGL insurance shall be written on a current ISO occurrence form CG 00 01 96 (or a substitute form providing equivalent or broader coverage) and shall cover liability arising from Premises, operations, independent contractors, products- completed operations, personal injury, advertising injury and liability assumed under an insured contract.

(ii) Workers Compensation insurance as required by the applicable state law, and Employers Liability insurance with limits not less than One Million Dollars ($1,000,000) for each accident, One Million Dollars ($1,000,000) disease policy limit, and One Million Dollars ($1,000,000) disease each employee.

(iii) Commercial Auto Liability insurance ("**Auto Policy**") (if applicable) covering automobiles owned, hired or used by Tenant in carrying on its business with limits not less than One Million Dollars ($1,000,000) combined single limit for each accident.

(iv) Umbrella/Excess Insurance ("**Umbrella**") coverage on a follow form basis in excess of the CGL, Employers Liability and Auto Policy with limits not less than Five Million Dollars ($5,000,000) per occurrence and Five Million Dollars ($5,000,000) annual aggregate.

(v) All-Risk Property Insurance ("**Property Policy**") covering Tenant's property, furniture, furnishings, fixtures, improvements and equipment located at the Building. If Tenant is responsible for any machinery, Tenant shall maintain boiler and machinery insurance.

(vi) Business Interruption and Extra Expenses insurance in amounts typically carried by prudent tenants engaged in similar operations, but in no event in an amount less than the annual Base Rent and additional rent then in effect during any full Lease Year. Such insurance shall reimburse Tenant for direct and indirect loss of earnings and extra expense attributable to all perils insured against.

(vii) Builder's Risk (or Building Constructions) insurance during the course of construction of any Alteration by Tenant, and until completion thereof. Such insurance shall be on a form covering Landlord, Landlord's architects, Landlord's contractor or subcontractors, Tenant and Tenant's contractors, as their interest may appear, against loss or damage by fire, vandalism, and malicious mischief and other such risks as are customarily covered by the so-called "broad form extended coverage endorsement" upon all Alterations in place and all materials stored at the Premises, and all materials, equipment, supplies and temporary structures of all kinds incident to Alterations and builder's machinery, tools and equipment, all while forming a part of, or on the Premises, or when adjacent thereto, while on drives, sidewalks, streets or alleys, all on a completed value basis for the full insurable value at all times. Said Builder's Risk Insurance shall contain an express waiver of any right of subrogation by the insurer against Landlord, its agents, employees and contractors.

(b) Landlord and the Landlord Insured Parties shall be endorsed on each policy as additional insureds as it pertains to the CGL, Umbrella, and Auto Policy, and coverage

shall be primary and noncontributory. Landlord shall be a loss payee on the Property Policy in respect of Tenant's improvements to the extent that Landlord is responsible for the repair and replacement of same under Article XVII. All insurance shall (1) contain an endorsement that such policy shall remain in full force and effect notwithstanding that the insured may have waived its right of action against any party prior to the occurrence of a loss; (2) provide that the insurer thereunder waives all right of recovery by way of subrogation against Landlord and Landlord's Representatives in connection with any loss or damage covered by such policy (and Tenant shall provide evidence of such waiver); and (3) be acceptable in form and content to Landlord. Tenant shall request its insurance carrier to provide Landlord with thirty (30) days' advance notice (ten (10) days' for non-payment of premium) of any cancellation, failure to renew, reduction of amount of insurance or change in Tenant's insurance coverage; provided that in the event Tenant's insurance carrier will not agree to provide Landlord advance notice as aforesaid, then Tenant shall give Landlord notice of cancellation, failure to renew, reduction of amount of insurance, or change of Tenant's insurance coverage no later than five (5) business days after Tenant learns of such cancellation, failure to renew, reduction of amount of insurance, or change of coverage. Any such policy may provide for a commercially reasonable deductible. Landlord reserves the right from time to time to reasonably require higher minimum amounts or different types of insurance. Tenant shall deliver an ACORD 25 certificate or its equivalent with respect to all liability and personal property insurance and an ACORD 28 certificate or its equivalent with respect to all commercial property insurance and receipts evidencing payment therefor (and, upon request, copies of all required insurance policies, including endorsements and declarations) to Landlord on or before delivery of possession of the Premises to Tenant and at least annually thereafter. If Tenant fails to provide evidence of insurance required to be provided by Tenant hereunder, prior to commencement of the Lease Term and thereafter within thirty (30) days following Landlord's request during the Lease Term (and in any event within thirty (30) days prior to the expiration date of any such coverage, any other cure or grace period provided in this Lease not being applicable hereto), Landlord shall be authorized (but not required) after ten (10) days' prior notice to procure such coverage in the amount stated with all costs thereof to be chargeable to Tenant and payable as additional rent upon written invoice therefor.

13.3 Landlord agrees to carry and maintain special form property insurance (with replacement cost coverage) covering the Building and Landlord's property therein in an amount required by its insurance company to avoid the application of any coinsurance provision. Landlord hereby waives its right of recovery against Tenant and releases Tenant from any and all liabilities, claims and losses for which Tenant may otherwise be liable to the extent Landlord receives proceeds from its property insurance therefor. Landlord shall secure a waiver of subrogation endorsement from its insurance carrier. Landlord also agrees to carry and maintain commercial general liability insurance in limits it reasonably deems appropriate (but in no event less than the limits required by Tenant pursuant to Section 13.2). Landlord may elect to carry such other additional insurance or higher limits as it reasonably deems appropriate. Tenant acknowledges that Landlord shall not carry insurance on, and shall not be responsible for damage to, Tenant's personal property or any Alterations, and that Landlord shall not carry insurance against, or be responsible for any loss suffered by Tenant due to, interruption of Tenant's business.

13.4 Landlord and Tenant hereby waive and shall cause their respective insurance carriers to waive any and all rights of recovery, claims, actions or causes of action against the

other for any loss or damage with respect to loss or damage to any property, which loss or damage is (or would have been, had the insurance required by this Lease been carried) covered by insurance.

ARTICLE XIV
SERVICES AND UTILITIES

14.1 Landlord shall manage and operate (or cause to be managed and operated) the Building in a manner consistent with comparable class office buildings in the Back Bay submarket of Boston (the "**Comparable Standard**"). From and after the Lease Commencement Date, Landlord will provide to the Premises the services and utilities in accordance with applicable Law and in accordance with the standards set forth below, or, if no standards are specified below, in a manner and at a level consistent with the Comparable Standard: air conditioning and heating during Building Hours as required in Landlord's reasonable judgment; janitorial service to the office portions of the Premises (Landlord not being required to clean any mail rooms, kitchen areas (except that Landlord will clean the floors and counter areas of any kitchen area, and remove trash therefrom) or private restrooms within the Premises) on Monday through Friday; electric power from the utility provider sufficient for customary lighting purposes and normal office use (but no less than five (5) watts per rentable square foot of the Premises connected load, which connected load shall be exclusive of HVAC and other base Building systems); standard hot and cold water in Building standard restrooms and (if applicable) chilled water in Building standard drinking fountains; elevator service (with at least one (1) elevator in operation at all times, except in the event of an emergency); landscaping and snow removal during the seasons they are required; and exterior window cleaning service. Notwithstanding the foregoing, Landlord shall provide Tenant with air conditioning and heating on Saturdays during Building Hours (excluding Holidays) at no additional cost only upon the request of Tenant. If Tenant requires air conditioning or heat beyond the Building Hours, then Landlord will furnish the same provided Tenant gives Landlord one business day's advance notice of such requirement. Tenant shall pay for such extra service in accordance with Landlord's then-current schedule (currently $80.00 per hour per floor, subject to adjustment at any time and from time to time without notice, with a one (1) hour usage minimum). To the extent Tenant provides or contracts for any services relating to any Building Structure or System or any service or utility being provided by Landlord to the Premises directly from the supplier (which Tenant shall not be permitted to do without Landlord's prior written consent, which consent shall not be unreasonably withheld conditioned or delayed), Tenant shall enter into and maintain (and provide Landlord with a copy of) a service contract therefor with a contractor licensed to do business in the jurisdiction in which the Building is located and otherwise approved by Landlord. Tenant shall have access to the Building twenty four (24) hours per day each day of the year (except in the event of an emergency). Landlord shall provide a card key (or similar type of) access system to provide access to the Building at times other than Building Hours. A reasonable number of access cards or other means of access shall be provided to Tenant at Lease Term commencement at no cost to Tenant (except that Landlord may charge Tenant for replacement cards). Such access cards shall be issued by Landlord to the specific individuals that are designated by Tenant. Tenant shall not permit anyone, except for Tenant's employees, permitted subtenants and assigns and authorized guests, to enter the Building at times other than the Building Hours. All persons entering or exiting the Building at times other than the normal hours of operation of the Building shall, at Landlord's discretion, be required to sign in and out.

14.2 Landlord shall install, in connection with Landlord's Work, submeters to measure Tenant's actual electricity consumption, and commencing on the Lease Commencement Date, Tenant shall pay for such consumption at the then-current rates charged by the electric service provider selected and used by Landlord.

14.3 Tenant shall reimburse Landlord for the cost of any excess water, sewer and chiller usage in the Premises. Excess usage shall mean the excess of the estimated usage in the Premises (per square foot of rentable area) during any three (3) month billing period over the average usage (per square foot of rentable area) during the same period for the entire Building, as reasonably calculated by Landlord in good faith.

14.4 Landlord shall not have any liability to Tenant, and Tenant shall not be entitled to terminate this Lease or receive a rent abatement, in the event of Landlord's failure or inability to furnish any of the utilities or services required to be furnished by Landlord hereunder; provided, however, that (a) if Landlord is not proceeding diligently and in good faith to correct such failure or inability, and if all or substantially all of the Premises is rendered unusable by Tenant for a continuous period of five (5) consecutive business days after Tenant gives Landlord written notice thereof, and if Tenant does not in fact use the Premises during such period, then, so long as no Event of Default exists under this Lease, Tenant shall be entitled, as its sole and exclusive remedy, to an abatement of the Base Rent payable hereunder for the period beginning on the day after such five (5) business day period ends and continuing until the earlier of the date Tenant resumes use or occupancy of the Premises or the date use of the Premises is restored to Tenant; and (b) Landlord shall use reasonable efforts to restore such failure or inability so long as such failure or inability is within Landlord's reasonable control to correct.

14.5 Tenant acknowledges and agrees that Landlord and Tenant will be subject to certain mandatory informational and other reporting requirements imposed by the City of Boston pursuant to the Building Energy Reporting and Disclosure Ordinance, as the same may be amended from time to time (the "**Energy Reporting Ordinance**") with respect to Tenant's space use attributes and energy use in the Premises and, in connection therewith. Landlord and Tenant shall cooperate with each other in satisfying their respective obligations under the Energy Reporting Ordinance and Tenant shall provide Landlord with copies of Tenant's utility bills and other reasonably requested related information for the prior calendar year not later than February 28th of each calendar year during the Term and such obligation shall survive the expiration or earlier termination of the Term of this Lease with respect to the last Lease Year of the Term.

ARTICLE XV
LIABILITY OF LANDLORD

15.1 Except as otherwise provided in this Article XV, Landlord and Landlord's Representatives shall not be liable to Tenant or any other person or entity for any damage, injury, loss or claim based on or arising out of any cause whatsoever, including the following: repair to any portion of the Premises or the Building; interruption in the use of the Premises or the Building or any equipment therein; any accident or damage resulting from any use or operation

(by Landlord, Tenant or any other person or entity) of elevators or heating, cooling, electrical, sewage or plumbing equipment or apparatus; termination of this Lease by reason of damage to the Premises or the Building; any fire, robbery, theft, vandalism, mysterious disappearance or any other casualty; actions of any other tenant of the Building or of any other person or entity; failure or inability to furnish any service specified in this Lease; and leakage in any part of the Premises or the Building from water, rain, ice or snow that may leak into, or flow from, any part of the Premises or the Building, or from drains, pipes or plumbing fixtures in the Premises or the Building. If any condition exists which may be the basis of a claim of constructive eviction, then Tenant shall give Landlord written notice thereof and a reasonable opportunity to correct such condition, and in the interim Tenant shall not claim that it has been constructively evicted or is entitled to a rent abatement. Any property placed by Tenant or any Agent in or about the Premises or the Building shall be at the sole risk of Tenant, and Landlord shall not in any manner be held responsible therefor. Any person receiving an article delivered for Tenant shall be acting as Tenant's agent for such purpose and not as Landlord's agent. For purposes of this Article, the term "Building" shall be deemed to include the Building, the Land and the Parking Facilities. Notwithstanding the foregoing provisions of this Section, Landlord shall not be released from liability to Tenant for any physical injury to any natural person caused by the negligence or willful misconduct of Landlord or Landlord's Representatives to the extent such injury is not covered by insurance either carried by Tenant (or such person) or required by this Lease to be carried by Tenant; provided, however, that neither Landlord nor any of Landlord's Representatives (nor any past, present or future board member, partner, trustee, director, member, officer, employee, agent, representative or advisor of any of them) shall under any circumstances be liable for any exemplary, punitive, consequential or indirect damages (or for any interruption of or loss to business) in connection with or relating to this Lease.

15.2 (a) Except to the extent caused by the negligence or willful misconduct of Landlord or its agents, Tenant shall reimburse Landlord, its employees and agents for (as additional rent), and shall indemnify, defend upon request and hold them harmless from and against all reasonable Costs suffered by or claimed against them, directly or indirectly, based on or arising out of, in whole or in part, (i) use and occupancy of the Premises or the business conducted therein, (ii) any negligent or willful act or omission of Tenant or any Agent of Tenant, (iii) any breach of Tenant's obligations under this Lease, including failure to comply with Laws or surrender the Premises upon the expiration or earlier termination of the Lease Term, or (iv) any entry by Tenant or any Agent of Tenant upon the Land prior to the Lease Commencement Date.

(b) Except to the extent caused by the negligence or willful misconduct of Tenant or an Agent of Tenant, Landlord shall reimburse Tenant and shall indemnify and hold Tenant harmless from and against all Costs suffered or claimed against Tenant as a result of the negligence or willful misconduct of Landlord, its agents, employees or contractors, provided, however, that neither Landlord nor any of Landlord's Representatives (nor any past, present or future board member, partner, trustee, director, member, officer, employee, agent, representative or advisor of any of them) shall under any circumstances be liable for any exemplary, punitive, consequential or indirect damages (or for any interruption of or loss to business) in connection with or relating to this Lease.

15.3 No landlord hereunder shall be liable for any obligation or liability based on or arising out of any event or condition occurring during the period that such landlord was not the owner of any of the Building or the Land, or a landlord's interest therein. Within five (5) days after request, Tenant shall attorn to any transferee landlord and execute, acknowledge and deliver any document submitted to Tenant confirming such attornment provided such transferee assumes the obligations of landlord hereunder which accrue from and after the date of the transfer.

15.4 Tenant shall not have the right to set off or deduct any amount allegedly owed to Tenant pursuant to any claim against Landlord from any rent or other sum payable to Landlord. Tenant's sole remedy for recovering upon such claim shall be to institute an independent action against Landlord, which action shall not be consolidated with any action of Landlord; provided, however, that the foregoing shall not prohibit Tenant from asserting a compulsory counterclaim in any proceeding instituted by Landlord against the Tenant that is required to be brought by applicable statute and will be deemed forever waived if not then asserted by Tenant.

15.5 If Tenant or any Agent is awarded a money judgment against Landlord, then recourse for satisfaction of such judgment shall be limited to execution against Landlord's estate and interest in the Building which shall be deemed to include proceeds actually received by Landlord from any sale of the Building (net of all expenses of sale), insurance or condemnation proceeds (subject to the rights of any holder of any Mortgage), and rental income from the Building (net of all expenses) to the extent all of the foregoing are held in an account for Landlord and have not been applied or distributed by Landlord in the ordinary course of business (i.e., not as a fraud against creditors). No other asset of Landlord, and no asset of any of Landlord's representatives (or any past, present or future board member, partner, director, member, officer, trustee, employee, agent, representative or advisor of any of them (each, an "**officer**")) or any other person or entity, shall be available to satisfy or be subject to any such judgment. No such Landlord's representative, officer or other person or entity shall be held to have personal liability for satisfaction of any claim or judgment whatsoever under this Lease.

ARTICLE XVI
RULES

16.1 Tenant and its Agents shall at all times abide by and observe the rules specified in **Exhibit C**. Tenant and its Agents shall also abide by and observe any other rule that Landlord may reasonably promulgate from time to time for the operation and maintenance of the Building, provided that written notice thereof is given and such rule is not inconsistent with the provisions of this Lease. All rules shall be binding upon Tenant and enforceable by Landlord as if they were contained herein. Nothing contained in this Lease shall be construed as imposing upon Landlord any duty or obligation to enforce such rules, or the terms, conditions or covenants contained in any other lease, as against any other tenant, and Landlord shall not be liable to Tenant for the violation of such rules by any other tenant or its employees, agents, assignees, subtenants, invitees or licensees. Landlord shall use reasonable efforts not to enforce any rule or regulation in a manner which unreasonably discriminates among similarly situated tenants.

ARTICLE XVII
DAMAGE OR DESTRUCTION

17.1 If the Premises or the Building are totally or partially damaged or destroyed thereby rendering the Premises totally or partially inaccessible or unusable, then Landlord shall diligently repair and restore the Premises and the Building to substantially the same condition they were in prior to such damage or destruction; provided, however, that if in Landlord's reasonable judgment such repair and restoration cannot be completed within two hundred seventy (270) days after the occurrence of such damage or destruction (taking into account the time needed for effecting a satisfactory settlement with any insurance company involved, removal of debris, preparation of plans and issuance of all required governmental permits), then Landlord shall have the right to terminate this Lease by giving written notice of termination within forty five (45) days after the occurrence of such damage or destruction. If this Lease is terminated pursuant to this Article, then rent shall be apportioned (based on the portion of the Premises which is usable or used after such damage or destruction) and paid to the later of the date of termination or the date Tenant completely vacates and abandons the Premises on account of such damage and (if applicable) Landlord shall be entitled to any insurance proceeds received by Tenant that are attributable to Landlord's Work and other improvements insured or required to be insured by Tenant that would remain in the Premises at the end of the Lease Term. If this Lease is not terminated as a result of such damage or destruction, then until such repair and restoration of the Premises are substantially complete, Tenant shall be required to pay rent only for the portion of the Premises that is usable while such repair and restoration are being made; provided, however, that (x) if such damage or destruction was caused by the act or omission of Tenant or any Agent of Tenant, then Tenant shall not be entitled to any such rent reduction and (y) if Tenant fails to immediately pay over to Landlord insurance proceeds when received from Tenant's insurance any such rent abatement shall end on the date when Landlord would have been able to substantially complete repair and restoration of the Premises had Tenant timely paid Landlord such insurance proceeds. After receipt of all insurance proceeds (including proceeds of insurance maintained by Tenant), Landlord shall proceed with and bear the expenses of such repair and restoration of the Premises and the Building; provided, however, that (a) if such damage or destruction was caused by the act or omission of Tenant or any Agent of Tenant, then Tenant shall pay Landlord's deductible and the amount by which such expenses exceed the insurance proceeds, if any, actually received by Landlord on account of such damage or destruction (or, if Landlord fails to maintain the insurance required by Section 13.3, that Landlord would have received had Landlord maintained such insurance required by Section 13.3), (b) Tenant shall pay the amount by which the cost of restoring any item which Landlord is required to restore and Tenant is required to insure exceeds the insurance proceeds received with respect thereto, and (c) Landlord shall not be required to repair or restore any tenant improvements installed in the Premises (except to the extent Landlord receives proceeds therefor from Tenant's insurance), any Alterations or any other contents of the Premises (including Tenant's trade fixtures, decorations, furnishings, equipment or personal property). Notwithstanding anything herein to the contrary, Landlord shall have the right to terminate this Lease if (1) insurance proceeds plus deductibles are insufficient to pay the full cost of such repair and restoration (so long as Landlord maintains the insurance required by Section 13.3), (2) the holder of any Mortgage fails or refuses to make such insurance proceeds available for such repair and restoration, (3) zoning or other applicable Laws or regulations do not permit such repair and restoration, or (4) the damage to the Building exceeds thirty five percent (35%) of the replacement value of the Building.

17.2 If, within forty five (45) days after the occurrence of the damage or destruction described in Section 17.1, Landlord determines in its sole but reasonable judgment that the repairs and restoration cannot be substantially completed within two hundred seventy (270) days after the date of such damage or destruction as aforesaid, and provided Landlord does not elect to terminate this Lease pursuant to this Article, then Landlord shall promptly notify Tenant of such determination. For a period continuing through the later of the thirtieth (30th) day after the occurrence of the damage or destruction or the tenth (10th) day after receipt of such notice, Tenant shall have the right to terminate this Lease by providing written notice to Landlord (which date of such termination shall be not more than thirty (30) days after the date of Tenant's notice to Landlord). Notwithstanding any of the foregoing to the contrary, Tenant shall not have the right to terminate this Lease if the willful misconduct of Tenant or any Agent of Tenant shall have caused the damage or destruction.

ARTICLE XVIII
CONDEMNATION

18.1 If one third or more of the Premises, or the use or occupancy thereof, shall be taken or condemned by any governmental or quasi-governmental authority for any public or quasi-public use or purpose or sold under threat of such a taking or condemnation (collectively, "**condemned**"), then this Lease shall terminate on the day prior to the date title thereto vests in such authority and rent shall be apportioned as of such date. If less than one third of the Premises or occupancy thereof is condemned, then this Lease shall continue in full force and effect as to the part of the Premises not so condemned, except that as of the date title vests in such authority Tenant shall not be required to pay rent with respect to the part of the Premises so condemned. Landlord shall notify Tenant of any condemnation contemplated by this Section promptly after Landlord receives notice thereof. Within ten (10) days after receipt of such notice, Tenant shall have the right to terminate this Lease with respect to the remainder of the Premises not so condemned as of the date title vests in such authority if such condemnation renders said remainder of the Premises totally unusable for their intended purpose. Notwithstanding anything herein to the contrary, if twenty five percent (25%) or more of the Land or the Building is condemned, then whether or not any portion of the Premises is condemned, Landlord shall have the right to terminate this Lease as of the date title vests in such authority.

18.2 All awards, damages and other compensation paid on account of such condemnation shall belong to Landlord, and Tenant assigns to Landlord all rights to such awards, damages and compensation. Tenant shall not make any claim against Landlord or such authority for any portion of such award, damages or compensation attributable to damage to the Premises, value of the unexpired portion of the Lease Term, loss of profits or goodwill, leasehold improvements or severance damages. Nothing contained herein, however, shall prevent Tenant from pursuing a separate claim against the authority for relocation expenses and for the value of furnishings, equipment and trade fixtures installed in the Premises at Tenant's expense and which Tenant is entitled pursuant to this Lease to remove at the expiration or earlier termination of the Lease Term, provided that such claim shall in no way diminish the award, damages or compensation payable to or recoverable by Landlord in connection with such condemnation.

ARTICLE XIX
DEFAULT

19.1 If there shall be an Event of Default, then the provisions of Section 19.2 shall apply. The periods herein specified (if any) within which Tenant is permitted to cure any default shall be in lieu of any cure period provided by applicable laws, all of which Tenant hereby waives.

19.2 Upon the occurrence of an Event of Default, Landlord shall have the right to pursue any one or more of the following remedies:

(a) Terminate this Lease, in which case Tenant shall immediately surrender the Premises to Landlord. In addition, with or without terminating this Lease, Landlord may re-enter, terminate Tenant's right of possession and take possession of the Premises. The provisions of this Article shall operate as a notice to quit, and Tenant hereby waives any other notice to quit or notice of Landlord's intention to re-enter the Premises or terminate this Lease. Landlord may proceed to recover possession of the Premises under applicable Laws, or by such other proceedings, including re-entry and possession, as may be applicable. If Landlord elects to terminate this Lease and/or elects to terminate Tenant's right of possession, everything contained in this Lease on the part of Landlord to be done and performed shall cease without prejudice, however, to Tenant's liability for all Base Rent, additional rent and other sums specified herein. Whether or not this Lease and/or Tenant's right of possession is terminated, Landlord shall have the right, at its sole option, to terminate any renewal or expansion right contained in this Lease and to grant or withhold any consent or approval pursuant to this Lease in its sole and absolute discretion. If Tenant fails to surrender the Premises, Landlord, in compliance with Law, may enter upon and take possession of the Premises and remove Tenant, Tenant's Personal Property and any party occupying the Premises. Tenant shall pay Landlord, on demand, all past due Rent and other losses and damages Landlord suffers as a result of Tenant's Event of Default, including, without limitation, all Costs of Reletting (as hereinafter defined) and any deficiency that may arise from reletting or the failure to relet the Premises. "Costs of Reletting" shall include all reasonable costs and expenses incurred by Landlord in reletting or attempting to relet the Premises, including, without limitation, legal fees, brokerage commissions, the cost of alterations and the value of other concessions or allowances granted to a new tenant.

(b) Landlord shall use reasonable efforts to relet the Premises on such terms as Landlord in its sole discretion may determine (including a term different from the Term, rental concessions, and alterations to, and improvement of, the Premises); however, Landlord shall not be obligated to relet the Premises before leasing other portions of the Building. Landlord shall not be liable for, nor shall Tenant's obligations hereunder be diminished because of, Landlord's failure to relet the Premises or to collect rent due for such reletting.

19.3 In lieu of calculating damages under Section 19.2, Landlord may elect to receive as damages (x) the sum of (a) all Rent accrued through the date of termination of this Lease, and (b) an amount equal to the total Rent that Tenant would have been required to pay for the

remainder of the Term discounted to present value, minus (y) the then present fair rental value of the Premises for the remainder of the Term, similarly discounted, after deducting all anticipated Costs of Reletting.

19.4 All rights and remedies of Landlord set forth in this Lease are cumulative and in addition to all other rights and remedies available to Landlord at law or in equity, including those available as a result of any anticipatory breach of this Lease. The exercise by Landlord of any such right or remedy shall not prevent the concurrent or subsequent exercise of any other right or remedy. No delay or failure by Landlord or Tenant to exercise or enforce any of its respective rights or remedies or the other party's obligations (except to the extent a time period is specified in this Lease therefor) shall constitute a waiver of any such or subsequent rights, remedies or obligations. Neither party shall be deemed to have waived any default by the other party unless such waiver expressly is set forth in a written instrument signed by the party against whom such waiver is asserted. If Landlord waives in writing any default by Tenant, such waiver shall not be construed as a waiver of any covenant, condition or agreement set forth in this Lease except as to the specific circumstances described in such written waiver.

19.5 If Landlord shall institute proceedings against Tenant and a compromise or settlement thereof shall be made, then the same shall not constitute a waiver of the same or of any other covenant, condition or agreement set forth herein, nor of any of Landlord's rights hereunder. Neither the payment by Tenant of a lesser amount than the monthly installment of Base Rent, additional rent or of any sums due hereunder nor any endorsement or statement on any check or letter accompanying a check for payment of rent or other sums payable hereunder shall be deemed an accord and satisfaction. Landlord may accept the same without prejudice to Landlord's right to recover the balance of such rent or other sums or to pursue any other remedy. Notwithstanding any request or designation by Tenant, Landlord may apply any payment received from Tenant to any payment then due. Only an express written acceptance of a surrender of this Lease executed by an authorized representative of Landlord and delivered to Tenant shall constitute an acceptance of surrender. Without limiting the foregoing, no re-entry or taking of possession of the Premises by Landlord, and no acceptance by Landlord of keys from Tenant, shall be considered an acceptance of a surrender of this Lease.

19.6 If Tenant fails to make any payment to any third party or to do any act herein required to be made or done by Tenant, then Landlord may, after written notice to Tenant, but shall not be required to, make such payment or do such act. The taking of such action by Landlord shall not be considered a cure of such default by Tenant or prevent Landlord from pursuing any remedy it is otherwise entitled to in connection with such default. If Landlord elects to make such payment or do such act, then all expenses incurred by Landlord, plus interest thereon at the Default Rate from the date incurred by Landlord to the date of payment thereof by Tenant, shall constitute additional rent due hereunder.

19.7 If Tenant fails to make any payment of Base Rent, additional rent or any other sum on or before the date such payment is due and payable (without regard to any grace period), then Landlord shall have the right to impose upon Tenant in writing a late charge of five percent (5%) of the amount of such payment. In addition, such payment and such late fee shall bear interest at the Default Rate from the date such payment or late fee, respectively, became due to the date of payment thereof by Tenant. Such late charge and interest shall constitute additional

rent due hereunder without any notice or demand and shall be in addition to any and all other rights and remedies of Landlord. Notwithstanding the foregoing, Landlord shall waive such late charge and interest the first (1st) time in each calendar year that Tenant fails to make a payment when due, but not more than four (4) times during the entire Lease Term, so long as Tenant makes such payment prior to the expiration of the applicable notice and grace period.

19.8 [Reserved]

19.9 If more than one natural person or entity shall constitute Tenant, then the liability of each such person or entity shall be joint and several. If Tenant is a general partnership or other entity the partners or members of which are subject to personal liability, then the liability of each such partner or member shall be joint and several. No waiver, release or modification of the obligations of any such person or entity shall affect the obligations of any other such person or entity.

ARTICLE XX
BANKRUPTCY

20.1 Upon occurrence of an Event of Bankruptcy, Landlord shall have all rights and remedies available pursuant to Article XIX; provided, however, that while a Case is pending, Landlord's right to terminate this Lease shall be subject, to the extent required by the Bankruptcy Code, to any rights of the Trustee to assume or assume and assign this Lease pursuant to the Bankruptcy Code. After the commencement of a Case: (i) Trustee shall perform all post-petition obligations of Tenant under this Lease; and (ii) if Landlord is entitled to damages (including unpaid rent) pursuant to the terms of this Lease, then all such damages shall be entitled to administrative expense priority pursuant to the Bankruptcy Code. Tenant acknowledges that this Lease is a lease of nonresidential real property and therefore Tenant, as the debtor in possession, or the Trustee shall not seek or request any extension of time to assume or reject this Lease or to perform any obligations of this Lease which arise from or after the order of relief. Any person or entity to which this Lease is assigned pursuant to the Bankruptcy Code shall be deemed without further act or deed to have assumed all of the obligations arising under this Lease on and after the date of assignment, and any such assignee shall upon request execute and deliver to Landlord an instrument confirming such assumption. Trustee shall not have the right to assume or assume and assign this Lease unless Trustee promptly (a) cures all defaults under this Lease, (b) compensates Landlord for damages incurred as a result of such defaults, (c) provides adequate assurance of future performance on the part of Trustee as debtor in possession or Trustee's assignee, and (d) complies with all other requirements of the Bankruptcy Code. If Trustee desires to assume and assign this Lease to any person who shall have made a bona fide offer, then Trustee shall give Landlord written notice of such proposed assignment (which notice shall set forth the name and address of such person, all of the terms and conditions of such offer, and the adequate assurance to be provided Landlord to assure such person's future performance under this Lease) no later than fifteen (15) days after receipt by Trustee of such offer, but in no event later than thirty (30) days prior to the date Trustee shall make application to the appropriate court for authority and approval to enter into such assignment and assumption, and Landlord shall thereupon have the prior right and option, to be exercised by notice to Trustee given at any time prior to the effective date of such proposed assignment, to accept (or to cause Landlord's designee to accept) an assignment of this Lease upon the same terms and conditions and for the

same consideration, if any, as the bona fide offer made by such person, less any brokerage commissions which may be payable out of the consideration to be paid by such person for the assignment of this Lease. If Trustee fails to assume or assume and assign this Lease in accordance with the requirements of the Bankruptcy Code within sixty (60) days after the initiation of the Case (or such other period as may be provided by the Bankruptcy Code or allowed by the United States Bankruptcy Court for same), then Trustee shall be deemed to have rejected this Lease. If this Lease is rejected or deemed rejected, then Landlord shall have all rights and remedies available to it pursuant to Article XIX. At any time during the Term, upon not less than five (5) days prior written notice, Tenant shall provide Landlord with the most current financial statement for Tenant and any such person and financial statements for the two (2) years prior to the current financial statement year. Such statements are to be certified by Tenant to be true, correct and complete, prepared in accordance with generally accepted accounting principles and, if it is the normal practice of Tenant, audited by any independent certified public accountant.

ARTICLE XXI
SUBORDINATION

21.1 This Lease is subject and subordinate to the lien, provisions, operation and effect of all Mortgages, to all funds and indebtedness intended to be secured thereby, and to all renewals, extensions, modifications, recastings or refinancings thereof. Said subordination and the provisions of this Section shall be self-operative and no further instrument of subordination shall be required to effectuate such subordination. The holder of any Mortgage to which this Lease is subordinate shall have the right (subject to any required approval of the holders of any superior Mortgage) at any time to declare this Lease to be superior to the lien, provisions, operation and effect of such Mortgage.

21.2 Tenant shall at Landlord's request promptly execute any requisite document confirming such subordination. During the pendency of an Event of Default, Tenant appoints Landlord as Tenant's attorney in fact to execute any such document for Tenant. Tenant waives the provisions of any statute or rule of law now or hereafter in effect which may give or purport to give Tenant any right to terminate or otherwise adversely affect this Lease and Tenant's obligations hereunder in the event any foreclosure proceeding is prosecuted or completed or in the event the Building, the Land or Landlord's interest therein is transferred by foreclosure, by deed in lieu of foreclosure or otherwise. At the request of such transferee and assumption of Landlord's obligations as required hereby, Tenant shall attorn to such transferee and shall recognize such transferee as the landlord under this Lease. Tenant agrees that upon any such attornment, such transferee shall not be (a) bound by or required to credit Tenant with any prepayment of the Base Rent or additional rent more than thirty (30) days in advance or any deposit, rental security or any other sums deposited with any prior landlord under the Lease (including Landlord) unless said sum is actually received by such transferee, (b) bound by any amendment, modification or termination of this Lease made without the consent of the holder of each Mortgage existing as of the date of such amendment, (c) liable for any breach, act or omission of any prior landlord under the Lease (including Landlord) or any damages arising therefrom; (d) subject to any offsets or defenses which Tenant might have against any prior landlord (including Landlord), (e) liable for any late completion of any construction of the Premises or tenant improvement work to the Premises commenced or agreed to by any prior

landlord under the Lease (including Landlord), (f) liable for payment of any damages, fees or penalties payable by any landlord under the Lease (including Landlord) to Tenant including but not limited to fees or penalties for failure to deliver the Premises in a timely fashion, or (g) bound by any obligation which may appear in this Lease to pay any sum of money to Tenant; provided, however, that after succeeding to Landlord's interest under this Lease, such transferee shall agree to perform in accordance with the terms of this Lease all obligations of Landlord arising after the date of transfer. Within ten (10) days after the request of such transferee, Tenant shall execute, acknowledge and deliver any requisite or appropriate document submitted to Tenant confirming such attornment.

ARTICLE XXII
HOLDING OVER

22.1 Tenant acknowledges that it is extremely important that Landlord have substantial advance notice of the date on which Tenant will vacate the Premises, and that if Tenant fails to surrender the Premises or any portion thereof at the expiration or earlier termination of the Lease Term or upon Landlord's re-entry following an Event of Default, then it will be conclusively presumed that the value to Tenant of remaining in possession, and the loss that will be suffered by Landlord as a result thereof, far exceed the Base Rent and additional rent that would have been payable had the Lease Term continued during such holdover period. Therefore, if Tenant (or anyone claiming through or under Tenant) does not immediately surrender the Premises or any portion thereof upon the expiration or earlier termination of the Lease Term or upon Landlord's re-entry following an Event of Default, then the rent payable by Tenant hereunder shall be increased to equal (1) for each of the first (1st) and second (2nd) months of such holdover, the greater of (i) one hundred twenty-five percent (125%) of the fair market rent for the entire Premises, or (ii) one hundred twenty-five percent (125%) of the then fully escalated Base Rent and additional rent, and (2) for each month of holdover thereafter, the greater of (x) two hundred percent (200%) of the fair market rent for the entire Premises, or (y) two hundred percent (200%) of the then fully escalated Base Rent and additional rent. Such rent shall be computed by Landlord and paid by Tenant on a monthly basis and shall be payable on the first day of such holdover period and the first day of each calendar month thereafter during such holdover period until the Premises have been vacated. Notwithstanding any other provision of this Lease, Landlord's acceptance of such rent shall not in any manner adversely affect Landlord's other rights and remedies, including Landlord's right to evict Tenant and to recover all damages, and Tenant shall save Landlord, its agents and employees, harmless and will exonerate, defend and indemnify Landlord, its agents and employees, from and against any and all damages which Landlord may suffer on account of Tenant's hold-over in the Premises after the expiration or prior termination of the Lease Term; provided, however, that consequential damages shall be available only if the holdover persists for more than thirty (30) days. Any such holdover shall be deemed to be a tenancy at sufferance and not a tenancy at will. In no event shall any holdover be deemed a permitted extension or renewal of the Lease Term, and nothing contained herein shall be construed to constitute Landlord's consent to any holdover or to give Tenant any right with respect thereto. The provisions of this Section 22.1 expressly survive termination of the Lease or of Tenant's right to possession.

ARTICLE XXIII
COVENANTS OF LANDLORD

23.1 Landlord covenants that it has the right to enter into this Lease, and that if Tenant shall perform timely all of its obligations hereunder, then, subject to the provisions of this Lease, Tenant shall during the Lease Term peaceably and quietly occupy and enjoy the full possession of the Premises (i.e., quiet enjoyment) without hindrance by Landlord, its employees or agents.

23.2 Subject to other applicable terms and provisions expressly provided in this Lease, Landlord reserves the following rights: (a) to change the street address and name of the Building provided that Tenant's access to the Premises is not permanently, materially and adversely affected; (b) to change the arrangement and location of entrances, passageways, doors, doorways, corridors, elevators, stairs, toilets or other public parts of, and make additions to, the Building provided that Tenant's access to the Premises is not permanently, materially and adversely affected; (c) to erect, use and maintain pipes, wires, structural supports, ducts and conduits in and through the plenum areas of the Premises; (d) to grant to anyone the exclusive right to conduct any particular business in the Building not inconsistent with Tenant's permitted use of the Premises; (e) to exclusively use and/or lease the roof areas, the sidewalks and other exterior areas; (f) to re-subdivide the Land or to combine the Land with other lands; (g) to relocate any parking areas designated for Tenant's use; (h) [intentionally omitted]; (i) to construct improvements (including kiosks) on the Land and in the public and Common Areas of the Building; (j) to prohibit smoking in the entire Building or portions thereof (including the Premises), and to restrict smoking to certain designated areas of the Land, so long as such prohibitions are in accordance with applicable law; and (k) if any excavation or other substructure work shall be made or authorized to be made upon land adjacent to the Building or the Land, to enter the Premises for the purpose of doing such work as is required to preserve the walls of the Building and to preserve the land from injury or damage and to support such walls and land by proper foundations. Subject to the other applicable terms and provisions expressly provided in this Lease, Landlord may exercise any or all of the foregoing rights without being deemed to be guilty of an eviction, actual or constructive, or a disturbance of Tenant's business or use or occupancy of the Premises and Tenant shall have no claim against Landlord in connection therewith. With respect to (b), (c), (e), (g), (i) and (k) above, Landlord shall use reasonable efforts to minimize interference with Tenant's normal business operations in the Premises (subject, however, in all cases to governmental requirements, emergencies and/or temporary maintenance and repair activities, and in no event shall Landlord have any obligation to employ contractors or labor at overtime or other premium pay rates or incur any other overtime costs).

ARTICLE XXIV
PARKING

24.1 During the Lease Term, Tenant and its employees, visitors and other invitees shall be entitled to use unreserved parking spaces for passenger automobiles in the Parking Facilities in an amount equal to the Parking Space Allotment, subject to Landlord's rights pursuant to the remainder of this Section and such rules and regulations as Landlord may establish from time to time. Such parking shall be in non-exclusive, unassigned spaces on a self-park, attendant-park, valet or other basis, as from time to time prescribed by Landlord, and the charge for such permits

shall be the prevailing rate charged from time to time by Landlord or the Operator (currently $510.00 per space per month, subject to change at any time and from time to time without notice), plus all taxes or other governmental surcharges. Such charges shall be paid monthly in advance to the Operator. Except as otherwise provided herein, contracts for parking permits shall be with the Operator and shall contain the same terms as are usually contained in contracts with other customers of the Operator.. Tenant shall not use the Parking Facilities for the servicing or extended storage of vehicles. Tenant shall not assign, sublet or transfer any permits hereunder, except in connection with any assignment or sublease permitted pursuant to Article VII hereof where parking is provided for in the sublease or assignment. Landlord reserves the right to institute either a Parking Facilities operator system, which may include self-park, attendant-park, valet or other parking arrangements, or to otherwise change the parking system. Notwithstanding the foregoing, Landlord does not guarantee the availability of any such monthly parking permits to Tenant during the second (2nd) or any subsequent month of the Lease Term if and to the extent that Tenant does not purchase any such monthly parking permits during the first (1st) month and each subsequent month of the Lease Term (it being understood that if Tenant does not timely purchase any such monthly parking contracts as provided herein but later notifies Landlord in writing of its desire to purchase same, then Landlord shall, upon not less than sixty (60) days' prior written notice from Tenant, provide Tenant the right to purchase its desired number of monthly parking permits (up to the Parking Space Allotment in the aggregate). Tenant and its employees shall observe reasonable safety precautions in the use of the Parking Facilities or any other parking area and shall at all times abide by all rules and regulations governing the use of the Parking Facilities. Tenant acknowledges that particular parking facilities, areas or spaces may be designated for exclusive use by particular tenants, occupants, visitors or other users, either generally or at particular times, and Tenant shall comply with all such designations and cause its employees, visitors and other invitees to do the same. Landlord reserves the right to close the Parking Facilities or any other parking area during periods of unusually inclement weather or for alterations, improvements or repairs. Landlord does not assume any responsibility, and shall not be held liable, for any damage or loss to any automobile or personal property in or about the Parking Facilities, or for any injury sustained by any person in or about the Parking Facilities. Landlord shall not be liable to Tenant and this Lease shall not be affected if any parking rights hereunder are impaired by any Law imposed after the Lease Commencement Date. Landlord reserves the right to determine whether the Parking Facilities are becoming crowded and to allocate and assign parking spaces among Tenant and the other tenants provided that the Parking Space Allotment will not be reduced thereby. Said Parking Space Allotment shall be paid for by Tenant at the then current prevailing rate in the Parking Facilities, as such rate may vary from time to time.

ARTICLE XXV
GENERAL PROVISIONS

25.1 Tenant acknowledges that neither Landlord nor any broker, agent or employee of Landlord has made any representation or promise with respect to the Premises or any portion of the Building except as herein expressly set forth, and no right, privilege, easement or license is being acquired by Tenant except as herein expressly set forth.

25.2 Nothing contained in this Lease shall be construed as creating any relationship between Landlord and Tenant other than that of landlord and tenant, and no estate shall pass out

of Landlord. Landlord and Tenant intend that their relationship hereunder shall be that of landlord and tenant pursuant to applicable Law. Tenant's interest hereunder is not subject to levy and sale and is not assignable or transferable (for security purposes, collateral purposes or otherwise), except as expressly provided in Article VII of this Lease. Tenant shall not use the name of the Building for any purpose other than as the address of the business to be conducted by Tenant in the Premises, use the name of the Building as Tenant's business address after Tenant vacates the Premises, or do or permit to be done anything in connection with Tenant's business or advertising which in the reasonable judgment of Landlord may reflect unfavorably on Landlord or the Building or confuse or mislead the public as to any apparent connection or relationship between Landlord, the Building and Tenant.

25.3 Landlord and Tenant each warrants to the other that in connection with this Lease it has not employed or dealt with any broker, agent or finder, other than the Brokers. It is understood that Landlord shall pay Landlord's Broker pursuant to a separate agreement and Landlord's Broker shall pay Tenant's Broker pursuant to a separate agreement. Tenant shall indemnify and hold Landlord harmless from and against any claim for brokerage or other commissions asserted by any broker, agent or finder employed by Tenant or with whom Tenant has dealt, other than the Brokers. Landlord shall indemnify and hold Tenant harmless from and against any claim for brokerage or other commissions asserted by Landlord's Broker or Tenant's Broker (in the event that Landlord fails to pay Landlord's Broker its commission) or any broker, agent or finder employed by Landlord or with whom Landlord has dealt other than Tenant's Broker. Tenant's and Landlord's indemnities set forth in this Section shall survive the expiration or earlier termination of the Lease Term.

25.4 At any time and from time to time, upon not less than ten (10) days' prior written notice, Tenant and each subtenant, assignee, licensee or concessionaire or occupant of Tenant shall execute, acknowledge and deliver to Landlord and/or any other person or entity designated by Landlord, a written statement certifying: (a) that this Lease is unmodified and in full force and effect (or if there have been modifications, that this Lease is in full force and effect as modified and stating the modifications); (b) the dates to which the rent and any other charges have been paid; (c) to Tenant's knowledge, whether or not Landlord is in default in the performance of any obligation, and if so, specifying the nature of such default; (d) whether or not Tenant is in default of the performance of any obligation, and if so, specifying the nature of such default; (e) that this Lease is subject and subordinate to all Mortgages encumbering the Building or the Land; (f) that Tenant has accepted the Premises and that all work thereto has been completed (or if such work has not been completed, specifying the incomplete work); and (g) such other matters as Landlord may reasonably request. Any such statement may be relied upon by any owner of the Building or the Land, any prospective purchaser of the Building or the Land, any holder or prospective holder of a Mortgage or any other person or entity. If Tenant fails to so execute and deliver such statement (or submit a revised version thereof) within such ten (10) day period, then Landlord shall be entitled to send Tenant a second notice requesting such execution and delivery of such statement ("**Second Notice**"), and if Tenant fails to execute and deliver such statement (or submit a revised version thereof) within five (5) business days after the Second Notice, then Tenant shall pay to Landlord a fee in the amount of Two Hundred Fifty and 00/100 Dollars ($250.00) per day for each day beyond the fifth (5th) business day after the Second Notice that Tenant fails to execute and deliver such statement (or submit a revised version thereof). Such fee shall be in addition to Landlord's other remedies hereunder.

25.5 TO THE EXTENT PERMITTED BY LAW, LANDLORD, TENANT, ALL GUARANTORS AND ALL GENERAL PARTNERS EACH WAIVES TRIAL BY JURY IN ANY ACTION, PROCEEDING, CLAIM OR COUNTERCLAIM BROUGHT IN CONNECTION WITH ANY MATTER ARISING OUT OF OR IN ANY WAY CONNECTED WITH THIS LEASE, THE RELATIONSHIP OF LANDLORD AND TENANT HEREUNDER, TENANT'S USE OR OCCUPANCY OF THE PREMISES, AND/OR ANY CLAIM OF INJURY OR DAMAGE. TENANT CONSENTS TO SERVICE OF PROCESS AND ANY PLEADING RELATING TO ANY SUCH ACTION AT THE PREMISES; PROVIDED, HOWEVER, THAT NOTHING HEREIN SHALL BE CONSTRUED AS REQUIRING SUCH SERVICE AT THE PREMISES. TENANT WAIVES ANY RIGHT TO RAISE ANY NON-COMPULSORY COUNTERCLAIM IN ANY SUMMARY OR EXPEDITED ACTION OR PROCEEDING INSTITUTED BY LANDLORD. LANDLORD, TENANT, ALL GUARANTORS AND ALL GENERAL PARTNERS EACH WAIVES ANY OBJECTION TO THE VENUE OF ANY ACTION FILED IN ANY COURT SITUATED IN THE JURISDICTION IN WHICH THE BUILDING IS LOCATED, AND WAIVES ANY RIGHT, CLAIM OR POWER, UNDER THE DOCTRINE OF FORUM NON CONVENIENS OR OTHERWISE, TO TRANSFER ANY SUCH ACTION TO ANY OTHER COURT.

25.6 All notices or other communications required under this Lease shall be in writing and shall be deemed duly given and received when delivered in person (with receipt therefor), on the next business day after deposit with a recognized overnight delivery service, or on the second day after being sent by certified or registered mail, return receipt requested, postage prepaid, to the following addresses: (a) if to Landlord, at the Landlord Notice Address specified in Article I; (b) if to Tenant, at the Tenant Notice Address specified in Article I. Either party may change its address for the giving of notices by written notice given in accordance with this Section. If Landlord or the holder of any Mortgage notifies Tenant in writing that a copy of any notice to Landlord shall be sent to such holder at a specified address, then Tenant shall send (in the manner specified in this Section and at the same time such notice is sent to Landlord) a copy of each such notice to such holder, and no such notice shall be considered duly sent unless such copy is so sent to such holder. Any such holder shall have thirty (30) days after receipt of such notice to cure any Landlord default before Tenant may exercise any remedy (provided that in the case of a Landlord default arising from an act or omission which cannot be reasonably remedied within said thirty (30) day period, then the holder of any Mortgage shall have as long as reasonably necessary to remedy such act or omission provided that (i) such holder commences such remedy and notifies Tenant within said thirty (30) day period of holder's desire to remedy, and (ii) holder pursues completion of such remedy with due diligence following such giving of notice and following the time when holder should have become entitled under the Mortgage to remedy the same). Any cure of Landlord's default by such holder shall be treated as performance by Landlord.

25.7 Each provision of this Lease shall be valid and enforceable to the fullest extent permitted by law. If any provision of this Lease or the application thereof to any person or circumstance shall to any extent be invalid or unenforceable, then such provision shall be deemed to be replaced by the valid and enforceable provision most substantively similar to such invalid or unenforceable provision, and the remainder of this Lease and the application of such provision to persons or circumstances other than those as to which it is invalid or unenforceable shall not be affected thereby. Nothing contained in this Lease shall be construed as permitting Landlord to charge or receive interest in excess of the maximum rate allowed by law.

25.8 Feminine, masculine or neuter pronouns shall be substituted for those of another form, and the plural or singular shall be substituted for the other number, in any place in which the context may require such substitution.

25.9 The provisions of this Lease shall be binding upon and inure to the benefit of the parties and each of their respective representatives, successors and assigns, subject to the provisions herein restricting assignment or subletting.

25.10 This Lease contains and embodies the entire agreement of the parties hereto and supersedes all prior agreements, negotiations, letters of intent, proposals, representations, warranties, understandings, suggestions and discussions, whether written or oral, between the parties hereto. Any representation, inducement, warranty, understanding or agreement that is not expressly set forth in this Lease shall be of no force or effect. This Lease may be modified or changed in any manner only by an instrument signed by both parties. This Lease includes and incorporates all exhibits, schedules and riders referenced herein, all of which are attached hereto. Tenant shall, at Landlord's request, promptly execute any requisite document, certificate or instrument that is reasonably necessary or desirable to clarify or carry out the force and effect of any terms or conditions of, or obligation of Tenant under, this Lease.

25.11 This Lease shall be governed by the Laws of the jurisdiction in which the Building is located, without regard to the application of choice of law principles. There shall be no presumption that this Lease be construed more strictly against the party who itself or through its agent prepared it (it being agreed that all parties hereto have participated in the preparation of this Lease and that each party had the opportunity to consult legal counsel before the execution of this Lease). No custom or practice which may evolve between the parties in the administration of the terms of this Lease shall be construed to waive Landlord's right to insist on Tenant's strict performance of the terms of this Lease.

25.12 Headings are used for convenience and shall not be considered when construing this Lease.

25.13 The submission of an unsigned copy of this document to Tenant shall not constitute an offer or option to lease the Premises. This Lease shall become effective and binding only upon execution and delivery by both Landlord and Tenant.

25.14 Time is of the essence with respect to Tenant's obligations hereunder.

25.15 This Lease (and all exhibits hereto) may be executed in multiple counterparts, each of which shall be deemed an original and all of which together constitute one and the same document. Electronic copies of signatures delivered by any method shall have the same binding effect as original signatures, and an electronic copy of the Lease containing the signatures (original, faxed or emailed) of the parties is binding. This Lease (and all exhibits hereto) may be signed by Landlord or Tenant (as applicable) with an electronic signature or signature stamp, which electronic signature or signature stamp shall have the same binding effect as if it were an original signature.

25.16 Neither this Lease nor a memorandum thereof shall be recorded.

25.17 Except as otherwise provided in this Lease, any additional rent or other sum owed by Tenant to Landlord, and any cost, expense, damage or liability incurred by Landlord for which Tenant is liable, shall be considered additional rent payable pursuant to this Lease to be paid by Tenant no later than thirty (30) days after the date Landlord notifies Tenant of the amount thereof. If Tenant has not objected to any statement of additional rent which is rendered by Landlord to Tenant within one hundred eighty (180) days after Landlord has rendered the same to Tenant, then the same shall be deemed to be a final account between Landlord and Tenant not subject to any further dispute.

25.18 Tenant's liabilities and obligations with respect to the period prior to the expiration or earlier termination of the Lease Term shall survive such expiration or earlier termination. Landlord's liabilities and obligations with respect to refund of the security deposit or overpayments by Tenant of Real Estate Taxes or Operating Charges, if and to the extent required by the provisions of this Lease, shall survive the expiration or earlier termination of this Lease.

25.19 If Landlord or Tenant is in any way delayed or prevented from performing any obligation (except, with respect to Tenant, its obligations to pay rent and other sums due under this Lease, any obligation set forth in **Exhibit B**, any obligation with respect to insurance pursuant to Article XIII, any obligation to give notice with respect to extensions, expansions or otherwise, and its obligation to vacate the Premises at the expiration or earlier termination of the Lease Term) due to fire, act of God, governmental act or failure to act, strike, labor dispute, inability to procure materials, or any cause beyond Landlord's or Tenant's (as applicable) reasonable control (whether similar or dissimilar to the foregoing events), then the time for performance of such obligation shall be excused for the period of such delay or prevention and extended for a period equal to the period of such delay or prevention. No such force majeure event shall delay the Lease Commencement Date or excuse the timely payment of all items of rent by Tenant. Financial disability or hardship shall never constitute a force majeure event.

25.20 Landlord's review, approval and consent powers (including the right to review plans and specifications) are for its benefit only. Such review, approval or consent (or conditions imposed in connection therewith) shall be deemed not to constitute a representation concerning legality, safety or any other matter.

25.21 The deletion of any printed, typed or other portion of this Lease shall not evidence the parties' intention to contradict such deleted portion. Such deleted portion shall be deemed not to have been inserted in this Lease.

25.22 At the expiration or earlier termination of the Lease Term, Tenant shall deliver to Landlord all keys and security cards to the Building and the Premises, whether such keys were furnished by Landlord or otherwise procured by Tenant, and shall inform Landlord of the combination of each lock, safe and vault, if any, in the Premises.

25.23 Tenant and the person executing and delivering this Lease on Tenant's behalf each represents and warrants that such person is duly authorized to so act; that Tenant is duly

organized, is qualified to do business in the jurisdiction in which the Building is located, is in good standing under the Laws of the state of its organization and the Laws of the jurisdiction in which the Building is located, and has the power and authority to enter into this Lease, and that all action required to authorize Tenant and such person to enter into this Lease has been duly taken.

25.24 Any elimination or shutting off of light, air, or view by any structure which may be erected on lands adjacent to the Building, or any noise in connection with activities permitted by this Lease, shall in no way effect this Lease or impose any liability on Landlord.

25.25 In the event Landlord or Tenant is required or elects to take legal action against the other party to enforce the provisions of this Lease, then the prevailing party in such action shall be entitled to collect from the other party its costs and expenses incurred in connection with the legal action (including reasonable attorneys' fees and court costs). Notwithstanding the foregoing, if Landlord shall take any legal action for collection of rent or file any eviction proceedings (whether summary or otherwise) for the nonpayment of rent, and Tenant shall make payment of such rent prior to the rendering of any judgment, the Landlord shall be entitled to collect and Tenant shall pay as additional rent all filing fees and other costs in connection therewith (including reasonable attorneys' fees).

25.26 Landlord and Tenant shall keep the Lease (including the existence, terms and conditions thereof) strictly confidential and shall not disclose same to any person or entity other than a Permitted Person, and then only on a need to know basis. A "**Permitted Person**" shall be defined as the officers and directors of Landlord or Tenant, the employees of Landlord or Tenant who are involved in lease administration, Tenant's or Landlord's certified public accountants, lenders, attorneys or agents who have responsibilities related to the Lease, or any person or entity to whom disclosure is required by applicable judicial or governmental authority, lenders and investors and prospective lenders and investors, and with respect to Landlord, to any prospective purchasers of the Building or of any interests therein. Prior to disclosing same to any Permitted Person, Tenant and Landlord shall instruct such Permitted Person to abide by this confidentiality provision.

25.27 As an inducement to Landlord to enter into this Lease, Tenant hereby represents and warrants that: (i) Tenant is not, nor is it owned or controlled directly or indirectly by, any person, group, entity or nation named on any list issued by the Office of Foreign Assets Control of the United States Department of the Treasury ("**OFAC**") pursuant to Executive Order 13224 or any similar list or any law, order, rule or regulation or any Executive Order of the President of the United States as a terrorist, "Specially Designated National and Blocked Person" or other banned or blocked person (any such person, group, entity or nation being hereinafter referred to as a "**Prohibited Person**"); (ii) Tenant is not (nor is it owned or controlled, directly .or indirectly, by any person, group, entity or nation which is) acting directly or indirectly for or on behalf of any Prohibited Person; and (iii) from and after the effective date of the above-referenced Executive Order, Tenant (and any person, group, or entity which Tenant controls, directly or indirectly) has not knowingly conducted nor will knowingly conduct business nor has knowingly engaged nor will knowingly engage in any transact ion or dealing with any Prohibited Person in violation of the U.S. Patriot Act or any OFAC rule or regulation, including, without limitation , any assignment of this Lease or any subletting of all or any portion of the Premises or

the making or receiving of any contribution of funds, goods or services to or for the benefit of a Prohibited Person in violation of the U.S. Patriot Act or any OFAC rule or regulation. In connection with the foregoing, it is expressly understood and agreed that (x) any breach by Tenant of the foregoing representation s and warranties shall be deemed a default by Tenant under Article XIX of this Lease and shall be covered by the indemnity provisions of this Lease, (y) Tenant shall be responsible for ensuring that all assignees of this Lease and all subtenants or other occupants of the Premises comply with the foregoing representations and warranties, and (z) the representations and warranties contained in this subsection shall be continuing in nature and shall survive the expiration or earlier termination of this Lease.

ARTICLE XXVI
RIGHT OF FIRST OFFER

26.1 Subject to the terms and conditions of this Section 26.1, if that certain horizontally contiguous space on the sixth (6th) floor of the Building, known as Suite 603, containing approximately two thousand sixty-nine (2,069) square feet of rentable area, as shown on the plan attached hereto as **Exhibit E** (the "**ROFO Space**") becomes available for Lease during the Lease Term as it may be extended or renewed, then Tenant shall have the one-time first right to lease such ROFO Space for the then remainder of the Lease Term (as it may have been extended or renewed) pursuant to the following terms and conditions:

(a) Prior to entering into any lease with any third party for the ROFO Space, Landlord shall notify Tenant in writing (the "**Landlord ROFO Availability Notice**") of the availability of such space. Tenant shall have ten (10) days after receiving the Landlord ROFO Availability Notice to notify Landlord in writing ("**Tenant's ROFO Election Notice**") that Tenant desires to negotiate with Landlord for a lease of such ROFO Space for the then remainder of the Lease Term (as it may have been extended or renewed). If Tenant does not properly and timely deliver Tenant's ROFO Election Notice to Landlord as set forth above, Landlord shall be free to lease the ROFO Space to any third party on terms and conditions as determined by Landlord in its sole and absolute discretion, and Tenant's right of first offer set forth in this Section 26.1 shall be of no further force or effect and Landlord shall have the right to lease the ROFO Space to any third party on any terms.

(b) If Tenant timely and properly exercises its right to lease the ROFO Space pursuant to this Section 26.1, then (i) such ROFO Space shall be added to the Premises as of the date Landlord delivers same to Tenant (the "**ROFO Space Commencement Date**") at an annual Base Rent and any other applicable concessions determined as provided herein, and pursuant to all of the other then existing terms and conditions of this Lease; provided, however, that all provisions varying with square footage not specifically described herein (including, without limitation, Tenant's Proportionate Share) shall be re-determined to reflect the increased rentable area of the Premises, and (ii) Tenant shall accept the ROFO Space in broom clean, but otherwise then "as is" condition, with no improvements obligation on the part of Landlord unless included in the Landlord ROFO Availability Notice.

(c) The parties shall have thirty (30) days after Landlord's timely receipt of Tenant's ROFO Election Notice (the "**ROFO Negotiation Period**") in which to agree on the annual base rent, escalation factor and additional rent (and any other applicable concessions)

which shall be payable for the first year of the Lease Term for the ROFO Space, which would equal one hundred percent (100%) of the applicable fair market rent taking into account the Market Items (as defined in Section 3.4), except that such fair market rent shall be determined with respect to a new lease. If during the ROFO Negotiation Period the parties agree on such annual base rent, escalation factor and additional rent, then they shall promptly execute an amendment to the Lease stating the terms so agreed upon. If during the ROFO Negotiation Period the parties are unable, for any reason whatsoever, to agree on such annual base rent, escalation factor and additional rent, then within five (5) business days after the last day of the ROFO Negotiation Period, the parties shall each appoint a real estate broker who shall be licensed in the Commonwealth of Massachusetts and who specializes in the field of commercial office space leasing in Boston, Massachusetts, has at least ten (10) years of experience and is recognized within the field as being reputable and ethical. Such two individuals shall each determine, within ten (10) business days after their appointment, such annual base rent, escalation factor and additional rent. If such individuals do not agree on such items, then the two individuals shall, within five (5) business days, render separate written reports of their determinations and together appoint a third similarly qualified individual. The third individual shall, within ten (10) business days after his or her appointment, select either Landlord's broker's determination or Tenant's broker's determination (this being the third broker's sole function) as being closest to the applicable fair market annual base rent, escalation factor and additional rent and shall notify the parties of such selection. The third broker's decision shall be final and conclusive, and binding on Landlord and Tenant. Landlord and Tenant shall each bear the cost of its broker and shall share equally the cost of the third broker. Upon determination of the annual base rent, escalation factor and concessions payable pursuant to this Section, the parties shall promptly execute an amendment to this Lease stating the rent and additional terms so determined (the "**ROFO Amendment**").

(d) Tenant's rights under this Section 26.1 are subject and subordinate to (i) any rights of any other tenant pursuant to its lease at the Building as of the Execution Date, and (ii) Landlord's rights to renew or continue to lease space to any current or future tenant of such space beyond the expiration date of the lease term of such tenant's lease.

(e) Notwithstanding anything in the Lease to the contrary, delivery of possession of the ROFO Space to Tenant and commencement of Tenant's leasing thereof is and shall be subject to Landlord's obtaining possession from any prior tenant or occupant who holds over beyond the applicable lease expiration date, and Tenant shall have no claim against Landlord (for damages or otherwise) and Landlord shall have no obligation or liability for, on account of or with respect to any holdover in all or any portion of the ROFO Space. Tenant shall accept possession of such ROFO Space and commence paying rent therefor on the date of delivery of such space by Landlord in the condition required and otherwise as provided pursuant to this Section 26.1 and the ROFO Amendment.

(f) If an Event of Default exists on the date Tenant sends Tenant's ROFO Election Notice or on the ROFO Space Commencement Date, or if an Event of Default exists on the date that Landlord would be required to send a Landlord ROFO Availability Notice, then, at Landlord's election, Tenant's rights pursuant to this Section 26.1 shall lapse and be of no further force or effect.

(g) Tenant's rights under this Section 26.1 may be exercised by Tenant only and may not be exercised by or for the benefit of any transferee, sublessee or assignee of Tenant (other than an Affiliate-assignee of Tenant, as permitted hereby).

(h) If at any time any portion of the Premises has been subleased or assigned (other than to an Affiliate-assignee of Tenant as permitted hereby), or if this Lease has been terminated with respect to such portion of the Premises, then Tenant's rights pursuant to this Section 26.1 shall lapse and be of no further force or effect.

(i) Tenant has the right under this Section 26.1 to lease only the entire ROFO Space identified in Landlord's ROFO Availability Notice. Tenant has no right to lease less nor more than the entire ROFO Space so identified. Tenant shall have no right to renew or extend the Lease Term with respect to the ROFO Space except in connection with the renewal of the Lease Term for the entire Premises pursuant to Section 3.4 above.

(j) Landlord shall have no obligation to offer the ROFO Space to Tenant if there are less than twenty-four (24) months then remaining in the Lease Term. Notwithstanding the foregoing, if there are less than twenty-four (24) months then remaining in the Lease Term and Tenant has available to it an unexercised Renewal Term pursuant to Section 3.4 above, that has not been waived by Tenant or deemed waived, then Landlord shall offer the ROFO Space to Tenant during such period pursuant the terms of this Section 26.1; provided, however, that (i) Landlord shall have no obligation to lease the ROFO Space to Tenant for a term of less than twenty-four (24) months, and (ii) Tenant's right to lease the ROFO Space from Landlord shall be conditioned upon Tenant's irrevocable exercise of such Renewal Term pursuant to Section 3.4 above along with or prior to Tenant's delivery to Landlord of Tenant's ROFO Election Notice, and (iii) if Tenant does not properly and timely deliver Tenant's Renewal Option Notice to Landlord as set forth in Section 3.4 above, then Landlord shall have no further obligation to Tenant with respect to the ROFO Space and Landlord shall be free to lease the ROFO Space to any third party on terms and conditions as determined by Landlord in its sole and absolute discretion.

[Signature pages follow]

IN WITNESS WHEREOF, Landlord and Tenant have executed this Lease under seal as of the day and year first above written.

WITNESS:

LANDLORD:

COLUMBIA REIT — 116 HUNTINGTON, LLC, a Delaware limited liability company

By: Columbia Property Trust Operating Partnership, L.P., a Delaware limited partnership, its sole member

By: Columbia Property Trust Inc., a Maryland corporation, its general partner

/s/ Mary Anne Pattile

By: /s/ David Cheikin (SEAL)
Name: David Cheikin
Title: Senior Vice President
May 20, 2019

TENANT:

IMARA INC., a Delaware corporation

/s/ Rahul Ballal

By: /s/ Michael P. Gray (SEAL)
Name: Michael P. Gray
Title: Chief Financial & Operating Officer

EXHIBIT A

PLAN SHOWING PREMISES

EXHIBIT B

WORK AGREEMENT

This Exhibit B is attached to and made a part of that certain Office Lease Agreement dated as of May 20, 2019 (the "Lease"), by and between **COLUMBIA REIT – 116 HUNTINGTON, LLC**, a Delaware limited liability company, and **IMARA INC.**, a Delaware corporation ("Tenant"). Terms used but not defined in this Exhibit shall have the meaning ascribed to them in the Lease.

1. Tenant's Authorized Representative. Tenant designates Michael Gray ("Tenant's Authorized Representative") as the person authorized to approve and initial all budgets, plans, drawings, approvals and change orders pursuant to this Exhibit. Landlord shall not be obligated to respond to or act upon any such item until such item has been approved in writing by Tenant's Authorized Representative.

2. Construction of the Premises. Landlord, through its independent designated contractor, shall, at Landlord's expense, install the initial improvements specified in the Approved Space Plan and schedule of improvements/notes attached hereto as Schedules I and II, respectively (collectively, with any subsequent modifications or additions, "Landlord's Work"). If Tenant fails to utilize the entire allowance of any item specified in said Schedules, then Tenant shall not be entitled to any credit therefor. Landlord shall not be obligated to provide any improvements (including any supplemental HVAC equipment or any furniture or equipment), and the Premises shall be delivered containing no property of any kind, other than Landlord's Work. Landlord shall pay for the costs of Landlord's Work (which shall include a fee for Landlord's construction management in the amount of three percent (3%) of the total cost of Landlord's Work), to the extent such costs do not exceed the Improvements Allowance (as defined in Section 1.10 of the Lease). Tenant shall pay, not later than thirty (30) days after the Lease Commencement Date and Tenant's receipt of a bill, for the cost of any portion of Landlord's Work that exceeds the Improvements Allowance; provided that Landlord shall pay directly (and not from the Improvements Allowance) for the costs of one (1) initial test fit plan and one (1) revision. If the entire Improvements Allowance is not reserved or applied for Landlord's Work, then Tenant shall not be entitled to any credit therefor; provided that, so long as no Event of Default by Tenant then exists, Tenant shall receive a credit of such unused portion of the Improvements Allowance, not to exceed fifteen percent (15%) of the Improvements Allowance (the "Unused Allowance"), as follows: Landlord shall, at Tenant's request, which request shall be made within sixty (60) days following substantial completion of Landlord's Work, and provided Tenant submits invoices therefor and has commenced beneficial use of the Premises, reimburse Tenant (up to the Unused Allowance) for certain "soft" costs related to the architectural and engineering design fees, installation of Cabling and Tenant's reasonable, out-of-pocket moving expenses incurred by Tenant in moving into the Premises. Except as otherwise provided in Schedule II, all work and materials to be performed or provided by Landlord pursuant to this Exhibit shall be Building Standard items consistent in type and quality with the most recent buildout of the Premises. All amounts payable by Tenant pursuant to this Exhibit shall be considered additional rent and subject to all applicable provisions of the Lease. Notwithstanding the foregoing, except as otherwise expressly provided herein, Landlord shall

not be required to perform work which would require changes to structural components or the exterior design of the Building, require any material modification to the Building's mechanical installations or installations outside the Premises, not comply with all Laws, be incompatible with the building plans filed with appropriate governmental authorities or with the occupancy of the Building as a first-class office building, or delay the completion of any other work in the Building. Any changes required by any government department affecting the construction of the Building or the Premises shall not be deemed to violate any plans or provisions of this Exhibit, and shall be accepted by Tenant.

3. Schedule.

(a) Certain plans and specifications for the Building are available for Tenant's inspection at the property manager's offices. All plans shall be prepared by Landlord's architect and/or engineer. Landlord shall have the sole right to select the architects to be used in connection with Landlord's Work.

(b) Attached hereto as Schedule II is the Approved Space Plan.

(c) Based on the Approved Space Plan, Landlord shall deliver to Tenant the Construction Drawings. Within five (5) business days following Tenant's receipt of such Construction Drawings, Tenant shall have the right, but not the obligation, to deliver to Landlord in writing its comments thereto ("Tenant's Comments"). Tenant's failure to timely deliver to Landlord Tenant's Comments shall be deemed a waiver of Tenant's foregoing right to deliver to Landlord such Tenant's Comments. If Tenant timely delivers to Landlord such Tenant's Comments, then within five (5) business days following Landlord's receipt thereof, Landlord shall deliver to Tenant a written response, reasonably specifying of what actions, if any (Landlord agreeing to be reasonable in connection therewith but with no obligation to take any such actions), Landlord shall agree to take in response to such Tenant's Comments. Notwithstanding the foregoing, if and only if the Construction Drawings fail to substantially conform in all material respects to the Approved Space Plan, other than to the extent conformance is not permitted by Law or as a result of an event of force majeure, then Tenant shall have the right, but not the obligation, to notify Landlord thereof within five (5) business days following Tenant's receipt of such Construction Drawings, specifying in reasonable detail the reasons for such failure. Within five (5) business days after its receipt of Tenant's notice, Landlord shall (i) revise such Construction Drawings to substantially conform in all material respects to the Approved Space Plan, except to the extent conformance is not permitted by Law or as a result of an event of force majeure, and (ii) submit the revised Construction Drawings to Tenant for its review. Within three (3) business days after its receipt thereof, Tenant shall notify Landlord in writing whether the resubmitted Construction Drawings substantially conform in all material respects to the Approved Space Plan, except to the extent conformance is not permitted by Law or as a result of an event of force majeure. This process shall be repeated until the Construction Drawings substantially conform in all material respects to the Approved Space Plan, except to the extent conformance is not permitted by Law or as a result of an event of force majeure. The failure of Tenant to provide written notice that the Construction Drawings fail to substantially conform in all material respects to the Approved Space Plan (with reasonably detailed reasons) within the above time frames shall be deemed conclusive evidence that the Construction Drawings (or the last revisions thereof, if applicable) submitted to Tenant

substantially conform in all material respects to the Approved Space Plan, except to the extent conformance is not permitted by Law or as a result of an event of force majeure. Once Landlord finalizes the Construction Drawings, they shall be deemed "Final Construction Drawings".

(d) It is vital that all deadlines be met in order to allow Landlord sufficient time to review plans and working drawings, discuss with Tenant any changes therein which Landlord believes to be necessary or desirable, and substantially complete the Premises within the time frame provided in Article III of the Lease. Landlord and Tenant intend for each such deadline to be the applicable deadline, even if any such deadline is before the date the Lease is executed

4. Approval. All plans and drawings (and changes thereto) shall be subject to the written approval of Landlord and Tenant as provided in this Work Agreement. Landlord's approval may be withheld or granted in Landlord's sole and absolute discretion with respect to Structural and System Alterations and any Alterations which are visible from the exterior of the Premises, and which consent shall not be unreasonably withheld, conditioned or delayed with respect to all other Alterations. Any such approval by Landlord shall not constitute approval of any delay caused by Tenant or a waiver of any right or remedy that may arise as a result of such delay.

5. Change Orders. If Tenant requests any change or addition to the work or materials to be provided by Landlord pursuant to the Approved Space Plan or the Final Construction Drawings, then Landlord shall not be obligated to perform such change or addition. All additional expenses attributable to any change order requested by Tenant and approved by Landlord shall be payable by Tenant prior to the performance of the work contemplated by such change order. If Landlord submits an estimate of the additional expenses attributable to a change order, then Tenant shall pay such estimated additional expenses prior to the performance of the work contemplated by such change order. If the actual additional expenses attributable to such change order exceed such estimated additional expenses, then Tenant shall pay the amount of such excess no later than the earlier of the Lease Commencement Date or ten (10) days after Tenant's receipt of a bill therefor. If such estimated additional expenses exceed the actual additional expenses attributable to such change order, then the amount of such excess shall be credited against the first installment(s) of rent.

6. Substantial Completion.

(a) Except as provided in Paragraph 6(b), the Premises shall be deemed to be substantially complete when (i) Landlord's Work has been completed (except for items of work and adjustment of equipment and fixtures that can be completed after the Premises are occupied without causing substantial interference with Tenant's use of the Premises (i.e., the "punch list" items)), as reasonably determined by Landlord's architect (based on AIA standards), and (ii) Landlord has obtained the final inspection for the Premises from the appropriate governmental authority for the local jurisdiction, which shall grant permission to legally occupy the Premises.

(b) If Landlord shall be delayed in completing Landlord's Work as a result of (1) Tenant's failure to comply with any of the approval requirements and deadlines specified in this Exhibit or with any of the other requirements of this Exhibit or the Lease, (2) Tenant's

request for modifications to the Approved Space Plans or the Final Construction Drawings (other than pursuant to Tenant's permitted comment period hereunder), (3) Tenant's failure to pay when due any amount required pursuant to this Exhibit, (4) Tenant's request for long lead time materials, finishes or installations, or (5) the performance or timing of any work, or the entry into the Premises, by Tenant or any person or firm employed or retained by Tenant, then for purposes of determining the Lease Commencement Date, Landlord's Work shall be deemed to have been substantially complete on the date that Landlord determines in its reasonable judgment that Landlord's Work would have been substantially complete if such delay(s) had not occurred. Landlord shall provide Tenant's Authorized Representative with notice of any such delays by Tenant.

7. Possession. Tenant's taking of possession of the Premises shall constitute Tenant's acknowledgment that the Premises are in good condition and that all work and materials are satisfactory, except as to any defect or incomplete work that is described in a written notice given by Tenant to Landlord not later than the day Tenant takes possession of the Premises. Tenant and its agents shall have no right to make any Alteration in the Premises until Tenant submits such written notice. Landlord will correct and complete those defects and incomplete items described in such notice which Landlord confirms are in fact defects or incomplete items. At Landlord's request, Tenant shall accompany Landlord to prepare the punch list on or before the date Tenant takes possession of the Premises.

Initials of:

Landlord: /s/ DC

Tenant: /s/ MG

EXHIBIT B

SCHEDULE I

TENANT'S APPROVED SPACE PLAN

NOTE: Furniture and equipment are shown for illustration purposes only and are not included in the scope of Landlord's Work.

EXHIBIT B

SCHEDULE II

SCHEDULE OF LEASEHOLD IMPROVEMENTS

The following represents a list of all items to be included in Landlord's Work:

Tenant: Irama

Address: 116 Huntington Ave.

Suite: 6th Floor

Basis of Design: Dyer Brown Fit plan FP-01R5 dated 05/10/2019

Flooring

- Patch in new carpeting at areas of demolition to match existing otherwise carpeting is to remain as is.
- Install new vinyl base at new wall locations to match existing, otherwise base is to remain as is.
- All other flooring to remain as is.

Drywall & Framing

- New Walls:
  - To extend 6" above finished ceiling except: (walls between tenants and in between offices which are to go to deck)
  - To be insulated
  - To be constructed using metal studs with one layer 5/8" drywall on each side.
  - At conference rooms will extend to deck with insulation.

Painting/wall

- Paint: rolled and brushed latex, Benjamin Moore or equivalent, primer and finish coat on all new walls and touch up existing walls as needed.
- Paint: brushed latex, Benjamin Moore or equivalent, on new metal door frames.

Doors, Frames and Hardware

- All new doors, frames and hardware will be part of the wall system and will match the existing in style and function

Glazing

- The fronts of the new offices, and the hoteling office will be the storefront system that will match existing.
- The front of the large conference room will be either the same storefront or an aluminum system that will match this will have a section of full height glazing but then will have partial height partition at the front and also at the south side of the conference room.

Millwork

- Provide new plastic laminate countertop at the hoteling office
- All other millwork throughout the space will remain as is.

Ceiling

- At areas of new work install acoustical ceiling tile & grid with linear LED recessed light fixtures to match existing,
- All ceiling and lighting throughout the space will remain as is.
- Lighting will be reworked in the open office area to accommodate new work.

Electrical

- All Lighting; will comply with Massachusetts energy code
- Switching: per energy code.
- Added Exit Signs: per code furnish and install all new to match building standard.

Power

- Outlets:
  - Duplex provide (2) outlets per room
  - Duplex & junction box for Cable at (I) TV location at the large conference room
  - Provide a power feed for furniture whips, which will be located off the wall
- Include a conduit from TV location to the floor cores

Tel/data

- Telecommunication/Data: new cable, winning, conduit, and equipment by Tenant.

Fire Alarm

- Life Safety Notification Devices (audible visual devices and smoke detectors): per code.

Fire Protection

- Fire Protection (sprinklers): per code.

HVAC

- HVAC: for all areas per plan and code

Furniture

- Furniture: not included: by Tenant.

Security System

- Security: not included; by Tenant.

AV

- AV Systems not included; by Tenant.

The following are specifically excluded from scope:

- Furniture
- Reception desk
- Millwork Bench at the open office. assumes this will be a furniture piece.
- Office Equipment (including all IT room equipment)
- Relocating Tenant’s existing furniture and equipment of any kind
- Telecommunications, data, security, and audio-visual cable, wiring, conduit, and equipment
- Interior signage, both new and relocation of existing, and any blocking for it
- Moving expenses or any other relocation cost, including freight elevator and loading dock charges related to move
- Structural fortification.
- Treatments for interior glass like sand-blasting, drapery, and blinds
- Door bells and door chimes
- White noise systems or other sound attenuation systems and devices
- Stone, ceramic, porcelain, and other hard floor tile and base, except as noted above
- Whiteboards
- Scuffmaster paint

EXHIBIT C

RULES AND REGULATIONS

The following rules and regulations have been formulated for the safety and well-being of all tenants of the Building. Strict adherence to these rules and regulations is necessary to guarantee that every tenant will enjoy a safe and undisturbed occupancy of its premises. Any violation of these rules and regulations by Tenant shall constitute a default by Tenant under the Lease.

1. Tenant shall not obstruct or encumber or use for any purpose other than ingress and egress to and from the Premises any sidewalk, entrance, passage, court, elevator, vestibule, stairway, corridor, hall or other part of the Building not exclusively occupied by Tenant. No bottles, parcels or other articles shall be placed, kept or displayed on window ledges, in windows or in corridors, stairways or other public parts of the Building. Tenant shall not place any showcase, mat or other article outside the Premises. Nothing may be placed on or about balcony areas, if any, of the Building without Landlord's prior written approval. Tenant shall keep all portions of the Premises which are visible from the Building's central atrium (if any) in a tasteful, neat and orderly condition characteristic of first-class professional offices, so as not to be offensive to other tenants of the Building. No desks, bookcases, file cabinets and other furniture shall be placed against the glass surrounding the Building's central atrium (if any).

2. Landlord shall have the right to control and operate the public portions of the Building and the facilities furnished for common use of the tenants, in such manner as Landlord deems best for the benefit of the tenants generally. Tenant shall not permit the visit to the Premises of persons in such numbers or under such conditions as to interfere with the use and enjoyment of the entrances, corridors, elevators and other public portions or facilities of the Building by other tenants. Tenant shall coordinate in advance with Landlord's property management department all deliveries to the Building so that arrangements can be made to minimize such interference. Tenant shall not permit its employees and invitees to congregate in the elevator lobbies or corridors of the Building. Canvassing, soliciting and peddling in the Building are prohibited, and Tenant shall cooperate to prevent the same. Public corridor doors, when not in use, shall be kept closed. Nothing, including mats and trash, shall be placed, swept or thrown into the corridors, halls, elevator shafts, stairways or other public or Common Areas.

3. Tenant shall not attach, hang or use in connection with any window or door of the Premises any drape, blind, shade or screen, without Landlord's prior written consent. All awnings, drapes projections, curtains, blinds, shades, screens and other fixtures shall be of a quality, type, design and color, and shall be attached in a manner, approved in writing by Landlord. Any Tenant-supplied window treatments shall be installed behind Landlord's standard window treatments so that Landlord's standard window treatments will be what is visible to persons outside the Building. Drapes (whether installed by Landlord or Tenant) which are visible from the exterior of the Building shall be cleaned by Tenant at least once a year, without notice from Landlord, at Tenant's own expense.

4. Tenant shall not use the water fountains, water and wash closets, and plumbing and other fixtures for any purpose other than those for which they were constructed, and Tenant shall not place any debris, rubbish, rag or other substance therein (including coffee grounds). All damages from misuse of fixtures shall be borne by the tenant causing same.

5. Tenant shall not construct, maintain, use or operate within the Premises any electrical device, wiring or apparatus in connection with a loudspeaker system (other than an ordinary telephone and paging system) or other sound system, in connection with any excessively bright, changing, flashing, flickering or moving light or lighting device, or in connection with any similar device or system, without Landlord's prior written consent. Tenant shall not construct, maintain, use or operate any such device or system outside of its Premises or within such Premises so that the same can be heard or seen from outside the Premises. No flashing, neon or search lights shall be used which can be seen outside the Premises. Only warm white lamps may be used in any fixture that may be visible from outside the Building or Premises. Tenant shall not maintain, use or operate within the Premises any space heater, or any toaster oven or coffee machine that is not equipped with an automatic shut-off feature.

6. Tenant shall not bring any bicycle, vehicle, animal, bird or pet of any kind into the Building, except service animals and bicycles in designated areas by Landlord. Except while loading and unloading vehicles, there shall be no parking of vehicles or other obstructions placed in the loading dock area.

7. Except as specifically provided to the contrary in the Lease, Tenant shall not cook or permit any cooking on the Premises, except for microwave cooking and use of coffee machines by Tenant's employees for their own consumption. Tenant shall not cause or permit any unusual or objectionable odor to be produced upon or emanate from the Premises.

8. Tenant shall not make any unseemly or disturbing noise or disturb or interfere with occupants of the Building, whether by the use of any musical instrument, radio, talking machine or in any other way.

9. Tenant shall not place on any floor a load exceeding the floor load per square foot which such floor was designed to carry. Landlord shall have the right to prescribe the weight, position and manner of installation of safes and other heavy equipment and fixtures. Landlord shall have the right to repair at Tenant's expense any damage to the Premises or the Building caused by Tenant's moving property into or out of the Premises or due to the same being in or upon the Premises or to require Tenant to do the same. Tenant shall not receive into the Building or carry in the elevators any safes, freight, furniture, equipment or bulky item except as approved by Landlord, and any such furniture, equipment and bulky item shall be delivered only through the designated delivery entrance of the Building and the designated freight elevator at designated times. Tenant shall remove promptly from any sidewalk adjacent to the Building any furniture, furnishing, equipment or other material there delivered or deposited for Tenant. Landlord reserves the right to inspect all freight to be brought into the Building, except for government classified and confidential client materials, and to exclude from the Building all freight which violates any of these rules or the Lease.

10. Tenant shall not place additional locks or bolts of any kind on any of the doors or windows, and shall not make any change in any existing lock or locking mechanism therein, without Landlord's prior written approval. At all times Tenant shall provide Landlord with a

“master” key for all locks on all doors and windows. Tenant shall keep doors leading to a corridor or main hall closed at all times except as such doors may be used for ingress or egress and shall lock such doors during all times the Premises are unattended. Tenant shall, upon the termination of its tenancy: (a) restore to Landlord all keys and security cards to stores, offices, storage rooms, toilet rooms, the Building and the Premises which were either furnished to, or otherwise procured by, Tenant, and in the event of the loss of any keys so furnished, Tenant shall pay the replacement cost thereof; and (b) inform Landlord of the combination of any lock, safe and vault in the Premises. At Landlord’s request, Landlord’s then customary charge per key shall be paid for all keys in excess of two (2) of each type. Tenant’s key system shall be consistent with that for the rest of the Building.

11. Except as shown in the Final Construction Drawings, Tenant shall not install or operate in the Premises any electrically operated equipment or machinery (other than standard servers, desk-top office equipment, including desk-top computers and copiers, typewriters, facsimile machines, printers or other similar equipment used in connection with standard office operations) without obtaining the prior written consent of Landlord. Landlord may condition such consent upon Tenant’s payment of additional rent in compensation for the excess consumption of electricity or other utilities and for the cost of any additional wiring or apparatus that may be occasioned by the operation of such equipment or machinery. Landlord shall have the right at any time and from time to time to designate the electric service providers for the Building. Tenant shall cooperate with Landlord and such service providers and shall allow, as reasonably necessary, access to the Building’s electric lines, feeders, risers, wiring and any other Building machinery. Tenant shall not install any equipment of any type or nature that will or may necessitate any changes, replacements or additions to, or changes in the use of, the water system, heating system, plumbing system, air-conditioning system or electrical system of the Premises or the Building, without obtaining Landlord’s prior written consent, which consent may be granted or withheld in Landlord’s sole and absolute discretion. If any machine or equipment of Tenant causes noise or vibration that may be transmitted to such a degree as to be objectionable to Landlord or any tenant in the Building, then Landlord shall have the right to install at Tenant’s expense vibration eliminators or other devices sufficient to reduce such noise and vibration to a level satisfactory to Landlord or to require Tenant to do the same.

12. All telephone and telecommunications services desired by Tenant shall be ordered by and utilized at the sole expense of Tenant. Unless Landlord otherwise requests or consents in writing, all of Tenant’s telecommunications equipment shall be and remain solely in the Premises and the telephone closet(s) designated by Landlord. Landlord shall have no responsibility for the maintenance of Tenant’s telecommunications equipment (including wiring) nor for any wiring or other infrastructure to which Tenant’s telecommunications equipment may be connected. Landlord shall have the right, upon reasonable prior notice to Tenant (except in the event of an emergency), to interrupt telecommunications facilities as necessary in connection with any repairs or with installation of other telecommunications equipment. Subject to the provisions of the Lease, Tenant shall not utilize any wireless communications equipment (other than usual and customary cellular telephones), including antennae and satellite receiver dishes, at the Premises or the Building, without Landlord’s prior written consent, which may be granted or withheld in Landlord’s sole and absolute discretion.

13. No telephone, telecommunications or other similar provider whose equipment is not then servicing the Building shall be permitted to install its lines or other equipment within or about the Building without first securing the prior written approval of Landlord, which approval shall not be unreasonably withheld, conditioned or delayed. Landlord's approval shall not be deemed any kind of warranty or representation by Landlord, including any warranty or representation as to the suitability, competence, or financial strength of the provider. Without limitation of the foregoing standards, as specific conditions of any consent: (i) Landlord shall incur no expense whatsoever with respect to any aspect of the provider's provision of its services (including the costs of installation, materials and services); (ii) prior to commencement of any work in or about the Building by the provider, the provider shall supply Landlord with such written indemnities, insurance, financial statements, and such other items as Landlord reasonably determines and Landlord shall have reasonably determined that there is sufficient space in the Building for the placement of the necessary equipment and materials; (iii) the provider agrees to abide by such rules and regulations, building and other codes, job site rules and such other requirements as are reasonably determined by Landlord to be necessary; (iv) the provider shall agree to use existing building conduits and pipes or use building contractors (or other contractors approved by Landlord); (v) the provider shall pay Landlord such compensation as is reasonably determined by Landlord to compensate it for space used in the building for the storage and maintenance of the provider's equipment, the fair market value of a provider's access to the Building, and the costs which may reasonably be expected to be incurred by Landlord; (vi) the provider shall agree to deliver to Landlord detailed "as built" plans immediately after the installation of the provider's equipment is complete; and (vii) all of the foregoing matters shall be documented in a written agreement between Landlord and the provider on Landlord's standard form and otherwise reasonably satisfactory to Landlord.

14. Landlord reserves the right to exclude from the Building at all times any person who does not properly identify himself to the Building management or attendant on duty. Landlord shall have the right to exclude any undesirable or disorderly persons from the Building at any time. Landlord may require all persons admitted to or leaving the Building to show satisfactory identification and to sign a register. Tenant shall be responsible for all persons for whom it authorizes entry into the Building and shall be liable to Landlord for all acts of such persons. Landlord has the right to evacuate the Building in the event of emergency or catastrophe or for the purpose of holding a reasonable number of fire drills.

15. Tenant shall not permit or encourage any loitering in or about the Premises and shall not use or permit the use of the Premises for lodging, dwelling or sleeping.

16. Tenant, before closing and leaving the Premises at the end of each business day, shall see that all lights and equipment are turned off, including coffee machines.

17. Tenant shall not request Landlord's employees to perform any work or do anything outside of such employees' regular duties without Landlord's prior written consent. Tenant's special requirements will be attended to only upon application to Landlord, and any such special requirements shall be billed to Tenant in accordance with the schedule of charges maintained by Landlord from time to time or as is agreed upon in writing in advance by Landlord and Tenant. Tenant shall not employ any of Landlord's employees for any purpose whatsoever without Landlord's prior written consent. Tenant shall not employ any person or

entity to do janitorial work within the Premises without Landlord's prior written consent, and any and all such work shall be done in compliance with all instructions issued by Landlord or its representatives.

18. There shall not be used in any space, or in the public halls of the Building, either by any tenant or by jobbers or others in the delivery or receipt of merchandise, any hand trucks, except those equipped with rubber tires and side guards. Tenant shall be responsible for any loss or damage resulting from any deliveries made by or for Tenant.

19. Tenant shall not install or permit the installation of any wiring for any purpose on the exterior of the Premises. Landlord will direct electricians as to where and how telephone and telegraph wires are to be introduced. No boring or cutting for wires or stringing of wires will be allowed without written consent of Landlord. The location of telephones, call boxes and other office equipment affixed to the Premises shall be subject to the approval of Landlord. All such work shall be effected pursuant to permits issued by all applicable governmental authorities having jurisdiction. Tenant shall not do anything, or permit anything to be done, in or about the Building, or bring or keep anything therein, that will in any way increase the possibility of fire or other casualty or obstruct or interfere with the rights of, or otherwise injure or annoy, other tenants, or do anything in conflict with the valid pertinent laws, rules, or regulations of any governmental authority.

20. Tenant acknowledges that it is Landlord's intention that the Building be operated in a manner which is consistent with the highest standards of cleanliness, decency and morals in the community which it serves. Toward that end, Tenant shall not sell, distribute, display or offer for sale any item which, in Landlord's judgment, is inconsistent with the quality of operation of the Building or may tend to impose or detract from the moral character or image of the Building. Tenant shall not use the Premises for any immoral or illegal purpose. Tenant shall cooperate with Building employees in keeping the Premises neat and clean.

21. Unless otherwise expressly provided in the Lease, Tenant shall not use, occupy or permit any portion of the Premises to be used or occupied for the storage, manufacture, or sale of liquor.

22. Tenant shall purchase or contract for waxing, rug shampooing, venetian blind washing, interior glass washing, furniture polishing, janitorial work, removal of any garbage from any dining or eating facility or for towel service in the Premises, only from contractors, companies or persons designated by Landlord. Tenant may have any such service provided within the Premises only upon prior written notice to Landlord or the Building manager in each instance, and Tenant shall provide Landlord or the Building manager with identifying information regarding each individual performing any such services, other than full-time employees of Tenant, prior to such individual's commencing work, and Tenant shall direct and cause each such individual, while in the Building and outside of the Premises, to comply with all instructions issued by Landlord or its representatives.

23. Tenant shall not remove, alter or replace the ceiling light diffusers, ceiling tiles or air diffusers in any portion of the Premises without the prior written consent of Landlord

24. Tenant shall not purchase water, ice, coffee, soft drinks, towels, or other merchandise or services from any company or person whose repeated violation of Building regulations has caused, in Landlord's opinion, a hazard or nuisance to the Building and/or its occupants.

25. Tenant shall not pay any employee on the Premises except those actually employed therein; nor shall Tenant use the Premises as headquarters for large scale employment of workers for other locations.

26. Landlord shall have the right, upon written notice to Tenant, to require Tenant to refrain from or discontinue any advertising by Tenant which, in Landlord's reasonable opinion, tends to impair the reputation of the Building or its desirability for offices.

27. Tenant shall not in any manner deface any part of the Premises or the Building. Other than ordinary office decorations, no stringing of wires, boring or cutting shall be permitted except with Landlord's prior written consent. Any floor covering installed by Tenant shall have an under layer of felt rubber, or similar sound-deadening substance, which shall not be affixed to the floor by cement or any other non-soluble adhesive materials.

28. Any installations to provide supplemental cooling for any portion of the Premises shall be made in such manner and using such equipment and facilities as Landlord may designate and direct, and all work relating to any such installations shall in all respects be performed at Tenant's sole cost and expense pursuant to plans approved in advance in writing by Landlord, and in all other respects in the manner required pursuant to the Lease.

29. Tenant shall handle its newspapers, "office paper," garbage, trash and other waste products in the manner required by applicable law (as the same may be amended from time to time) whether required of Landlord or otherwise and shall conform with any recycling plan instituted by Landlord. Landlord shall have no obligation to accept any waste that is not prepared for collection in accordance with any such requirements. Landlord reserves the right to require Tenant to arrange for waste collection, at Tenant's sole cost and expense, utilizing a contractor reasonably satisfactory to Landlord, and to require Tenant to pay all costs, expenses, fines, penalties, or damages that may be imposed on Landlord or Tenant by reason of Tenant's failure to comply with any such requirements. If Tenant is unable to comply with Landlord's standard procedures regarding the internal collection, sorting, separation and recycling of waste, then, upon reasonable advance notice to Landlord, Landlord shall use reasonable efforts to arrange for alternative procedures for Tenant, provided Tenant shall pay Landlord all additional costs incurred by Landlord with respect thereto.

30. Tenant shall not bring or keep, or permit to be brought or kept, in the Building any weapon or flammable, combustible or explosive fluid, chemical or substance, except as otherwise expressly permitted in the Lease.

31. Tenant shall comply with all workplace smoking Laws. There shall be no smoking in bathrooms, elevator lobbies, elevators, terraces, loading docks, plaza areas, and other common areas of the Building or the Land.

32. All Cabling installed by Tenant shall be marked and coded, in a manner reasonably acceptable to Landlord, to identify such facilities as belonging to Tenant and the point of commencement and termination of such facilities. All such Cabling shall be removed by Tenant upon the expiration or termination of the Lease.

33. Landlord may, upon request of Tenant, waive Tenant's compliance with any of the rules, provided that (a) no waiver shall be effective unless signed by Landlord, (b) no waiver shall relieve Tenant from the obligation to comply with such rule in the future unless otherwise agreed in writing by Landlord, (c) no waiver granted to any tenant shall relieve any other tenant from the obligation of complying with these rules and regulations, and (d) no waiver shall relieve Tenant from any liability for any loss or damage resulting from Tenant's failure to comply with any rule. Landlord reserves the right to rescind any of these rules and make such other and further rules as in the judgment of Landlord shall from time to time be needed for the safety, protection, care, and cleanliness of the Building, the operation thereof, the preservation of good order therein, and the protection and comfort of its tenants, their agents, employees, and invitees, which rules when made and notice thereof given to a tenant shall be binding upon it in like manner as if originally herein prescribed. In the event of any conflict or inconsistency between the terms and provisions of these rules, as now or hereafter in effect, and the terms and provision of the Lease, the terms and provision of the Lease shall prevail.

EXHIBIT D

CERTIFICATE AFFIRMING THE LEASE COMMENCEMENT DATE

This Certificate is being provided pursuant to that certain Office Lease Agreement dated as of (the "**Lease**"), by and between COLUMBIA REIT — 116 HUNTINGTON, LLC, a Delaware limited liability company ("**Landlord**"), and IMARA INC., a Delaware corporation ("**Tenant**"). The parties to the Lease desire to confirm the following:

1. The Lease Commencement Date is , 20 .

2. The initial Lease Term shall expire on , .

IN WITNESS WHEREOF, Landlord and Tenant have executed this Certificate under seal on .

WITNESS:

LANDLORD:

COLUMBIA REIT — 116 HUNTINGTON, LLC, a Delaware limited liability company

By: Columbia Property Trust Operating Partnership, L.P., a Delaware limited partnership, its sole member

By: Columbia Property Trust Inc., a Maryland corporation, its general partner

By: _____ (SEAL)
Name: _____
Title: _____

TENANT:

IMARA, INC., a Delaware corporation

By: _____ (SEAL)
Name: _____
Title: _____

EXHIBIT E

PLAN SHOWING THE ROFO SPACE

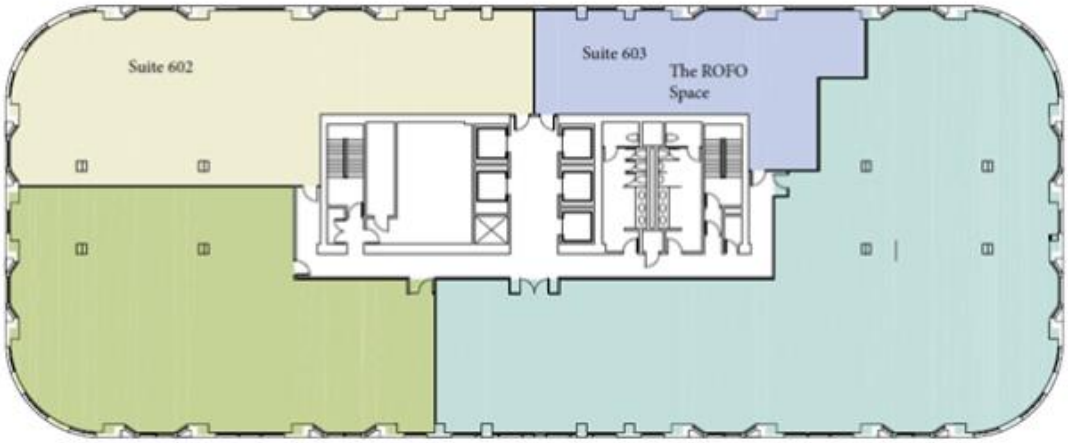

Exhibit 21.1

List of Subsidiaries

Name	Jurisdiction of Incorporation
IMARA E.U. Limited	United Kingdom