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

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2018

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission file number; 001-38796

GOSSAMER BIO, INC.

(Exact name of Registrant as specified in its charter)

Delaware **(State or other jurisdiction of incorporation or organization)**	**47-5461709** **(I.R.S. Employer Identification No.)**
3013 Science Park Road **San Diego, California** **(Address of principal executive offices)**	**92121** **(Zip Code)**

Registrant's telephone number, including area code: (858) 684-1300

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	**Name of exchange on which registered**
Common Stock, $0.0001 par value per share	The Nasdaq Global Select Market

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES ☐ NO ☑

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. YES ☐ NO ☑

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. YES ☐ NO ☑

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). YES ☑ NO ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☑

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 Securities Exchange Act of 1934.

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 pursuant to Section 13(a) of the Exchange Act. ☑

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). YES ☐ NO ☑

As of February 15, 2019, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was approximately $823.8 million, based on the closing price of the registrant's common stock on the Nasdaq Global Select Market of $19.30 per share. The registrant has elected to use February 15, 2019 as the calculation date, as on December 31, 2018 the registrant was a privately-held concern.

As of March 18, 2019, the registrant had 65,875,521 shares of common stock ($0.0001 par value) outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Certain sections of the registrant's definitive proxy statement for the 2019 annual meeting of stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after end of this fiscal year covered by this Form 10-K are incorporated by reference into Part III of this Form 10-K.

TABLE OF CONTENTS

PART I

FORWARD-LOOKING STATEMENTS

This annual report on Form 10-K contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. All statements other than statements of historical facts contained in this annual report, including statements regarding our future results of operations and financial position, business strategy, prospective products, product approvals, research and development costs, timing and likelihood of success, plans and objectives of management for future operations and future results of anticipated products, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. This annual report on Form 10-K also contains estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “expect,” “plan,” “anticipate,” “could,” “intend,” “target,” “project,” “contemplates,” “believes,” “estimates,” “predicts,” “potential” or “continue” or the negative of these terms or other similar expressions. The forward-looking statements in this annual report are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements speak only as of the date of this annual report and are subject to a number of risks, uncertainties and assumptions, including those described in Part I, Item 1A, “Risk Factors.” The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Moreover, we operate in an evolving environment. 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. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

This annual report includes trademarks, tradenames and service marks that are the property of other organizations. Solely for convenience, trademarks and tradenames referred to in this annual report appear without the ® and ™ symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights, or that the applicable owner will not assert its rights, to these trademarks and tradenames.

We maintain a website at www.gossamerbio.com, to which we regularly post copies of our press releases as well as additional information about us. Our filings with the Securities and Exchange Commission, or SEC, are available free of charge through our website as soon as reasonably practicable after being electronically filed with or furnished to the SEC. Information contained in our website does not constitute a part of this report or our other filings with the SEC.

Item 1. Business.

Overview

We are a clinical-stage biopharmaceutical company focused on discovering, acquiring, developing and commercializing therapeutics in the disease areas of immunology, inflammation and oncology. Our goal is to be an industry leader in each of these therapeutic areas and to enhance and extend the lives of patients suffering from such diseases. To accomplish this goal, we have assembled a deeply experienced and highly skilled group of industry veterans, scientists, clinicians and key opinion leaders from leading biotechnology and pharmaceutical companies, as well as leading academic centers from around the world. Our collective immunology and translational discovery and development expertise serves as the foundation of our company. We intend to maintain a scientifically rigorous and inclusive corporate culture where employees strive to bring improved therapeutic options to patients.

We are pursuing product candidates with strong scientific rationale to address indications where there is both a high unmet need and an opportunity to develop best-in-class or first-in-class therapeutics. We currently have six programs: three clinical-stage product candidates and three preclinical programs. We commenced a Phase 2b clinical trial for our most advanced product candidate, GB001, in October 2018.

The following table summarizes our current programs:

GB001 (DP2 Antagonist)

GB001 is an oral antagonist of prostaglandin D_2 receptor 2, or DP2, in development for the treatment of moderate-to-severe eosinophilic asthma and other allergic conditions. Eosinophilic asthma is caused by high levels of white blood cells known as eosinophils and is associated with more severe symptoms, late-onset disease and response to steroid treatment. We estimate that approximately 50% of severe asthma patients in the United States have eosinophilic asthma. Despite the availability of new biologic therapies for these patients, asthma exacerbations remain a significant healthcare problem and an unmet medical need. As of December 31, 2018, GB001 had been studied in 409 subjects in total and was generally well tolerated. In a Phase 2 clinical trial conducted in Japan, GB001 showed a statistically significant improvement in time-to-first asthma exacerbation compared to placebo. In a separate 248-subject Phase 2 clinical trial, neither treatment group, GB001 nor montelukast, achieved the primary endpoint of improvement in forced expiratory volume in one second, or FEV_1, as compared to placebo, which we believe was primarily related to study design and execution issues related to patient selection, including adherence to inhaled corticosteroid, or ICS, therapy, eosinophilic phenotype thresholds and disease severity. A single serious adverse event, intrahepatic cholestasis, a liver disorder, deemed by the investigator likely to be related to study drug was observed in a Japanese patient who had received a 160 mg dose of GB001 in a Phase 1 clinical trial conducted by Teijin Pharma Limited, or Teijin. The patient had GB001 exposure levels approximately three to five times higher than the other patients receiving the 160 mg dose, and the dose was significantly higher than the highest dose of 60 mg currently being evaluated in our ongoing Phase 2b clinical trial. We commenced a Phase 2b clinical trial in moderate-to-severe eosinophilic asthma in October 2018.

Furthermore, we believe that there are a number of indications along the allergic spectrum for which GB001 may provide benefit. Accordingly, we plan to pursue the parallel development of GB001 in chronic rhinosinusitis, or CRS, both with nasal polyps, or CRSwNP, and without nasal polyps and in chronic spontaneous urticaria, or CSU. We expect to initiate proof-of-concept Phase 2 clinical trials for these indications in 2019. We retain worldwide rights to GB001, excluding Japan.

GB002 (PDGF Receptor Kinase Inhibitor)

GB002 is an orally inhaled, small molecule, selective platelet-derived growth factor, or PDGF, receptor kinase inhibitor in development for the treatment of pulmonary arterial hypertension, or PAH, an orphan disease with high unmet medical need. PAH is characterized by abnormally high pressure in the blood vessels transporting blood from the right side of the heart to the lungs and is a progressive and often fatal disease. In contrast to the three classes of marketed vasodilatory therapies for PAH, GB002 has the potential to be the first treatment with disease-modifying effects. Modulation of the PDGF pathway has been shown to be therapeutically relevant in PAH. In 2013, Novartis Pharmaceutical Corporation, or Novartis, announced results from a Phase 3 clinical trial in PAH of imatinib (Gleevec), a tyrosine kinase inhibitor with known activity against PDGF and marketed for oncology indications. These results were notable for not only achievement of statistically significant improvement in the study's primary efficacy endpoint, but also for systemic toxicities. To our knowledge, no further development of the drug has occurred in PAH. To

date, these toxicities have not been observed with GB002 in our ongoing Phase 1 studies in healthy volunteers. We plan to commence a Phase 1b clinical trial in PAH in the first half of 2019 and a Phase 2/3 clinical trial in PAH in the second half of 2019. We retain worldwide rights to GB002. The U.S. Food and Drug Administration, or FDA, has granted GB002 orphan drug designation for the treatment of patients with PAH.

GB004 (HIF-1α Stabilizer)

GB004 is a novel, gut-targeted, oral small molecule in development for the treatment of inflammatory bowel disease, or IBD, including ulcerative colitis, or UC, and Crohn's disease, or CD. GB004 stabilizes hypoxia inducible factor-1a, or HIF-1a, through the inhibition of prolyl hydroxylase domain proteins, or PHDs, key enzymes involved in HIF degradation. Preclinical data from animal models of IBD demonstrated that HIF-1a stabilization restores intestinal epithelial barrier integrity and function and results in immunomodulatory effects that we believe are important in reducing inflammation and enhancing mucosal healing in IBD patients. We have completed a Phase 1 single-ascending-dose, or SAD, study in healthy volunteers and are dosing healthy volunteers in a Phase 1 multiple-ascending-dose, or MAD, study. We plan to pursue clinical development in both UC and CD patients and expect to initiate a Phase 1b clinical trial in UC in the first half of 2019. We also plan to initiate a Phase 2 clinical trial in UC in the first half of 2020. We retain worldwide rights to GB004.

Our Research Capabilities and Preclinical Programs

We currently have three programs in preclinical development. GB1275 is an oral small molecule, CD11b agonist in preclinical development for the treatment of oncology indications for which we plan to submit an Investigational New Drug, or IND, application with the FDA and, after acceptance, initiate a Phase 1/2 clinical trial in 2019. We are also currently evaluating a portfolio of novel BTK inhibitors for the treatment of autoimmune indications and small molecule cancer metabolism modulators for the treatment of solid tumors. We are continuing to build our research capabilities, specifically focusing on our areas of expertise within immunology, inflammation and oncology, in order to advance new programs into the clinic, as well as to optimize our existing programs.

Our Team

Our founders and management team have held senior positions at leading biopharmaceutical companies, including Receptos, Inc., Genentech USA, Inc. (Roche), or Genentech, Bristol-Myers Squibb Company, GlaxoSmithKline LLC and Celgene Corporation, among others, and possess substantial experience and expertise across the spectrum of drug discovery, development and commercialization.

Sheila Gujrathi, M.D., our Co-Founder and President and Chief Executive Officer, was previously Chief Medical Officer of Receptos until its acquisition by Celgene in 2015 and has also served in senior leadership roles at Bristol-Myers Squibb and Genentech. Faheem Hasnain, our Co-Founder and Executive Chairman and former Chief Executive Officer, previously served as Chief Executive Officer at Receptos and has over 30 years of senior leadership experience at both large and small biopharmaceutical companies. Jakob Dupont, M.D., our Chief Medical Officer, has experience across the spectrum of clinical development, having most recently served as Vice President and Global Head of Breast and Gynecologic Cancer Development at Genentech. Luisa Salter-Cid, Ph.D., our Chief Scientific Officer, was previously the Head of Immunology Discovery at Bristol-Myers Squibb, having overseen immunology and immuno-oncology discovery efforts since 2005.

Our Strategy

We are a clinical-stage biopharmaceutical company focused on discovering, acquiring, developing and commercializing therapeutics in the disease areas of immunology, inflammation and oncology. Our goal is to be an industry leader in each of these therapeutic areas and to enhance and extend the lives of patients suffering from such diseases. Critical components of our business strategy include:

- **Create deep therapeutic centers of excellence by leveraging our immunology and translational discovery and development expertise.** We currently have six programs across the areas of immunology, inflammation and oncology. We will continue to build out our portfolio, focusing on these therapeutic areas, through both internal discovery and strategic transactions to create a diversified portfolio of early and late-stage product candidates.

- **Maximize the impact of our product candidates by expanding development across multiple indications.** We aim to focus our development efforts on product candidates that have the potential to treat multiple diseases and plan to develop them in additional indications where warranted. For example, we believe GB001 has the potential to be

effective in a variety of allergic and inflammatory diseases beyond moderate-to-severe eosinophilic asthma, and we expect to initiate proof-of-concept Phase 2 clinical trials in CRS and CSU in 2019. We also plan to develop GB004 in both UC and CD.

- **Expeditiously generate proof-of-concept data from our preclinical programs to facilitate value creation and efficient capital deployment.** We view our preclinical programs as important drivers of the long-term sustainability of our company. We plan to advance our preclinical programs to generate meaningful data to determine quickly whether each warrants clinical development.

- **Leverage the drug discovery, development and commercialization expertise of our world-class team.** Our executive management team and key scientific leaders have successfully discovered, developed and commercialized small molecule and biologic agents at both large and small biopharmaceutical companies. We plan to utilize this deep, broad set of expertise and experiences as we execute on our in-house discovery and development strategies and evaluate new external acquisition opportunities.

Our Product Candidates

GB001 (DP2 Antagonist)

GB001 is an oral DP2 antagonist in development for the treatment of moderate-to-severe eosinophilic asthma and other allergic conditions. As of December 31, 2018, GB001 had been studied in 409 subjects in total and was generally well tolerated. In a Phase 2 clinical trial conducted in Japan, GB001 showed a statistically significant improvement in time-to-first asthma exacerbation compared to placebo. We commenced a Phase 2b clinical trial in moderate-to-severe eosinophilic asthma in October 2018 and expect to conduct an interim analysis in the first half of 2020. If the interim analysis is positive, we plan on initiating a Phase 3 clinical trial thereafter. We have held a Type C meeting with the FDA to inform our Phase 2b and Phase 3 clinical trial design and endpoints. In addition, we plan to pursue the parallel development of GB001 in CRS and CSU by initiating proof-of-concept Phase 2 clinical trials for these indications in 2019. We retain worldwide rights to GB001, excluding Japan.

Mechanism of Action

DP2, also known as CRTh2, is a receptor for prostaglandin D_2, or PGD_2, a lipid mediator produced mainly by mast cells. DP2 is primarily responsible for mediating the pro-inflammatory effects of PGD_2, including:

- the activation of T helper 2, or Th2, cells, ILC2 cells, basophils and eosinophils;

- the stimulation of type 2 cytokine production, including IL-4, IL-5 and IL-13, by Th2 cells; and

- the increased expression of adhesion molecules on eosinophils and basophils.

These pro-inflammatory effects contribute to airway constriction, swelling in the walls of the airways and mucous production at sites of allergic airway inflammation, all of which are hallmarks of the airway obstruction seen in asthma. The expression of DP2 is more common in patients with more severe disease, and, importantly, a significant proportion of severe asthma patients have eosinophilic inflammation.

Aberrant Th2 cell activation and resulting type 2 cytokine production have been shown to play a prominent role in various allergic and inflammatory disorders beyond eosinophilic asthma, including CRS, CSU, eosinophilic esophagitis and atopic dermatitis.

DP2 antagonism has been clinically validated by Novartis' oral DP2 antagonist, fevipiprant, in a Phase 2 clinical trial. In this trial, both the 150 mg once-daily and 75 mg twice-daily doses demonstrated statistically significant improvements in FEV_1 compared to placebo in adult patients with asthma inadequately controlled with ICS. In addition, post hoc analyses of Phase 2 safety data related to asthma worsening, including exacerbations, appeared to demonstrate a reduction in the number of subjects experiencing an asthma event on fevipiprant compared to placebo. As of December 31, 2018, fevipiprant, at 150 mg once-daily and 450 mg once-daily doses, is being investigated by Novartis in six Phase 3 clinical trials in asthma patients.

GB001 has been shown in preclinical studies to be a selective antagonist of the DP2 receptor. GB001 binds reversibly to human DP2 with an affinity, or Ki, of 1 to 2 nanomolar, significantly greater than its affinity for the other PGD2 receptors. No significant activity was demonstrated in a standard selectivity panel of 90 other receptors and enzymes. GB001 has also shown a slow rate of disassociation from DP2, with a receptor residence time of 19.8 minutes, as measured by half-life. Additionally, in an *in vitro*

assay, GB001 inhibited PGD2 induced internalization of DP2. Combined with our observed human plasma half-life of 10 to 15 hours, we believe these measurements support the oral, once-daily dosing regimen of GB001.

Overview of Asthma

Asthma is a complex, chronic, highly heterogeneous inflammatory condition of the airways characterized by airflow obstruction, bronchial hyperactivity and airway inflammation. Symptoms of asthma, which can be fatal, are also called asthma exacerbations or attacks and include episodes of wheezing, breathlessness, chest tightness and coughing.

Patients are deemed to have intermittent, mild, moderate or severe disease based on the frequency and severity of their symptoms. Asthma can also be sub-categorized by the composition of the white blood cells that are causing inflammation in and around the airway wall. We estimate that approximately 50% of severe asthma patients have a phenotype called eosinophilic asthma, which is marked by an increase of eosinophils in the mucosal sputum that coats the airways. Eosinophils are immune cells that have been shown to play a major role in inflammation and allergic response, and eosinophilic asthma is associated with more severe symptoms, late-onset disease and response to steroid treatment.

Overview of the Asthma Market

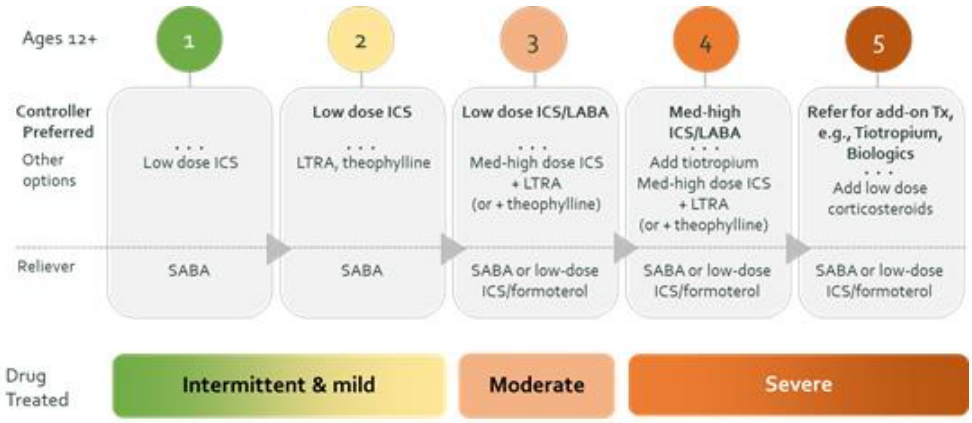
Asthma is a substantial, widespread condition afflicting more than 330 million patients worldwide and about 25 million patients in the United States. Approximately 25% and 12% of patients in the United States have moderate and severe disease, respectively, according to Datamonitor. The disease is responsible for more than $50 billion in annual direct healthcare costs in the United States and results in an estimated 420,000 and 3,500 deaths per year worldwide and in the United States, respectively.

Total asthma drug sales in the U.S. market were approximately $7.9 billion in 2017 and are projected to reach $13.9 billion by 2026, according to Datamonitor. Nearly $5.6 billion of the estimated $13.9 billion in sales is attributable to biologic therapies. In the future, we believe asthma market growth may be driven by increasing disease diagnosis and new biologic and small molecule agents entering the market.

Treatment Paradigm in Asthma

The treatment guidelines for asthma, depicted below for adolescents and adults in Figure 1, are a step-up paradigm.

Figure 1. Treatment Guidelines for Asthma



LABA = long-acting beta agonist; LTRA = leukotriene receptor antagonist; SABA = short-acting beta agonist

The goals of the step-up treatment paradigm are to achieve long-term control of asthma symptoms, minimize the use of SABAs and maintain near-normal lung function and activity levels. Reduction in asthma exacerbations is the primary endpoint predominantly used in new product development in asthma, while surrogate endpoints for improvements in lung function are commonly used as supportive secondary endpoints. Biologics, including the recently approved IL-5 and IL-4/IL-13 antibodies, are

typically used only in the most refractory, severe patients. We believe this is because of their route of administration through either subcutaneous (omalizumab, mepolizumab, benralizumab and dupilumab) or intravenous (reslizumab) injection, high cost and concerns about potential adverse events.

While the recent introduction of biologic agents has altered the course of treatment for refractory, severe patients, the last major change in the treatment paradigm for mild or moderate asthma came with the 1998 FDA approval of Singulair (montelukast), an LTRA, which became the top controller therapy for asthma. Worldwide sales for Singulair peaked at approximately $5.5 billion in 2011, prior to the entry of generic competition. Singulair's profile as an effective oral drug with a well-understood safety profile made it an attractive option for patients across the severity spectrum despite inferior efficacy, as measured by asthma exacerbations rate reduction, compared to that of the biologic agents. The success of Singulair highlights the unmet need and opportunity in the asthma market for safe and effective, orally-administered therapies.

GB001 Product Differentiation

We believe there is a significant market opportunity for improved and effective oral therapies in moderate-to-severe asthma with consistent safety and tolerability profiles that can be used prior to biologics. Published Phase 2 clinical trial results for fevipiprant appear to be comparable to the anti-inflammatory effects demonstrated by certain biologics in clinical studies. We believe oral options are generally preferred to biologics due to their route of administration, which leads to improved patient adherence. Furthermore, oral administration is especially important as children and adolescents are frequent sufferers of asthma. We believe GB001 as an oral agent has the potential to reduce asthma exacerbations and improve lung function, and thereby could be positioned as a pre-biologic treatment alternative.

Clinical Development History of GB001

We acquired GB001 through our acquisition of Pulmagen Therapeutics (Asthma) Limited, or Pulmagen, a wholly-owned subsidiary of our AA BioPharma Inc. subsidiary, in January 2018, after its partner, Teijin, completed a positive Phase 2, proof-of-concept clinical trial in Japanese patients. We have rights outside of Japan to all of the data from the two Phase 2 clinical trials conducted by Pulmagen and Teijin described below. As of December 31, 2018, 409 subjects have received at least one dose of GB001.

Summary of Completed Pulmagen Phase 2 Clinical Trial

In December 2014, Pulmagen completed a Phase 2 clinical trial of GB001, the primary objectives of which were (1) to evaluate the safety and efficacy of 20 mg GB001 once daily compared to placebo and an active comparator, montelukast, over a 10-week treatment period and (2) to evaluate the effect of the co-administration of 10 mg montelukast once daily with GB001 treatment in a two-week extension. The primary endpoint was improvement in FEV_1 over 10 weeks. The study enrolled 248 patients with mild to moderate asthma that were uncontrolled on low- or medium-dose ICS, randomized 1:1:1 to placebo, 20 mg GB001 once daily and 10 mg montelukast once daily. Patients were put on a standard medium-dose of ICS with and without LABA in a four-week lead-in to the study, during which they were also removed from their LABA, if applicable.

GB001 was generally well tolerated with a treatment emergent adverse event, or TEAE, rate similar to placebo, but the study did not meet its primary endpoint. Notably, neither the active comparator, montelukast, nor GB001, showed statistically significant differences in FEV_1 improvement as compared to placebo. We believe the lack of statistically significant differences between the active treatment arms and placebo was primarily related to study design and execution issues related to patient selection, including adherence to ICS therapy, eosinophilic phenotype thresholds and disease severity.

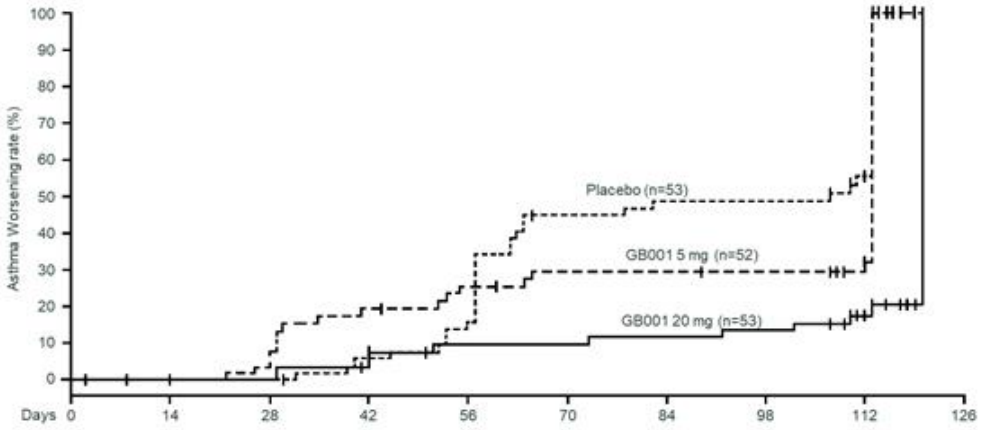
Summary of Completed Teijin Phase 2 Clinical Trial

In December 2016, Pulmagen and Teijin announced results from a Phase 2 clinical trial of GB001 conducted by Teijin in Japan. The trial was a double-blind, randomized, placebo-controlled, multi-center study, enrolling 158 patients with mild to moderate asthma who were using LABA and/or medium-dose ICS to control their disease. Patients on LABA discontinued its use upon entry to the trial, and all patients were brought to a standardized medium dose of ICS for a four-week lead-in period. Patients were then randomized 1:1:1 to one of two dose arms of GB001, 5 mg or 20 mg once daily, or to placebo in combination with a low dose of ICS for four weeks. Following this period of combination with low-dose ICS, use of ICS was discontinued, and patients continued taking GB001 or placebo for 12 weeks. The primary endpoint of the trial was change in morning peak expiratory flow, or AM PEF, a measure of lung function, from baseline to the last visit, marked as study completion or termination from the trial.

A total of 91 patients completed the trial, with a higher rate of patient withdrawal due to asthma worsening in the placebo arm (62%), as compared to the GB001 arms (40%, 5 mg; 25%, 20 mg). Trial protocol required withdrawal from the protocol after meeting the criteria for asthma worsening, a key secondary endpoint, including experiencing an asthma exacerbation. A statistically significant

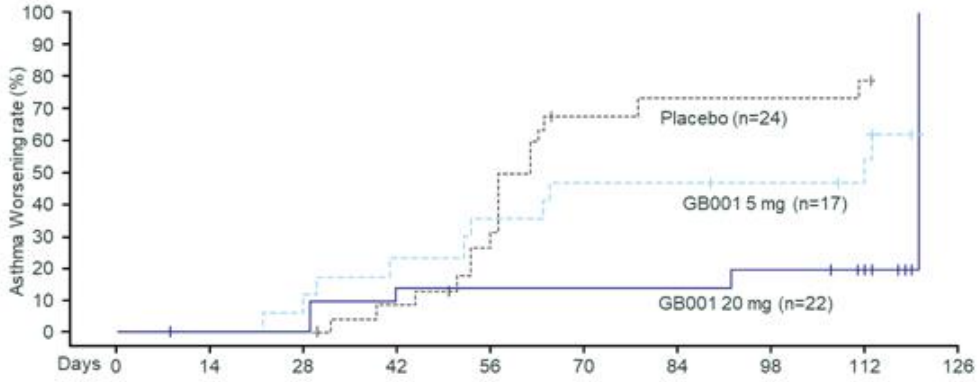
difference was seen in the AM PEF between placebo and both arms of GB001 (p = 0.015, 5 mg; p = 0.027, 20 mg). The p-value is the probability that the difference between two data sets was due to chance. The smaller the p-value, the more likely the differences are not due to chance alone. In general, if the p-value is less than or equal to 0.05, the outcome is considered statistically significant. The FDA's evidentiary standard of efficacy generally relies on a p-value of less than or equal to 0.05. In addition, time-to-first asthma worsening reached statistical significance for the 20 mg dose arm versus placebo (p < 0.001). Asthma worsening in this trial was defined as a composite measure to help characterize overall uncontrolled asthma, including exacerbations. Figure 2 below presents the improvement in time-to-first asthma worsening of patients as measured by the asthma worsening rate.

Figure 2. Improvement in Time-To-First Asthma Worsening of Patients with Mild to Moderate Asthma



The dose response in the time-to-first exacerbation was even more pronounced in the subgroup of patients with high blood eosinophils, defined as those with greater than 300 cells per microliter (µL), as shown below in Figure 3.

Figure 3. Pronounced Improvement in Time-To-First Asthma Worsening of Patients with High Blood Eosinophils



Subgroup analyses demonstrated patients with high blood eosinophils at baseline treated with the 20 mg dose of GB001 also had statistically significant improvement in FEV_1 compared with placebo (p = 0.016). GB001 was well tolerated in this trial, with an adverse event profile consistent with placebo, including nasopharyngitis, gastrointestinal disorders and measures of blood and liver markers. No serious adverse events, or SAEs, were observed in the GB001 treatment arms.

These results showed a clear, dose-dependent response to treatment with GB001, both in measures of lung function and in reduction of asthma worsening.

Summary of Pulmagen and Teijin Phase 1 Clinical Trials

In Phase 1 studies conducted by Pulmagen and Teijin, GB001 demonstrated safety and pharmacodynamic, or PD, parameters consistent with the DP2 drug class.

Most TEAEs were mild or moderate and were considered not related to study drug. A single SAE deemed by the investigator likely to be related to study drug was observed in a Japanese patient who had received a 160 mg dose of GB001, which is eight times higher than the highest dose Teijin tested in its Phase 2 clinical trial conducted in Japan. The patient experienced intrahepatic cholestasis, which resolved after treatment discontinuation. At the time of the intrahepatic cholestasis, the patient had GB001 exposure levels approximately three to five times higher than other patients receiving the 160 mg dose. Other than this SAE, there were no laboratory testing, physical exam or electrocardiographic findings that were considered to be clinically significant and related to GB001.

Ongoing Phase 2b Eosinophilic Asthma Clinical Trial

We commenced a Phase 2b clinical trial of GB001 in moderate-to-severe eosinophilic asthma in October 2018, and we expect to conduct an interim analysis of the results of this trial in the first half of 2020. We have designed this trial to efficiently assess proof-of-principle and help enable rapid transition to Phase 3 clinical trials, and we have held a Type C meeting with the FDA to inform our trial design and endpoints. We plan to enroll 480 patients in the study in a 1:1:1:1 randomized fashion to three GB001 dose arms of 20 mg, 40 mg and 60 mg per day and one placebo arm with once-daily dosing.

We believe that we have designed our trial in a manner to address the potential shortcomings of the Pulmagen Phase 2 clinical trial, in that:

- the study population will consist of more severe patients than those enrolled in the Pulmagen Phase 2 clinical trial;
- enrollment inclusion criteria will be based on a history of asthma exacerbations within the last year;
- enrolled patients will be required to have moderate-to-severe asthma with eosinophil counts greater than or equal to 250 cells/μL; and
- enrolled patients will be closely monitored during the run-in period to help ensure that lack of adherence to background therapy is not a contributing factor for their poorly controlled asthma.

The primary endpoint is reduction in asthma worsening from baseline, assessed at week 24, with an additional four weeks of follow-up. The parameters included in the asthma worsening composite primary endpoint include changes in FEV_1, AM PEF, rescue medication use and asthma control, and severe asthma exacerbations. We will also assess FEV_1 independently as a secondary efficacy measure.

We plan to conduct an interim analysis after approximately 320 patients complete the 24-week treatment period, and we expect the results of this interim analysis to be available in the first half of 2020. If the results obtained in the interim analysis support further development, we plan on initiating our first Phase 3 clinical trial thereafter. We expect to report full data from the Phase 2b clinical trial in the second half of 2020. If the full data support further development, we will initiate a second Phase 3 clinical trial.

Clinical Development Plan in Additional Indications

Because DP2 plays a central role in the activation of basophils, eosinophils and Th2 cells, we believe GB001 could be effective in the treatment of other Th2-associated allergic and inflammatory disorders, such as CRS, CSU, eosinophilic esophagitis and atopic dermatitis. Based on unmet medical need and a review of the mechanistic rationale and market opportunities, we have decided to initially pursue further development in CRS and CSU in parallel with our eosinophilic asthma program.

Chronic Rhinosinusitis

CRS is a debilitating disorder marked by persistent symptoms including congestion, stuffiness, nasal discharge, pain or facial pressure, impairment or loss of the sense of smell (anosmia), cough and fatigue. Mast cells and eosinophils are involved in allergic forms of chronic nasal inflammation, including CRS. Nasal polyps are a type 2 cytokine driven inflammatory process, and in Caucasians, eosinophils are the predominant inflammatory cell.

CRS is associated with an increased risk for late-onset asthma, suggesting significant overlap in the underlying pathology of the diseases. PGD_2 has been correlated with the recruitment and activation of Th2 cells in nasal polyps, and type 2 cytokines, such as

IL-4, IL-5 and IL-13, have been shown to play a pivotal role in nasal polyp formation. Importantly, emerging data suggest that nasal polyp status alone can often be inadequate for defining a type 2 phenotype. Tissue concentrations of IL-5 have extensive overlap in patients with and without nasal polyps. Among others, clinical studies of anti-IL-5 and anti-IL-4 receptor antibodies and an anti-immunoglobulin E, or anti-IgE, antibody are currently being studied in CRSwNP by other biopharmaceutical companies.

According to a 2014 study, annual direct costs related to CRS were estimated to be $6.9 to $9.9 billion worldwide. The prevalence of CRS is estimated to be 4% of the U.S. population, or approximately 13 million individuals. CRSwNP patients represent 25 to 30% of total CRS patients. CRSwNP patients are initially treated with intranasal corticosteroids. When patients fail intranasal corticosteroids, oral corticosteroids typically serve as the next line of therapy, although this treatment provides only two to four weeks of benefit while causing systemic side effects such as reduced glucose tolerance, osteoporosis and weight gain. Failure to control symptoms with corticosteroids presents the need for potential surgical intervention. A long-term study of post-surgical patients showed that nearly 80% of patients had polyps recur at least once, and 36% of patients required an additional surgery. We believe a significant number of patients in the United States are inadequately controlled with standard-of-care steroid treatment.

We plan to commence a Phase 2 proof-of-concept trial in adult patients with CRS in 2019 and expect data to read out in 2020.

Chronic Spontaneous Urticaria

Chronic urticaria, or CU, is characterized by the recurring eruption of transient, itchy, red welts on the skin. Patients with CU are often severely impaired in their quality of life, including negative effects on sleep, daily activities, school/work life and social interactions. Urticaria symptoms are caused by degranulation of dermal mast cells, and an allergic-mediated response is believed to contribute to mast cell activation in many cases. One of the most common forms of CU is CSU, previously known as the idiopathic form, or chronic idiopathic urticaria. In CSU patients, an underlying trigger for the skin lesions cannot be identified, thus making it impractical to employ a therapeutic strategy that relies on avoidance of causative environmental exposures. A published estimate of the U.S. prevalence of CSU ranged from 0.5% to 1.0% of the population, and approximately 20% of patients, or approximately 300,000 to 600,000 patients, have symptoms for more than five years.

The current treatment guidelines for the management of all forms of urticaria recommend the use of non-sedating oral H1-antihistamines as first-line therapy. For patients that do not respond to standard doses of H1-antihistamines, doses are increased by as much as four times. Though this can increase the response rates, side effects may also increase. Patients that do not respond to or are unable to tolerate high dose antihistamines have few remaining options. For antihistamine refractory patients with CSU, the only currently approved treatment is the biologic agent, omalizumab.

We plan to commence a Phase 2 proof-of-concept trial in adult patients with CSU in 2019 and expect data to read out in 2020.

GB002 (PDGF Receptor Kinase Inhibitor)

GB002 is an orally inhaled, small molecule, PDGF receptor kinase inhibitor in development for the treatment of PAH. In contrast to the three classes of marketed vasodilatory therapies for PAH, GB002 has the potential to be the first treatment with disease-modifying effects. Inhaled GB002, which is designed to act on both isoforms of the PDGF receptor, a and b, has inhibited and reversed cell overgrowth in lung blood vessels in PAH animal models. In 2013, results from a Phase 3 clinical trial in PAH of imatinib (Gleevec), an oral tyrosine kinase inhibitor with known activity against PDGF and marketed for oncology indications, showed statistically significant improvement in its primary efficacy endpoint, thus providing mechanistic validation, however systemic toxicities were also observed. To date, these toxicities have not been observed with GB002 in our ongoing Phase 1 studies in healthy volunteers. We have received FDA feedback through Type C meeting interactions to inform our Phase 2/3 clinical trial design and endpoints. We plan to commence a Phase 1b clinical trial in PAH in the first half of 2019 and a Phase 2/3 clinical trial in PAH in the second half of 2019. We in-licensed GB002 from Pulmokine, Inc. in 2017 and retain worldwide rights. The FDA has granted GB002 orphan drug designation for the treatment of patients with PAH.

Mechanism of Action

PAH is driven by abnormal cellular proliferation within and around the small blood vessels of the lung that carry blood from the right side of the heart to the lungs. Functional and structural changes in the pulmonary vasculature, known as vascular remodeling, can lead to smooth muscle cell proliferation and migration from the middle layer of the blood vessel into the inner layer. This can result in the development of plexiform and neointimal lesions that can obstruct blood flow. The obstruction of blood flow in the pulmonary vessels can also predispose patients to thrombosis, or blood clots, within these small pulmonary vessels that further blocks blood flow. This progressive obstruction of blood flow from the right side of the heart to the lungs can cause the right ventricle to fail, thus leading to severe breathlessness, reduced exercise tolerance and death.

The PDGF receptor is a tyrosine kinase receptor which, when activated by its agonist, induces cellular proliferation. PDGF expression is known to be particularly important to stimulating smooth muscle cell proliferation in PAH patients. Further supporting this mechanism, PDGF receptors and their ligands are both upregulated in PAH. Upregulated PDGF signaling results in endothelial cell and fibroblast dysfunction and the proliferation and migration of smooth muscle cells. This effect results in the overgrowth and occlusion of blood vessels in the lung. Kinase inhibitors with activity against the PDGF pathway have shown the ability to reverse PAH in animal models.

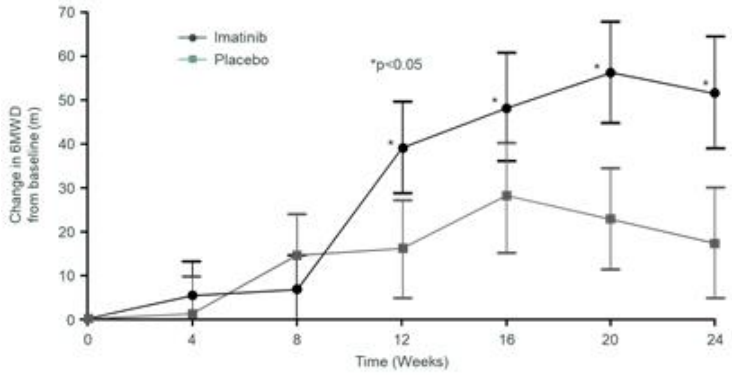
Inhaled GB002 is designed to act on both isoforms of the PDGF receptor, a and b. Data from preclinical animal models and human lung histology from PAH patients suggests that it is important to inhibit both of these isoforms of the PDGF receptor. PDGF receptor a is highly expressed in pulmonary arteriole vascular smooth muscle cells, or PAVSMCs. Inhibiting PDGF receptor a may help reduce the abnormal cell proliferation of PAVSMCs that results in blood vessel thickening. PDGF receptor b is more highly expressed in fibroblasts and myofibroblasts that are involved with the abnormal cell proliferation within the blood vessel that leads to the obstruction of the pulmonary arterioles. We believe inhibiting PDGF receptor b is therefore important in decreasing the abnormal cell proliferation of these cell types.

Mechanistic validation of a PDGF receptor kinase inhibitor has been observed in studies of imatinib (Gleevec), an oral tyrosine kinase inhibitor with known activity against the PDGF receptor kinase, which demonstrated proof-of-concept in humans in a Phase 3 clinical trial in PAH.

Prior PDGF Pathway Development in PAH—The IMPRES Phase 3 Clinical Trial of Imatinib

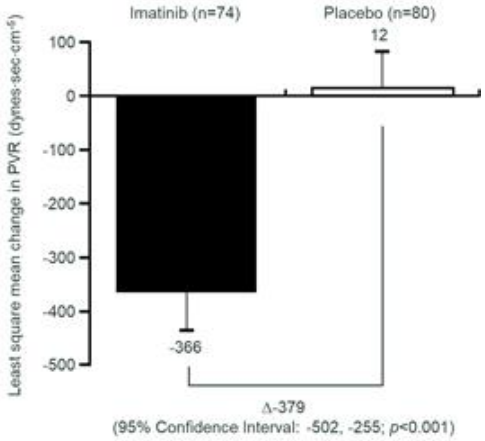
The IMPRES trial was a Phase 3 clinical trial conducted by Novartis of imatinib (Gleevec) in PAH. Imatinib has known activity against multiple tyrosine kinases, including the PDGF and c-KIT receptors and c-ABL. 202 patients were enrolled in the IMPRES trial, of which 41% had been treated with prostanoids, oral phosphodiesterase type 5, or PDE5, inhibitors and oral endothelin receptor agonists, or ERAs. As shown in Figure 4 below, the study met its primary endpoint, improvement in six-minute walk distance, or 6MWD, versus placebo at week 24 from baseline, with statistical significance ($p = 0.002$).

Figure 4. Improvement in Six-Minute Walk Distance of PAH Patients Treated with Imatinib



As shown in Figure 5 below, patients on imatinib also demonstrated statistically significant improvements in measures of hemodynamics, including pulmonary vascular resistance, or PVR, a standard measurement in the evaluation of patients with PAH.

Figure 5. Improvement in Pulmonary Vascular Resistance of PAH Patients Treated with Imatinib



However, systemic adverse events such as bleeding and poor tolerability and frequent drug discontinuation led to a high drop-out rate within the active arm of the trial. Subdural hematomas occurred in eight patients who were also being administered oral anticoagulants during the study. Novartis withdrew its supplemental regulatory applications in PAH in 2013 and, to our knowledge, did not pursue further development of imatinib in the indication.

Overview of Pulmonary Arterial Hypertension

PAH is an orphan disease that is characterized by abnormally high blood pressure in the blood vessels carrying deoxygenated blood from the right side of the heart to the lungs, and is progressive and often fatal. Symptoms include shortness of breath at rest or with minimal exertion. Other symptoms include fatigue, chest pain, dizzy spells and fainting. The progressive nature of this disease causes the right side of the heart to work much harder and eventually weaken or fail.

Patients are often evaluated by functional class, which categorizes patients by their ability to carry out physical activity and symptom severity. Worsening symptoms, and thus higher numbered functional classes, are associated with higher mortality. The four functional classes established by the World Health Organization are detailed below in Table 1.

Table 1. PAH Functional Classes

Functional Class	Description
Class I	Patients with PAH, but without resulting limitation of physical activity. Ordinary physical activity does not cause undue dyspnea or fatigue, chest pain or near syncope.
Class II	Patients with PAH resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity causes undue dyspnea or fatigue, chest pain or near syncope.
Class III	Patients with PAH resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary activity causes undue dyspnea or fatigue, chest pain or near syncope.
Class IV	Patients with PAH with inability to carry out any physical activity without symptoms. These patients manifest signs of right heart failure. Dyspnea and/or fatigue may even be present at rest. Discomfort is increased by any physical activity.

Additionally, recent medical society guidelines have identified intermediate and high-risk categories of PAH based on several variables including signs of right heart failure, rate of symptom progression, functional class, 6MWD, maximum oxygen consumption, NTproBNP, which is a biomarker for heart failure, and measures of right heart function.

Despite the introduction of many new therapies over the last several years, PAH continues to have a high morbidity and mortality. Based on registry data, newly diagnosed functional class III and IV patients have 5-year survival rates of 60% and 44%, respectively, while rates for previously diagnosed patients were even lower at 57% and 27%, respectively.

Overview of PAH Market

Diagnosed PAH prevalence in the United States is approximately 53,000 patients, and prevalence is highest among women between the ages of 30-60. The number of diagnosed PAH patients continues to increase, and we believe this increase is likely due to enhanced awareness and diagnosis of the disease. Total PAH drug sales worldwide in 2016 were estimated at approximately $5.6 billion and are expected to exceed $6.0 billion by 2019.

Treatment Paradigm in PAH

Current PAH therapies consist of three classes of vasodilators: PDE5 inhibitors and guanylate cyclase stimulators, ERAs, and prostanoids. PDE5 inhibitors are often used in combination with ERAs as an early treatment strategy. In patients who fail to respond to combination therapy of an ERA and a PDE5, it is common practice to add a prostanoid. Prostanoids are also commonly used to treat patients with evidence of right heart failure. While existing treatments have led to significant improvements in time to clinical worsening and other composite endpoints in PAH patients, none directly alter the underlying disease process. The effect of vasodilation, while improving blood flow through the lungs, may eventually be overtaken by the worsening cellular proliferation and arterial remodeling underlying the condition. We believe an agent with disease-modifying characteristics that safely addresses the underlying cellular overgrowth could provide utility across functional classes and risk categories.

GB002 Product Differentiation

GB002 is an orally inhaled PDGF receptor kinase inhibitor designed to build on the evidence of efficacy seen in trials of imatinib while overcoming imatinib's observed systemic safety issues. GB002 was designed with a higher degree of selectivity as compared to imatinib with increased potency against the PDGF receptor-b isoform, similar potency against the PDGF-a isoform and less activity against c-ABL. We believe GB002 has the potential to be a differentiated PDGF-targeted therapeutic that is designed to potentially provide:

- an improved response to PDGF-driven abnormal cell proliferation in pulmonary arteries by addressing the underlying mechanism that leads to arterial wall thickening, rather than resultant vasodilation;
- a more tolerable safety profile than imatinib due to the direct delivery to the lungs, as supported by the absence of adverse bleeding observed to date in toxicology programs or Phase 1 studies; and
- a convenient, simple and portable inhalation methodology and delivery system.

Clinical Development History of GB002

Summary of Preclinical Program

GB002 inhibits both PDGF receptor a and b, and inhibited and reversed cell overgrowth in lung blood vessels in a rat model of PAH, as shown below in Figure 6. This rat model replicates many features of human PAH, including the abnormal cell proliferation that can block the small vessels of the lung. GB002 substantially reduced the occlusive lesions in the small lung blood vessels in this model. Additionally, in this model, GB002 demonstrated a statistically significant reduction in right ventricular systolic pressure as compared to placebo.

Figure 6. Reversed Vascular Remodeling by GB002 Through Inhibition of PDGF

Vehicle
GB002

Summary of Ongoing Phase 1 Study

We are currently conducting Phase 1a SAD and MAD double-blind, placebo-controlled, randomized studies of orally inhaled GB002 in healthy adult volunteers. In the SAD portion of the studies, we have completed five dosing cohorts, each consisting of six volunteers on active drug and two on placebo. We have assessed pharmacokinetics, or PK, parameters and safety. No treatment-related safety issues have been reported during the studies to date. We have completed dosing for three cohorts in the MAD portion of the studies, in which healthy volunteers receive doses of GB002 or placebo for seven days. As of December 31, 2018, no treatment-related safety issues have arisen during the study.

Summary of Planned Phase 1b Clinical Trial

We expect to commence a Phase 1b ascending dose, single-blind, placebo-controlled, randomized trial of GB002 in functional class II and III PAH patients in the first half of 2019. We expect to enroll up to 24 patients in the study and patients will receive two weeks of dosing. The primary goal of the trial is to assess safety, and we also intend to assess certain PK/PD measurements in patients. We anticipate reporting data from our Phase 1b clinical trial in PAH in the first half of 2020.

Planned Phase 2/3 PAH Clinical Trial

We plan to commence a randomized, double-blind, placebo-controlled Phase 2/3 clinical trial in functional class III and IV PAH patients in the second half of 2019. We have received FDA feedback through Type C meeting interactions to inform our Phase 2/3 clinical trial design and endpoints. Our planned primary endpoint is the change from baseline in pulmonary vascular resistance at week 24. Key planned secondary endpoints include change from baseline to week 24 in 6MWD and NTproBNP. If we meet the primary endpoint and observe a favorable trend in the key secondary endpoints with a tolerable safety profile, we plan to discuss the possibility of expedited pathways for review and approval with the FDA. We anticipate reporting topline data from our Phase 2/3 clinical trial in PAH in the second half of 2021.

GB004 (HIF-1a Stabilizer)

GB004 is a novel, gut-targeted, oral small molecule being developed for the treatment of IBD including UC and CD. GB004 stabilizes HIF through the inhibition of HIF PHDs, key enzymes involved in HIF degradation. Preclinical data from animal models of IBD demonstrated that HIF-1a stabilization restores intestinal epithelial barrier integrity and function, and results in immunomodulatory effects that we believe are important in reducing inflammation and enhancing mucosal healing in IBD patients. We have completed a Phase 1 SAD study in healthy volunteers and are currently dosing healthy volunteers in a Phase 1 MAD study. We plan to pursue clinical development in both UC and CD patients and initiate a Phase 1b clinical trial in UC in the first half of 2019. We also plan to initiate a Phase 2 clinical trial in UC in the first half of 2020. We in-licensed GB004 from Aerpio Pharmaceuticals, Inc., or Aerpio, in June 2018 and retain worldwide rights.

Mechanism of Action

IFs have an important role in protecting cells from low oxygen levels. PHDs are enzymes that hydroxylate HIFs when oxygen levels are normal. At low oxygen levels, the activity of PHDs are inhibited, and HIFs are stabilized. Stabilized HIFs subsequently activate the expression of genes that protect cells and promote the healing of tissue that has been injured. Pharmacological inhibition of PHDs can replicate the effects of low oxygen levels on HIF stabilization.

IBD represents a state of chronic tissue injury. In IBD animal models, stabilizing HIF through the inhibition of PHD promoted the restoration of intestinal epithelial barrier function and reduction of inflammation. GB004 is a PHD inhibitor designed to be gut-targeted with higher intestinal exposure than systemic exposure. GB004 has also demonstrated greater accumulation of HIF-1a than HIF-2a in IBD animal models. Systemically active PHD inhibitors, which stabilize HIF-2a thereby increasing systemic erythropoietin, or EPO, production by the liver and kidney, are under development for the treatment of anemia in chronic kidney disease. By contrast, the use of orally administered GB004, which stabilized HIF-1a in an IBD animal model, did not result in higher red blood cell counts or a clinically significant increase in plasma EPO levels. We believe this is likely a consequence of both the limited systemic exposure of oral GB004 and its predominately selective inhibition of PHDs that stabilize HIF-1a.

Gut-targeting

In animal models of IBD, the reduction in inflammation was similar between oral and intravenously-administered GB004. Oral administration resulted in lower systemic exposure and greater accumulation of HIF-1a than HIF-2a without an increase in EPO, blood count or HIF-mediated effects outside of the gastrointestinal, or GI, tract, including in the heart, kidney, and liver. Other data in non-diseased animals have also shown that orally delivered GB004 preferentially concentrated in the GI tract at a rate many times higher than in other organs, such as the heart, kidney or liver.

GB004's potential beneficial effects in IBD can be broken into two categories: restoration of epithelial barrier function and immunomodulation.

Restoration of Epithelial Barrier Function

HIF-1a expression leads to increases in genes known to promote epithelial integrity and mucosal barrier function. GB004 stabilizes HIF-1a, promoting healing of the intestinal epithelial barrier. The treatment of 2,4,6-trinitrobenzenesulfonic acid (TNBS) colitis mouse models with GB004 demonstrated statistically significant restitution of the epithelial barrier and mucosal healing as compared to placebo, with similar improvements to dexamethasone, a corticosteriod used for the treatment of moderate-to-severe IBD. While current therapies target the inflammatory response in IBD, GB004 represents a novel mechanism designed to directly enhance the repair of the epithelial barrier. We believe that repairing damage to epithelium and the associated reduction of inflammation would lead to a significant improvement in the symptoms experienced by IBD patients.

Immunomodulation

HIF-1a is an important modulator of the innate and adaptive immune response. HIF-1a increases antimicrobial peptides, factors that protect the host from infection. In addition, HIF-1a may be critical for regulatory immune cell function, which may lead to the reduction of inflammation in IBD. Taken together, HIF-1a mediated effects on innate and adaptive immune responses in the gut may contribute to resolution of inflammation and complement the epithelial barrier protective effects of HIF-1a stabilization.

Overview of IBD

IBD refers to two conditions, UC and CD, that are characterized by chronic inflammation of the GI tract.

Ulcerative Colitis

UC is a chronic GI inflammatory disorder that involves the mucosal lining of the colon. Patients with UC suffer from a multitude of GI symptoms, such as diarrhea, rectal bleeding and weight loss. UC is characterized by a chronic course of remissions and exacerbations. Within 10 years of diagnosis, it is estimated that 20% of adults with UC will have undergone colectomy.

Crohn's Disease

CD is a chronic, inflammatory condition that involves the full thickness of the wall of the GI tract, and is characterized by erosions, strictures and perforations of the intestine. Symptoms include diarrhea, abdominal pain, blood in the stool, and weight loss. Maintaining symptomatic control and obtaining remission are critical to minimizing short-term and long-term complications and to improving the outcomes and quality of life for patients with CD. The natural course of CD is a progression from inflammation of the mucosa to stricture formation of the intestine and of mucosal penetration or fistula formation, with the risk of stricture and fistula increasing with the duration of CD.

Overview of the IBD Market

Approximately three million Americans report being diagnosed with either UC or CD. The U.S. market for IBD biologics reached an estimated $7 billion in 2016 and is projected to grow to over $10 billion by 2025, according to Datamonitor. The current biologic market is dominated by the anti-TNF antibodies Humira, marketed by AbbVie Inc., and Remicade, marketed by Janssen Pharmaceuticals, Inc., or Janssen, and the growing share of the anti-integrin antibody Entyvio, marketed by Takeda Pharmaceuticals America, Inc.

Treatment Paradigm in IBD

Treatment of IBD consists mainly of immunosuppressive therapies. Treatment choices depend on the patient's disease severity and responsiveness to therapy. Medications which treat mild to moderate IBD are generally well tolerated. However, as the severity of IBD increases, the potential toxicities of the medications required to manage the disease also increase. For example, treatment of mild to moderate patients typically starts with topical agents, such as 5-aminosalucylic acid, or 5-ASA. For those IBD patients who do not respond to 5-ASAs, or those with more severe disease, corticosteroids are generally used to induce clinical remission. However, longer-term treatment with corticosteroids is associated with multiple adverse effects. Additionally, approximately 38% of patients who initially respond to corticosteroids either become steroid-dependent or require surgery within a year of initiating corticosteroids for UC.

Patients with moderately to severely active IBD, who become nonresponsive or intolerant to corticosteroids, are treated with immunomodulators, biologics or a Janus kinase, or JAK, inhibitor. Immunomodulators show a delay in onset of action of one to three months, and can result in neutropenia, pancreatitis, nephrotoxicity and hepatotoxicity. Therefore, the treatment of IBD patients with moderate-to-severe active disease is dominated by anti-TNF biologics. This paradigm is shifting because of the approval of agents in other classes, such as an anti-integrin, an anti-IL-12 / IL-23 and a JAK inhibitor. Additional immune suppressive therapies for the treatment of IBD are expected in the coming years with the anticipated introduction of oral S1P1 inhibitors and additional oral JAK inhibitors.

GB004 Product Differentiation

GB004 is designed to be gut-targeted with higher intestinal exposure than systemic exposure. In IBD animal models, GB004 has demonstrated greater accumulation of HIF-1a than HIF-2a which may lead to restoration of epithelial barrier function and resolution of inflammation, while avoiding the potential adverse effects of increased EPO.

GB004 is distinct, and may have a differentiated profile, from the immunomodulatory or immunosuppressive mechanisms of approved IBD medicines and those in late-stage development. By reducing inflammation and potentially restoring intestinal epithelial barrier function and restitution through GB004's gut-targeted nature and preferential stabilization of HIF-1a, we believe GB004 could improve outcomes for IBD patients. We believe this mechanism has potential as a standalone therapeutic as well as a combination therapy with other therapeutic mechanisms in IBD.

Clinical Development Plan in IBD and Other Indications

Summary of Ongoing Phase 1 SAD and MAD Trial

GB004 was evaluated by Aerpio in a first-in-human Phase 1 SAD study in healthy male volunteers. The primary objective of the study was to evaluate the safety and tolerability of ascending dose levels of GB004 after single oral administrations. The secondary objective was to characterize PK. A total of 40 subjects were randomized into five cohorts with 8 subjects each. All subjects completed the study. The five dose levels evaluated in this study were 20 mg, 60 mg, 120 mg, and 240 mg in 50 ml of solution and 240 mg in 100 ml of solution. All GB004 doses evaluated in this study were determined to be safe and well tolerated. No deaths or SAEs occurred. There were no significant differences in systemic levels of vascular endothelial growth factor, or VEGF, and EPO between GB004 and placebo patients.

We are currently evaluating GB004 in a randomized, double-blind, placebo-controlled, MAD study to assess the safety, tolerability, PK and PD effects in healthy male and female volunteers. A total of 40 subjects are planned to be randomized into five cohorts with eight subjects each. Dose levels to be evaluated in the five cohorts are 60 mg and 120 mg per day in male volunteers, 240 mg per day in four male volunteers and four female volunteers, 120 mg per day in female volunteers and 60 mg per day in female volunteers. Volunteers unable to complete seven days of dosing may be replaced.

Summary of Planned Phase 1b Clinical Trial in UC

We plan to initiate a Phase 1b trial of GB004 in approximately 30 symptomatic adult UC patients in the first half of 2019. Dose selection for this trial will be informed by the results of the MAD study. The goals of the study are to assess safety, tolerability, PK/PD and target engagement of GB004 in patients with UC. We expect to report topline data from this trial in the first half of 2020. We expect to initiate a Phase 2 clinical trial in UC in the first half of 2020 and anticipate reporting topline data from the trial by the first half of 2022.

Our Research Capabilities and Preclinical Programs

We currently have three programs in preclinical development and expect to file an IND application with the FDA for one of these programs, GB1275, in the first half of 2019. We are continuing to build our research capabilities, specifically focusing on our areas of expertise within immunology, inflammation and oncology, in order to advance new programs into the clinic, as well as optimize our existing programs.

GB1275 (CD11b Agonist)

GB1275 is an oral small molecule, CD11b agonist in preclinical development for the treatment of oncology indications. CD11b and CD18 are members of the integrin family of cell adhesion receptors that combine to form the functional adhesion receptor CD11b / CD18, also known as Mac-1, CR3 or alpha-M beta-2, on cell surfaces. CD11b is highly expressed on myeloid cells of the immune system, including tumor-associated macrophages, or TAMs, and myeloid derived suppressor cells, or MDSCs, which play a significant role in promoting tumor growth, immune evasion and metastasis. Increased presence of CD11b positive MDSCs in tumors is observed across multiple tumor types and is associated with poor prognosis in multiple cancers.

The introduction of immune checkpoint therapies has revolutionized the treatment of many cancers in recent years. Despite this, the effectiveness of approved immunotherapies has been limited to a minority of patients in only a small number of approved indications, and many cancers show little to no response to checkpoint therapy. In many cancers, innate immune cells, such as TAMs and MDSCs, are recruited by tumor cells and induced into a suppressive state or polarization, which down-regulates the activation and infiltration of cytotoxic $CD8^+$ T cells in the tumor microenvironment, or TME. The result is an immunologically cold tumor state, which allows for tumor growth and metastasis, ultimately resulting in reduced survival.

GB1275 is being developed to address the immunological state leading to cold tumors. Recent preclinical data showed that GB1275 reduced tumor influx of CD11b-positive MDSCs and re-polarized immuno-suppressive (M2) TAMs towards the M1 phenotype. These pharmacodynamic effects have the potential to convert the TME from an immunosuppressive to an immunogenic, or active, state, which would ultimately allow the influx of activated $CD8^+$ T-cells and inhibition of tumor progression.

In pancreatic cancer, a characteristically cold cancer type and one of our initial planned targeted diseases, validation for targeting the immunosuppressive TME has been supported by evidence of durable clinical benefit in trials with an anti-colony-stimulating factor 1 receptor, or anti-CSF1R, antibody plus nivolumab, an anti-PD-1 antibody approved for multiple oncology indications, as well as a C-C chemokine receptor type 2, or CCR2, inhibitor in combination with chemotherapy.

Preclinical studies of GB1275 have demonstrated reduced tumor burden and improved survival as a single agent and in combination with chemotherapy and immuno-oncology therapies across multiple tumor models, including pancreatic, breast and colon cancers in mice. Importantly, preclinical data in pancreatic tumor models have shown that GB1275 treatment results in a greater reduction in tumor burden and improved survival as compared to anti-CSF1R antibodies. Preclinical studies and profile characterization of GB1275 support daily oral dosing with no significant preclinical toxicology findings.

We plan to submit an IND for GB1275 in the first half of 2019 and, after acceptance, initiate a Phase 1/2 clinical trial of GB1275 in 2019. In our Phase 1/2 trial, we anticipate targeting immuno-oncology resistant tumors, such as pancreatic, gastric, esophageal, colorectal, prostate and triple negative breast cancer. We anticipate reporting full data from this trial in 2021.

We acquired GB1275 through our acquisition of Adhaere Pharmaceuticals, Inc. in September 2018 for an upfront payment of $7.5 million in cash, up to $62.0 million in regulatory, development and sales milestones and tiered royalties on worldwide net sales at percentages ranging from low to mid-single digits, subject to customary reductions.

Autoimmune Program

We have a portfolio of novel BTK inhibitors with differentiated selectivity profiles with and without central nervous system penetration. We are currently evaluating these molecules with the goal of advancing an optimized compound into clinical development for the treatment of autoimmune indications.

Oncology Program

We are developing small molecule cancer metabolism modulators that have the potential to treat solid tumors that are refractory to currently available checkpoint inhibitors. We are currently evaluating these molecules with the goal of advancing an optimized compound into clinical development for the treatment of solid tumors.

Competition

The biotechnology and pharmaceutical industries are characterized by rapid technological advancement, significant competition and an emphasis on intellectual property. We face potential competition from many different sources, including major and specialty pharmaceutical and biotechnology companies, academic research institutions, governmental agencies and public and private research institutions. Any product candidates that we successfully develop and commercialize will compete with current therapies and new therapies that may become available in the future. 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 or more convenient than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we do. We believe that the key competitive factors affecting the success of any of our product candidates will include efficacy, safety profile, convenience, cost, level of promotional activity devoted to them and intellectual property protection.

We expect to face competition from existing products and products in development for each of our product candidates. GB001, currently in development for the treatment of moderate-to-severe eosinophilic asthma, is an oral DP2 antagonist, a class of medicines with no currently-approved agents. However, other DP2 antagonists are currently in development by Novartis, Chiesi Farmaceutici S.p.A., Merck & Company, Inc., Sunshine Lake Pharma Co., Ltd. and Idorsia Pharmaceuticals Ltd. If approved, we will also face branded competition from existing biologics, including Xolair (omalizumab/anti-IgE, marketed by Genentech and Novartis) and Dupixent (dupilumab/anti-IL-4/IL-13, marketed by Regeneron Pharmaceuticals, Inc. and Sanofi S.A.), for moderate to severe asthma, and Nucala (mepolizumab/anti-IL-5, marketed by GlaxoSmithKline), Cinqair (reslizumab/anti-IL-5, marketed by Teva Pharmaceutical Industries Ltd.), and Fasenra (benralizumab/anti-IL-5, marketed by AstraZeneca Pharmaceuticals LP) for severe eosinophilic asthma. We will also face competition from generic montelukast, which is utilized in mild to moderate patients. Several other agents are advancing in clinical trials for asthma, including tezepelumab, REGN3500 (anti-IL-33; Regeneron), etokimab (anti-IL-33; AnaptysBio, Inc.), GSK3772847 (anti-IL-33; GlaxoSmithKline) and RG6149 (anti-ST2; Genentech).

Additionally, while there are no agents currently approved beyond corticosteroids for CRSwNP, several agents approved for or in development for asthma are currently in development for CRSwNP, including Xolair, Fasenra, Dupixent and etokimab.

Xolair is currently FDA-approved for the treatment of CSU. We may also face competition from agents currently in development for the indication, including ligelizumab (anti-IgE; Novartis) and AK002 (anti-Siglec-8; Allakos Inc.).

GB002 is a potentially first-in-class PDGF receptor kinase inhibitor initially targeted for intermediate and high-risk PAH patients. While potentially unique in our class, we expect our primary competition in this patient set will include prostanoids, available in oral form as Orenitram (United Therapeutics Corporation, or United Therapeutics) and Uptravi (Janssen), by inhalation as Tyvaso

(United Therapeutics), and by infusion as Remodulin (United Therapeutics). While we may face some competition from products used in class I and II patients, such as the oral PDE5 inhibitors, including Revatio (Pfizer Inc.) and Adcirca (United Therapeutics); the sGC stimulator Adempas (Bayer AG); and oral ERAs, including Tracleer (Janssen), Letairis (Gilead Sciences, Inc.) and Opsumit (Janssen), we believe that, if approved, GB002 would be used along with these background therapies. PAH is also an active indication for investigational drugs, and we may face competition in the future from ralinepag (Arena Pharmaceuticals, Inc. and United Therapeutics), sotatercept (Acceleron Pharma, Inc.) and bardoxolone methyl (Reata Pharmaceuticals, Inc.).

GB004 is potentially a first-in-class HIF-1a stabilizer with the potential to restore epithelial barrier function in patients with IBD. Patients with mild to moderate UC can initially be maintained in remission using a 5-ASA. For those patients who do not respond to 5-ASA, or those with more severe and/or extensive disease at diagnosis, corticosteroids are generally the next line of treatment. Patients who have become nonresponsive or intolerant to corticosteroids may move to azathioprine and 6-mercaptopurine. The treatment of severe patients is dominated by anti-TNF biologics, though the paradigm is shifting because of the approval of agents in other classes, such as anti-integrin, IL-12 / IL-23, and JAK inhibitors. Further disruption is expected in the coming years through the introduction of oral S1P1 inhibitors and additional oral JAK inhibitors.

There may be other earlier stage clinical programs that, if approved, would compete with our product candidates. Many of our competitors have substantially greater financial, technical and human resources than we have. Additional mergers and acquisitions in the pharmaceutical industry may result in even more resources being concentrated in our competitors. Competition may increase further as a result of advances made in the commercial applicability of technologies and greater availability of capital for investment in these fields. Our success will be based in part on our ability to build and actively manage a portfolio of drugs that addresses unmet medical needs and creates value in patient therapy.

License Agreements

Pulmokine

In October 2017, we entered into a license agreement, or the Pulmokine Agreement, with Pulmokine, Inc., under which we were granted an exclusive worldwide license and sublicense to certain intellectual property rights owned or controlled by Pulmokine, including intellectual property rights co-owned by Pulmokine and Gilead Sciences, to develop and commercialize GB002 and certain backup compounds for the treatment, prevention and diagnosis of any and all disease or conditions. We also have the right to sublicense our rights under the Pulmokine Agreement, subject to certain conditions. We are required to use commercially reasonable efforts to develop and commercialize at least one licensed product in the United States and in at least two countries in the European Union.

Under the terms of the Pulmokine Agreement, we made an upfront payment of $5.5 million to Pulmokine and are obligated to make future development and regulatory milestone payments of up to $63 million, commercial milestone payments of up to $45 million, and sales milestone payments of up to $190 million. We are also obligated to pay tiered royalties on sales for each licensed product, at percentages ranging from the mid-single digits to the high single-digits. In addition, if we choose to sublicense or assign to any third parties our rights under the Pulmokine Agreement with respect to a licensed product, or our GB002 operating subsidiary undergoes a change of control, we must pay to Pulmokine a specified percentage of all revenue to be received in connection with such transaction.

Our royalty obligations and the Pulmokine Agreement will expire on a licensed product-by-licensed product and country-by-country basis on the later of ten years from the date of first commercial sale or when there is no longer a valid patent claim covering such licensed product or specified regulatory exclusivity for the licensed product in such country. The Pulmokine Agreement may be terminated in its entirety either by Pulmokine or by us in the event of an uncured material breach by the other party, in the event the other party is subject to specified bankruptcy, insolvency or similar circumstances, or in the event of a force majeure event under certain circumstances. The agreement may be terminated by Pulmokine if we commence a legal action challenging the validity or enforceability of any licensed patents. We may terminate the agreement, either in its entirety or on a product-by-product basis, in the event of potential safety or efficacy concerns affecting a licensed product.

The intellectual property rights co-owned by Pulmokine and Gilead Sciences are subject to a license agreement, or the Gilead Agreement, between Pulmokine and Gilead Sciences. Under the Gilead Agreement, Pulmokine is required to use commercially reasonable efforts to develop and commercialize at least one licensed product, which obligation can be satisfied through our development efforts required under the Pulmokine Agreement, and to pay Gilead Sciences future regulatory milestone payments and royalties. Upon termination of the Gilead Agreement for any reason, our sublicense under the Pulmokine Agreement will survive provided that we did not cause a material breach that was the basis for such termination and we agree to be bound by the terms of the Gilead Agreement.

The Pulmokine Agreement also includes a sublicense to patents concerning methods for detecting pulmonary arterial hypertension owned by The Rensselaer Center for Translational Research, Inc., or Rensselaer, and licensed to Pulmokine in an exclusive license agreement, or the Rensselaer License. Under the Rensselaer License, Pulmokine is required to use commercially reasonable efforts to develop and commercialize at least one licensed product covered by the Rensselaer patent rights, which obligation can be satisfied through our development efforts. If such obligation is not satisfied by Pulmokine or us, or the Rensselaer License is otherwise terminated for any reason, our sublicense under the Pulmokine Agreement will, at our option, either terminate or, subject to Rensselaer's approval and our acceptance of the provisions of the Rensselaer License, convert to a license directly between us and Rensselaer.

Upon termination of the Pulmokine Agreement for any reason, all rights and licenses granted to us under the agreement will terminate and revert to Pulmokine, and in the event of certain termination events, we would grant Pulmokine worldwide rights to the terminated program.

Aerpio Pharmaceuticals

In June 2018, we entered into a license agreement, or the Aerpio Agreement, with Aerpio Pharmaceuticals, Inc., under which we were granted an exclusive worldwide license to certain intellectual property rights owned or controlled by Aerpio to develop and commercialize GB004 and certain other related compounds for all applications. We also have the right to sublicense our rights under the Aerpio Agreement, subject to certain conditions. We are required to use commercially reasonable efforts to develop and commercialize at least one licensed product in the United States, in at least two countries in the European Union, and in Japan, in each case for at least one of the initial indications of UC or CD. The Aerpio Agreement also includes a sublicense to a patent concerning methods for treating inflammatory bowel disease owned by The Regents of the University of Colorado, or UC Regents, and licensed to Aerpio in a nonexclusive license agreement, or the UC Regents License. If Aerpio breaches the UC Regents License and the UC Regents terminate the license, our sublicense under the Aerpio Agreement will also terminate.

Under the terms of the Aerpio Agreement, we made an upfront payment of $20 million to Aerpio and are obligated to make future development and regulatory milestone payments of up to $55 million, commercial milestone payments of up to $85 million and sales milestone payments of up to $260 million. We are also obligated to pay tiered royalties on sales for each licensed product, at percentages ranging from a high-single-digit to mid-teens, subject to certain customary reductions. In addition, if we choose to sublicense or assign to any third parties our rights under the Aerpio Agreement with respect to any licensed product or if our GB004 operating subsidiary undergoes a change of control and the value of such transaction exceeds a specified value, we have an option to pay a specified percentage of all revenue to be received in connection with such transaction, and if we exercise the option Aerpio will no longer be paid the development, regulatory, commercial or sales milestones or royalties on the sales of licensed products under the agreement. If we do not exercise our buy-down option with respect to a sublicense or assignment of our rights under the Aerpio Agreement or with respect to a change of control of our GB004 operating subsidiary, Aerpio will have an option to receive a specified percentage of all revenue received in connection with such transaction, and if Aerpio exercises the option Aerpio will no longer be paid the development, regulatory, commercial or sales milestones or royalties on sales of licensed products under the agreement.

Our royalty obligations and the Aerpio Agreement will expire on a licensed product-by-licensed product and country-by-country basis on the later of fifteen years from the date of first commercial sale or when there is no longer a valid patent claim covering such licensed product in such country. The agreement may be terminated either by Aerpio or by us in the event of an uncured material breach by the other party or in the event the other party becomes subject to specified bankruptcy, insolvency or similar circumstances. In the event we commence a legal action challenging the validity or enforceability of any licensed patents, Aerpio will have the right to terminate the agreement or elect to increase milestone and royalty payments by a specified percentage. We may terminate the agreement in the event of potential safety or efficacy concerns affecting a licensed product. Upon termination of the agreement for any reason all rights and licenses granted to us under the agreement will terminate, and in the event of certain termination events, we would grant Aerpio worldwide rights to the terminated program.

Manufacturing

We currently rely on multiple third-party manufacturers for the manufacture of our product candidates for preclinical and clinical testing. We intend to rely on third-party contract manufacturers for commercial manufacturing if our product candidates receive marketing approval. Typically, there are multiple sources for all of the materials required for the manufacture of our product candidates. Our manufacturing strategy enables us to more efficiently direct financial resources to the research, development and commercialization of product candidates rather than diverting resources to internally develop manufacturing facilities. As our product candidates advance through development, we expect to enter into longer-term commercial supply agreements with key suppliers and manufacturers to fulfill and secure our production needs.

Intellectual Property

We strive to protect the proprietary technology, inventions and improvements that are commercially important to our business, including seeking, maintaining, and defending patent rights, whether developed internally or licensed from third parties. We also rely on trade secrets and know-how relating to our proprietary technology and product candidates and continuing innovation to develop, strengthen and maintain our proprietary position. We also plan to rely on data exclusivity, market exclusivity and patent term extensions when available. Our commercial success will depend in part on our ability to obtain and maintain patent and other proprietary protection for our technology, inventions and improvements; to preserve the confidentiality of our trade secrets; to defend and enforce our proprietary rights, including any patents that we may own in the future; and to operate without infringing on the valid and enforceable patents and other proprietary rights of third parties. Intellectual property rights may not address all potential threats to our competitive advantage.

GB001

As of December 31, 2018, with respect to GB001, we owned one issued U.S. patent directed to compound and pharmaceutical composition claims, which is not due to expire before 2026, excluding any additional term for patent term adjustment or extension, and a number of patents and pending patent applications in other jurisdictions, including issued patents in Australia, Canada, China, the European Patent Convention, India, Mexico, New Zealand and Russia, and a pending application in Brazil directed to compound and pharmaceutical composition claims. As of December 31, 2018, we owned one pending U.S. patent application directed to compound claims, which, if issued, is not due to expire before 2037, excluding any additional term for patent term adjustment or extension, and a number of pending patent applications in other jurisdictions, including pending applications in Australia, Brazil, Canada, China, the European Patent Convention, India, South Korea, Mexico, New Zealand, Russia, and Taiwan directed to compound claims.

GB002

As of December 31, 2018, with respect to GB002, we have exclusively licensed one pending U.S. patent application and one pending PCT application owned by Pulmokine directed to method of use claims, which, if issued, is not due to expire before 2037, excluding any additional term for patent term adjustment or extension. We also have exclusively licensed two issued U.S. patents co-owned by Pulmokine and Gilead Sciences, Inc., which are not due to expire before 2034, excluding any additional term for patent term adjustment or extension; two pending U.S. patent applications, which, if issued, are not due to expire before 2034, excluding any additional term for patent term adjustment or extension; and a number of patents and pending patent applications in other jurisdictions, including issued patents in Australia, the European Patent Convention and Japan, and pending applications in Australia, Canada, China, the European Patent Convention and Japan. These patents and patent applications are directed to GB002 compound, formulation and method of use claims.

GB004

As of December 31, 2018, with respect to GB004, we have exclusively licensed from Aerpio nine issued U.S. patents directed to compound, pharmaceutical composition and method of use claims, eight of which are not due to expire before 2030, and one, directed to synthetic method claims, is not due to expire before 2035, excluding any additional term for patent term adjustment or extension; one pending U.S. patent application directed to compound and method of use claims, which, if issued, is not due to expire before 2030, excluding any additional term for patent term adjustment or extension; and a number of patents and pending patent applications in other jurisdictions. The patents and pending patent applications directed to compound, pharmaceutical composition and method of use claims in other jurisdictions, and which are not due to expire before 2030, include issued patents in Australia, Canada, China, the European Patent Convention, India, Japan, Mexico, New Zealand and South Korea, and pending patent applications in Brazil, the European Patent Convention, India, Mexico and South Korea. The patents and pending patent applications directed to synthetic method claims in other jurisdictions, and which are not due to expire before 2035, include pending patent applications in China, the European Patent Convention, India and Japan.

With respect to our product candidates and processes we intend to develop and commercialize in the normal course of business, we intend to pursue patent protection covering, when possible, compositions, methods of use, dosing and formulations. We may also pursue patent protection with respect to manufacturing and drug development processes and technologies. Obtaining and maintaining patent protection depends on compliance with various procedural, document submission, fee payment, and other requirements imposed by governmental patent agencies. We may not be able to obtain patent protections for our compositions, methods of use, dosing and formulations, manufacturing and drug development processes and technologies throughout the world. Issued patents can provide protection for varying periods of time, depending upon the date of filing of the patent application, the date of patent issuance and the legal term of patents in the countries in which they are obtained. In general, patents issued for applications filed in the United States can provide exclusionary rights for 20 years from the earliest effective filing date. In addition, in certain

instances, the term of an issued U.S. patent that covers or claims an FDA approved product can be extended to recapture a portion of the term effectively lost as a result of the FDA regulatory review period, which is called patent term extension. The restoration period cannot be longer than five years and the total patent term, including the restoration period, must not exceed 14 years following FDA approval. The term of patents outside of the United States varies in accordance with the laws of the foreign jurisdiction, but typically is also 20 years from the earliest effective filing date. However, the actual protection afforded by a patent varies on a product-by-product basis, from country-to-country, and depends upon many factors, including the type of patent, the scope of its coverage, the availability of regulatory-related extensions, the availability of legal remedies in a particular country, and the validity and enforceability of the patent. Patent term may be inadequate to protect our competitive position on our products for an adequate amount of time.

The patent positions of companies like ours are generally uncertain and involve complex legal and factual questions. No consistent policy regarding the scope of claims allowable in patents in the field of biopharmaceuticals has emerged in the United States. The relevant patent laws and their interpretation outside of the United States is also uncertain. Changes in either the patent laws or their interpretation in the United States and other countries may diminish our ability to protect our technology or product candidates and could affect the value of such intellectual property. In particular, our ability to stop third parties from making, using, selling, offering to sell or importing products that infringe our intellectual property will depend in part on our success in obtaining and enforcing patent claims that cover our technology, inventions and improvements. We cannot guarantee that patents will be granted with respect to any of our pending patent applications or with respect to any patent applications we may file in the future, nor can we be sure that any patents that may be granted to us in the future will be commercially useful in protecting our products, the methods of use or manufacture of those products. Moreover, even our issued patents do not guarantee us the right to practice our technology in relation to the commercialization of our products. Patent and other intellectual property rights in the pharmaceutical and biotechnology space are evolving and involve many risks and uncertainties. For example, third parties may have blocking patents that could be used to prevent us from commercializing our product candidates and practicing our proprietary technology, and our issued patents may be challenged, invalidated or circumvented, which could limit our ability to stop competitors from marketing related products or could limit the term of patent protection that otherwise may exist for our product candidates. In addition, the scope of the rights granted under any issued patents may not provide us with protection or competitive advantages against competitors with similar technology. Furthermore, our competitors may independently develop similar technologies that are outside the scope of the rights granted under any issued patents. For these reasons, we may face competition with respect to our product candidates. Moreover, because of the extensive time required for development, testing and regulatory review of a potential product, it is possible that, before any particular product candidate can be commercialized, any patent protection for such product may expire or remain in force for only a short period following commercialization, thereby reducing the commercial advantage the patent provides.

Government Regulation

Government authorities in the United States, at the federal, state and local level, and other countries extensively regulate, among other things, the research, development, testing, manufacture, quality control, approval, labeling, packaging, storage, record-keeping, promotion, advertising, distribution, marketing and export and import of products such as those we are developing. A new drug must be approved by the FDA through the new drug application, or NDA, process before it may be legally marketed in the United States.

Certain of our product candidates are subject to regulation as combination products, which means that they are composed of both a drug product and device product. If marketed individually, each component would be subject to different regulatory pathways and reviewed by different centers within the FDA. A combination product, however, is assigned to a Center that will have primary jurisdiction over its regulation based on a determination of the combination product's primary mode of action, which is the single mode of action that provides the most important therapeutic action. In the case of our inhaled product candidate regulated as a combination product, the primary mode of action is attributable to the drug component of the product, which means that the FDA's Center for Drug Evaluation and Research has primary jurisdiction over the premarket development, review and approval. Accordingly, we plan to investigate this product through the IND framework and seek approval through the NDA pathway. We do not anticipate that the FDA will require a separate medical device authorization for the device, but this could change during the course of its review of any marketing application that we may submit.

U.S. Drug Development Process

In the United States, the FDA regulates drugs under the federal Food, Drug, and Cosmetic Act, or the FDCA, and its implementing regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval may subject an applicant to administrative or judicial sanctions. These sanctions could include the FDA's refusal to approve pending applications, withdrawal of an approval, a clinical hold, warning letters, product recalls, product seizures, total or partial suspension of

production or distribution, injunctions, fines, refusals of government contracts, restitution, disgorgement or civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on us.

The process required by the FDA before a drug may be marketed in the United States generally involves the following:

- completion of preclinical laboratory tests, animal studies and formulation studies in accordance with Good Laboratory Practice, or GLP, regulations and other applicable regulations;
- submission to the FDA of an IND, which must become effective before human clinical trials may begin;
- approval by an independent institutional review board, or IRB, at each clinical site before each trial may be initiated;
- performance of adequate and well-controlled human clinical trials in accordance with Good Clinical Practice, or GCP, regulations to establish the safety and efficacy of the proposed drug for its intended use;
- submission to the FDA of an NDA;
- satisfactory completion of an FDA advisory committee review, if applicable;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities at which the drug is produced to assess compliance with current GMP, or cGMP, requirements to assure that the facilities, methods and controls are adequate to preserve the drug's identity, strength, quality and purity; and
- FDA review and approval of the NDA to permit commercial marketing of the product for particular indications for use in the United States.

Once a pharmaceutical candidate is identified for development, it enters the preclinical testing stage. Preclinical tests include laboratory evaluations of product chemistry, toxicity and formulation, as well as animal studies. An IND sponsor must submit the results of the preclinical tests, together with manufacturing information and analytical data, to the FDA as part of the IND. An IND is a request for authorization from the FDA to administer an investigational new drug product to humans. The sponsor will also include a protocol detailing, among other things, the objectives of the first phase of the clinical trial, the parameters to be used in monitoring safety, and the effectiveness criteria to be evaluated, if the first phase lends itself to an efficacy evaluation. Some preclinical testing may continue even after the IND is submitted. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day time period, places the clinical trial on a clinical hold. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. Clinical holds also may be imposed by the FDA at any time before or during clinical trials due to safety concerns about on-going or proposed clinical trials or non-compliance with specific FDA requirements, and the trials may not begin or continue until the FDA notifies the sponsor that the hold has been lifted. Submission of an IND therefore may or may not result in FDA authorization to begin a clinical trial.

All clinical trials must be conducted under the supervision of one or more qualified investigators in accordance with GCP regulations, which include the requirement that all research subjects provide their informed consent in writing for their participation in any clinical trial. They must be conducted under protocols detailing, among other things, the objectives of the trial, dosing procedures, subject selection and exclusion criteria and the safety and effectiveness criteria to be evaluated. Each protocol must be submitted to the FDA as part of the IND as well as any subsequent protocol amendments, and timely safety reports must be submitted to the FDA and the investigators for serious and unexpected adverse events. An IRB at each institution participating in the clinical trial must review and approve each protocol before a clinical trial commences at that institution and must also approve the information regarding the trial and the consent form that must be provided to each trial subject or his or her legal representative, monitor the study until completed and otherwise comply with IRB regulations.

Human clinical trials are typically conducted in three sequential phases that may overlap or be combined:

- *Phase 1*: The product candidate is initially introduced into healthy human volunteers and tested for safety, dosage tolerance, absorption, metabolism, distribution and excretion and, if possible, to gain an early indication of its effectiveness. In the case of some products for severe or life-threatening diseases, such as cancer, especially when the product may be too inherently toxic to ethically administer to healthy volunteers, the initial human testing is often conducted in patients. Sponsors sometimes designate their Phase 1 clinical trials as Phase 1a or Phase 1b. Phase 1b clinical trials are typically aimed at confirming dosing, pharmacokinetics and safety in larger number of patients. Some Phase 1b studies evaluate biomarkers or surrogate markers that may be associated with efficacy in patients with specific types of diseases.

- *Phase 2*: This phase involves clinical trials in a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance and appropriate dosage.

- *Phase 3*: Clinical trials are undertaken to further evaluate dosage, clinical efficacy and safety in an expanded patient population, generally at geographically dispersed clinical study sites. These clinical trials are intended to establish the overall risk-benefit ratio of the product candidate and provide, if appropriate, an adequate basis for product labeling.

Post-approval trials, sometimes referred to as Phase 4 studies, may be conducted after initial marketing approval. These trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication. In certain instances, the FDA may mandate the performance of Phase 4 clinical trials as a condition of approval of an NDA.

The FDA or the sponsor may suspend a clinical trial at any time on various grounds, including a finding that the research subjects or patients are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the drug has been associated with unexpected serious harm to patients. In addition, some clinical trials are overseen by an independent group of qualified experts organized by the sponsor, known as a data safety monitoring board or committee. Depending on its charter, this group may determine whether a trial may move forward at designated check points based on access to certain data from the trial.

During the development of a new drug, sponsors are given opportunities to meet with the FDA at certain points. These points may be prior to submission of an IND, at the end of Phase 2, and before an NDA is submitted. Meetings at other times may be requested. These meetings can provide an opportunity for the sponsor to share information about the data gathered to date, for the FDA to provide advice, and for the sponsor and the FDA to reach agreement on the next phase of development. Sponsors typically use the meetings at the end of the Phase 2 trial to discuss Phase 2 clinical results and present plans for the pivotal Phase 3 clinical trials that they believe will support approval of the new drug.

Concurrent with clinical trials, companies usually complete additional animal studies and must also develop additional information about the chemistry and physical characteristics of the drug and 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 product candidate and, among other things, the manufacturer must develop methods for testing the identity, strength, quality and purity of the final drug. In addition, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the product candidate does not undergo unacceptable deterioration over its shelf life.

While the IND is active and before approval, progress reports summarizing the results of the clinical trials and nonclinical studies performed since the last progress report must be submitted at least annually to the FDA, and written IND safety reports must be submitted to the FDA and investigators for serious and unexpected suspected adverse events, findings from other studies suggesting a significant risk to humans exposed to the same or similar drugs, findings from animal or *in vitro* testing suggesting a significant risk to humans, and any clinically important increased incidence of a serious suspected adverse reaction compared to that listed in the protocol or investigator brochure.

There are also requirements governing the reporting of ongoing clinical trials and completed trial results to public registries. Sponsors of certain clinical trials of FDA-regulated products are required to register and disclose specified clinical trial information, which is publicly available at www.clinicaltrials.gov. Information related to the product, patient population, phase of investigation, trial sites and investigators and other aspects of the clinical trial is then made public as part of the registration. Sponsors are also obligated to discuss the results of their clinical trials after completion. Disclosure of the results of these trials can be delayed until the new product or new indication being studied has been approved.

Regulation of Combination Products in the United States

Certain products may be comprised of components, such as drug components and device components that would normally be regulated under different types of regulatory authorities, and frequently by different centers at the FDA. These products are known as combination products. Specifically, under regulations issued by the FDA, a combination product may be:

- a product comprised of two or more regulated components that are physically, chemically, or otherwise combined or mixed and produced as a single entity;

- two or more separate products packaged together in a single package or as a unit and comprised of drug and device products, device and biological products, or biological and drug products;

- a drug, or device, or biological product packaged separately that according to its investigational plan or proposed labeling is intended for use only with an approved individually specified drug, or device, or biological product where both are required to achieve the intended use, indication, or effect and where upon approval of the proposed product the labeling of the approved product would need to be changed, e.g., to reflect a change in intended use, dosage form, strength, route of administration, or significant change in dose; or

- any investigational drug, or device, or biological product packaged separately that according to its proposed labeling is for use only with another individually specified investigational drug, device, or biological product where both are required to achieve the intended use, indication, or effect.

Under the FDCA and its implementing regulations, the FDA is charged with assigning a center with primary jurisdiction, or a lead center, for review of a combination product. The designation of a lead center generally eliminates the need to receive approvals from more than one FDA component for combination products, although it does not preclude consultations by the lead center with other components of FDA. The determination of which center will be the lead center is based on the "primary mode of action" of the combination product. Thus, if the primary mode of action of a drug-device combination product is attributable to the drug product, the FDA center responsible for premarket review of the drug product would have primary jurisdiction for the combination product. The FDA has also established an Office of Combination Products to address issues surrounding combination products and provide more certainty to the regulatory review process. That office serves as a focal point for combination product issues for agency reviewers and industry. It is also responsible for developing guidance and regulations to clarify the regulation of combination products, and for assignment of the FDA center that has primary jurisdiction for review of combination products where the jurisdiction is unclear or in dispute.

A combination product with a drug primary mode of action generally would be reviewed and approved pursuant to the drug approval processes under the FDCA. In reviewing the NDA application for such a product, however, FDA reviewers in the drug center could consult with their counterparts in the device center to ensure that the device component of the combination product met applicable requirements regarding safety, effectiveness, durability and performance. In addition, under FDA regulations, combination products are subject to cGMP requirements applicable to both drugs and devices, including the Quality System, or QS, regulations applicable to medical devices.

NDA Review and Approval Process

The results of product development, preclinical and other non-clinical studies and clinical trials, along with descriptions of the manufacturing process, analytical tests conducted on the chemistry of the drug, proposed labeling and other relevant information are submitted to the FDA as part of an NDA requesting approval to market the product. The submission of an NDA is subject to the payment of substantial user fees; a waiver of such fees may be obtained under certain limited circumstances. The FDA reviews an NDA to determine, among other things, whether a product is safe and effective for its intended use and whether its manufacturing is cGMP-compliant to assure and preserve the product's identity, strength, quality and purity. Under the Prescription Drug User Fee Act, or PDUFA, guidelines that are currently in effect, the FDA has a goal of ten months from the date of "filing" of a standard NDA for a new molecular entity to review and act on the submission. This review typically takes twelve months from the date the NDA is submitted to FDA because the FDA has approximately two months to make a "filing" decision after it the application is submitted. The FDA conducts a preliminary review of all NDAs within the first 60 days after submission, before accepting them for filing, to determine whether they are sufficiently complete to permit substantive review The FDA may request additional information rather than accept an NDA for filing. In this event, the NDA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing.

The FDA may refer an application for a novel drug to an advisory committee. An advisory committee is a panel of independent experts, including clinicians and other scientific experts, that reviews, evaluates and provides 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 it considers such recommendations carefully when making decisions. Before approving an NDA, the FDA will inspect the facility or facilities where the product is manufactured. 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 may inspect one or more clinical trial sites to assure compliance with GCP requirements.

After the FDA evaluates an NDA, it will issue an approval letter or a Complete Response Letter. An approval letter authorizes commercial marketing of the drug with prescribing information for specific indications. A Complete Response Letter indicates that the review cycle of the application is complete and the application will not be approved in its present form. A Complete Response Letter usually describes the specific deficiencies in the NDA identified by the FDA and may require additional clinical data, such as an

additional pivotal Phase 3 trial or other significant and time consuming requirements related to clinical trials, nonclinical studies or manufacturing. If a Complete Response Letter is issued, the sponsor must resubmit the NDA or, addressing all of the deficiencies identified in the letter, or withdraw the application. Even if such data and information are submitted, the FDA may decide that the NDA does not satisfy the criteria for approval.

If a product receives regulatory approval, the approval may be significantly limited to specific diseases and dosages or the indications for use may otherwise be limited, which could restrict the commercial value of the product. In addition, the FDA may require a sponsor to conduct Phase 4 testing, which involves clinical trials designed to further assess a drug's safety and effectiveness after NDA approval, and may require testing and surveillance programs to monitor the safety of approved products which have been commercialized. The FDA may also place other conditions on approval including the requirement for a risk evaluation and mitigation strategy, or REMS, to assure the safe use of the drug. If the FDA concludes a REMS is needed, the sponsor of the NDA must submit a proposed REMS. The FDA will not approve the NDA without an approved REMS, if required. A REMS could include medication guides, physician communication plans or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. Any of these limitations on approval or marketing could restrict the commercial promotion, distribution, prescription or dispensing of products. Marketing approval may be withdrawn for non-compliance with regulatory requirements or if problems occur following initial marketing.

The Pediatric Research Equity Act, or PREA, requires a sponsor to conduct pediatric clinical trials for most drugs, for a new active ingredient, new indication, new dosage form, new dosing regimen or new route of administration. Under PREA, original NDAs and supplements must contain a pediatric assessment unless the sponsor has received a deferral or waiver. The required assessment must evaluate the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The sponsor or FDA may request a deferral of pediatric clinical trials for some or all of the pediatric subpopulations. A deferral may be granted for several reasons, including a finding that the drug is ready for approval for use in adults before pediatric clinical trials are complete or that additional safety or effectiveness data needs to be collected before the pediatric clinical trials begin. The FDA must send a non-compliance letter to any sponsor that fails to submit the required assessment, keep a deferral current or fails to submit a request for approval of a pediatric formulation.

Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug intended to treat a rare disease or condition, which is a disease or condition that affects fewer than 200,000 individuals in the United States or, if it affects more than 200,000 individuals in the United States, there is no reasonable expectation that the cost of developing and making a drug product available in the United States for this type of disease or condition will be recovered from sales of the product. Orphan designation must be requested before submitting an NDA. After the FDA grants orphan designation, the identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. Orphan designation does not convey any advantage in or shorten the duration of the regulatory review and approval process.

If a product that has orphan designation subsequently receives the first FDA approval for the disease or condition for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications to market the same drug for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan exclusivity or inability to manufacture the product in sufficient quantities. The designation of such drug also entitles a party to financial incentives such as opportunities for grant funding toward clinical trial costs, tax advantages and user-fee waivers. However, competitors, may receive approval of different products for the indication for which the orphan product has exclusivity or obtain approval for the same product but for a different indication for which the orphan product has exclusivity. Orphan exclusivity also could block the approval of one of our product candidates for seven years if a competitor obtains approval of the same drug as defined by the FDA or if our product candidate is determined to be contained within the competitor's product for the same indication or disease.

In addition, if an orphan designated product receives marketing approval for an indication broader than what is designated, it may not be entitled to orphan exclusivity. In addition, orphan drug exclusive marketing rights in the United States may be lost if the FDA later determines that the request for designation was materially defective or, as noted above, if the second applicant demonstrates that its product is clinically superior to the approved product with orphan exclusivity or the manufacturer of the approved product is unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition. GB002 has received orphan drug designation for the treatment of patients with PAH.

Expedited Development and Review Programs

A sponsor may seek approval of its product candidate under programs designed to accelerate FDA's review and approval of new drugs and biological products that meet certain criteria. The FDA has a fast track designation program that is intended to expedite or facilitate the process for reviewing new drug products that meet certain criteria. Specifically, new drugs are eligible for Fast Track designation if they are intended to treat a serious or life-threatening disease or condition and demonstrate the potential to address unmet medical needs for the disease or condition. Unique to a fast track product, the FDA may consider for review sections of the NDA on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the NDA, the FDA agrees to accept sections of the NDA and determines that the schedule is acceptable, and the sponsor pays any required user fees upon submission of the first section of the NDA.

Any product submitted to the FDA for approval, including a product with a fast track designation, may also be eligible for other types of FDA programs intended to expedite development and review, such as priority review and accelerated approval. A product is eligible for priority review if it has the potential to provide safe and effective therapy where no satisfactory alternative therapy exists or a significant improvement in the safety or effectiveness of the treatment, diagnosis or prevention of a serious disease or condition. The FDA will attempt to direct additional resources to the evaluation of an application for a new drug designated for priority review in an effort to facilitate the review. The FDA endeavors to review applications with priority review designations within six months of the filing date as compared to ten months for review of new molecular entity NDAs under its current PDUFA review goals. Priority review designation does not change the scientific/medical standard for approval or the quality of evidence necessary to support approval.

In addition, a product may be eligible for accelerated approval. Drug products intended to treat serious or life-threatening diseases or conditions may be eligible for accelerated approval upon a determination that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. As a condition of approval, the FDA may require that a sponsor of a drug receiving accelerated approval perform adequate and well-controlled post-marketing clinical 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. FDA may withdraw approval of a drug or indication approved under accelerated approval if, for example, the confirmatory trial fails to verify the predicted clinical benefit of the product.

The FDA Safety and Innovation Act established a category of drugs referred to as "breakthrough therapies" that may be eligible to receive breakthrough therapy designation. A sponsor may seek FDA designation of a product candidate as a "breakthrough therapy" if the product is intended, 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. If the FDA designates a breakthrough therapy, it may take actions appropriate to expedite the development and review of the application, which may include holding meetings with the sponsor and the review team throughout the development of the therapy; providing timely advice to, and interactive communication with, the sponsor regarding the development of the drug to ensure that the development program to gather the nonclinical and clinical data necessary for approval is as efficient as practicable; involving senior managers and experienced review staff, as appropriate, in a collaborative, cross-disciplinary review; assigning a cross-disciplinary project lead for the FDA review team to facilitate an efficient review of the development program and to serve as a scientific liaison between the review team and the sponsor; and considering alternative clinical trial designs when scientifically appropriate, which may result in smaller trials or more efficient trials that require less time to complete and may minimize the number of patients exposed to a potentially less efficacious treatment. The designation includes all of the fast track program features, which means that the sponsor may file sections of the NDA for review on a rolling basis if certain conditions are satisfied, including an agreement with FDA on the proposed schedule for submission of portions of the application and the payment of applicable user fees before the FDA may initiate a review. The breakthrough therapy designation is a distinct status from both accelerated approval and priority review, which can also be granted to the same drug if relevant criteria are met. If a product is designated as breakthrough therapy, the FDA will work to expedite the development and review of such drug.

Fast track designation, priority review and breakthrough therapy designation do not change the standards for approval but may expedite the development or approval process. Even if a product qualifies for one or more of these programs, the FDA may later decide that the product no longer meets the conditions for qualification or decide that the time period for FDA review or approval will not be shortened. We may explore some of these opportunities for our product candidates as appropriate.

Post-Approval Requirements

Once an approval is granted, the FDA may withdraw the approval if compliance with regulatory standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product may result in restrictions on the product or even complete withdrawal of the product from the market. After approval, some types of changes to the approved product, such as adding new indications, certain manufacturing changes and additional labeling claims, are subject to further FDA review and approval. Drug manufacturers and other entities involved in the manufacture and distribution of approved drugs 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 cGMP regulations and other laws and regulations. In addition, the FDA may impose a number of post-approval requirements as a condition of approval of an NDA. For example, the FDA may require post-marketing testing, including Phase 4 clinical trials, and surveillance to further assess and monitor the product's safety and effectiveness after commercialization.

Any drug products manufactured or distributed by us or our partners pursuant to FDA approvals will be subject to pervasive and continuing regulation by the FDA, including, among other things, record-keeping requirements, reporting of adverse experiences with the drug, providing the FDA with updated safety and efficacy information, drug sampling and distribution requirements, complying with certain electronic records and signature requirements, and complying with FDA promotion and advertising requirements. The FDA strictly regulates labeling, advertising, promotion and other types of information on products that are placed on the market and imposes requirements and restrictions on drug manufacturers, such as those related to direct-to-consumer advertising, the prohibition on promoting products for uses or in patient populations that are not described in the product's approved labeling (known as "off-label use"), industry-sponsored scientific and educational activities, and promotional activities involving the internet.

Discovery of previously unknown problems or the failure to comply with the applicable regulatory requirements may result in restrictions on the marketing of a product or withdrawal of the product from the market as well as possible civil or criminal sanctions. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant or manufacturer to administrative or judicial civil or criminal sanctions and adverse publicity. FDA sanctions could include refusal to approve pending applications, withdrawal of an approval, clinical holds on post-approval clinical trials, warning or untitled letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, mandated corrective advertising or communications with doctors, debarment, restitution, disgorgement of profits, or civil or criminal penalties.

Marketing Exclusivity

Market exclusivity provisions under the FDCA can delay the submission or the approval of certain marketing applications. The FDCA provides a five-year period of non-patent marketing exclusivity within the United States to the first applicant to obtain approval of an NDA for a new chemical entity. A drug is a new chemical entity if the FDA has not previously approved any other new drug containing the same active moiety, which is the molecule or ion responsible for the action of the drug substance. During the exclusivity period, the FDA may not approve or even accept for review an abbreviated new drug application, or ANDA, or an NDA submitted under Section 505(b)(2), or 505(b)(2) NDA, submitted by another company for another drug based on the same active moiety, regardless of whether the drug is intended for the same indication as the original innovative drug or for another indication, where the applicant does not own or have a legal right of reference to all the data required for approval. However, an application may be submitted after four years if it contains a certification of patent invalidity or non-infringement to one of the patents listed with the FDA by the innovator NDA holder.

The FDCA alternatively provides three years of marketing exclusivity for an NDA, or supplement to an existing NDA if new clinical investigations, other than bioavailability studies, that were conducted or sponsored by the applicant are deemed by the FDA to be essential to the approval of the application, for example new indications, dosages or strengths of an existing drug. This three-year exclusivity covers only the modification for which the drug received approval on the basis of the new clinical investigations and does not prohibit the FDA from approving ANDAs or 505(b)(2) NDAs for drugs containing the active agent for the original indication or condition of use. Five-year and three-year exclusivity will not delay the submission or approval of a full NDA. However, an applicant submitting a full NDA would be required to conduct or obtain a right of reference to all of the preclinical studies and adequate and well-controlled clinical trials necessary to demonstrate safety and effectiveness.

Pediatric exclusivity is another type of marketing exclusivity available in the United States. Pediatric exclusivity provides for an additional six months of marketing exclusivity attached to another period of exclusivity if a sponsor conducts clinical trials in children in response to a written request from the FDA. The issuance of a written request does not require the sponsor to undertake the

described clinical trials. In addition, orphan drug exclusivity, as described above, may offer a seven-year period of marketing exclusivity, except in certain circumstances.

U.S. Coverage and Reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of any product candidate for which we may seek regulatory approval. Sales in the United States will depend, in part, on the availability of sufficient coverage and adequate reimbursement from third-party payors, which include government health programs such as Medicare, Medicaid, TRICARE and the Veterans Administration, as well as managed care organizations and private health insurers. Prices at which we or our customers seek reimbursement for our product candidates can be subject to challenge, reduction or denial by third-party payors.

The process for determining whether a third-party payor will provide coverage for a product is typically separate from the process for setting the reimbursement rate that the payor will pay for the product. A third-party payor's decision to provide coverage for a product does not imply that an adequate reimbursement rate will be available. Additionally, in the United States there is no uniform policy among payors for coverage or reimbursement. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own coverage and reimbursement policies, but also have their own methods and approval processes. Therefore, coverage and reimbursement for products can differ significantly from payor to payor. If coverage and adequate reimbursement are not available, or are available only at limited levels, successful commercialization of, and obtaining a satisfactory financial return on, any product we develop may not be possible.

Third-party payors are increasingly challenging the price and examining the medical necessity and cost-effectiveness of medical products and services, in addition to their safety and efficacy. In order to obtain coverage and reimbursement for any product that might be approved for marketing, we may need to conduct expensive studies in order to demonstrate the medical necessity and cost-effectiveness of any products, which would be in addition to the costs expended to obtain regulatory approvals. Third-party payors may not consider our product candidates to be medically necessary or cost-effective compared to other available therapies, or the rebate percentages required to secure favorable coverage may not yield an adequate margin over cost or may not enable us to maintain price levels sufficient to realize an appropriate return on our investment in drug development.

U.S. Healthcare Reform

In the United States, there has been, and continues to be, several legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of product candidates, restrict or regulate post-approval activities, and affect the profitable sale of product candidates.

Among policy makers and payors in the United States, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and/or expanding access. In the United States, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives. In March 2010, the Patient Protection and Affordable Care Act, or ACA, was passed, which substantially changed the way healthcare is financed by both the government and private insurers, and significantly impacts the U.S. pharmaceutical industry. The ACA, among other things: (1) increased the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program and extended the rebate program to individuals enrolled in Medicaid managed care organizations; (2) created a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for certain drugs and biologics that are inhaled, infused, instilled, implanted or injected; (3) established an annual, nondeductible fee on any entity that manufactures or imports certain specified branded prescription drugs and biologic agents apportioned among these entities according to their market share in certain government healthcare programs; (4) expanded the availability of lower pricing under the 340B drug pricing program by adding new entities to the program; (5) expanded the eligibility criteria for Medicaid programs; (6) created a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research; (7) created a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% (and 70% commencing January 1, 2019) 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; (8) established a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research; and (9) established a Center for Medicare Innovation at the Centers for Medicare & Medicaid Services, or CMS, to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drugs.

Some of the provisions of the ACA have yet to be implemented, and there have been judicial and political challenges to certain aspects of the ACA. For example, since January 2017, President Trump has signed two Executive Orders and other directives 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. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the ACA. While Congress has not passed comprehensive repeal legislation, two bills affecting the implementation of certain taxes under the ACA have been signed into law. The Tax Cuts and Jobs Act of 2017, or Tax Act, includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate." 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. The Bipartisan Budget Act of 2018, among other things, amends the ACA, effective January 1, 2019, to close the coverage gap in most Medicare drug plans, commonly referred to as the "donut hole." In July 2018, CMS published a final rule permitting further collections and payments to and from certain ACA qualified health plans and health insurance issuers under the ACA risk adjustment program in response to the outcome of federal district court litigation regarding the method CMS uses to determine this risk adjustment. On December 14, 2018, a U.S. District Court Judge in the Northern District of Texas, or Texas District Court Judge, ruled that the individual mandate is a critical and inserverable feature of the ACA, and therefore, because it was repealed as part of the Tax Act, the remaining provisions of the ACA are invalid as well. While the Texas District Court Judge, as well as the Trump Administration and CMS, have stated that the ruling will have no immediate effect, it is unclear how this decision, subsequent appeals, and other efforts to repeal and replace the ACA will impact the ACA.

Other legislative changes have been proposed and adopted since the ACA was enacted. On August 2, 2011, the Budget Control Act of 2011 was signed into law, which, among other things, resulted in aggregate reductions of Medicare payments to providers of 2% per fiscal year, which went into effect on April 1, 2013 and, due to subsequent legislative amendments to the statute, including the BBA, will remain in effect through 2027 unless additional Congressional action is taken. On January 2, 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, reduced Medicare payments to several providers, including hospitals, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Moreover, there has recently been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drug products. At the federal level, the Trump administration's budget proposal for fiscal year 2019 contains further drug price control measures that could be enacted during the 2019 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. Additionally, the Trump administration released a "Blueprint" to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase 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 U.S. Department of Health and Human Services has begun the process of soliciting feedback on some of these measures and, at the same time, is implementing others under its existing authority. Although some of these, and other proposed measures will require authorization through additional legislation to become effective, Congress and the Trump administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical 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.

Additionally, on May 30, 2018, the Trickett Wendler, Frank Mongiello, Jordan McLinn, and Matthew Bellina Right to Try Act of 2017, or Right to Try Act, was signed into law. The law, among other things, provides a federal framework for patients to access certain investigational new drug products that have completed a Phase I clinical trial. Under certain circumstances, eligible patients can seek treatment without enrolling in clinical trials and without obtaining FDA approval under the FDA expanded access program. There is no obligation for a drug manufacturer to make its drug products available to eligible patients as a result of the Right to Try Act.

U.S. Healthcare Fraud and Abuse Laws and Compliance Requirements

Federal and state healthcare laws and regulations restrict business practices in the biopharmaceutical industry. These laws include anti-kickback and false claims laws and regulations, data privacy and security, and transparency laws and regulations.

The federal Anti-Kickback Statute prohibits, among other things, individuals or entities from knowingly and willfully offering, paying, soliciting or receiving remuneration, directly or indirectly, overtly or covertly, in cash or in kind to induce or in return for purchasing, leasing, ordering or arranging for or recommending the purchase, lease or order of any item or service reimbursable under Medicare, Medicaid or other federal healthcare programs. A person or entity does not need to have actual knowledge of this statute or specific intent to violate it in order to have committed a violation. In addition, the government may assert that a claim including items or 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 and the civil monetary penalties statute.

The federal civil and criminal false claims laws and civil monetary penalties laws, including the civil False Claims Act, prohibit, among other things, any individual or entity from knowingly presenting, or causing to be presented, a false claim for payment to the federal government or knowingly making, using or causing to be made or used a false record or statement material to a false or fraudulent claim to the federal government.

The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, created additional federal civil and criminal statutes that prohibit, among other things, knowingly and willfully executing a scheme to defraud any healthcare benefit program. In addition, HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, and their implementing regulations, imposes certain requirements relating to the privacy, security and transmission of protected health information on HIPAA covered entities, which include certain healthcare providers, health plans and healthcare clearinghouses, and their business associates who conduct certain activities for or on their behalf involving protected health information on their behalf.

The federal Physician Payments Sunshine Act requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program, with specific exceptions, to report annually to CMS information related to payments or other transfers of value made to physicians and teaching hospitals, and applicable manufacturers and applicable group purchasing organizations to report annually to CMS ownership and investment interests held by physicians and their immediate family members.

Similar state and local laws and regulations may also restrict business practices in the biopharmaceutical industry, such as state anti-kickback and false claims laws, which may apply to business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers, or by patients themselves; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws and regulations that require drug manufacturers to file reports relating to pricing and marketing information or which require tracking gifts and other remuneration and items of value provided to physicians, other healthcare providers and entities; state and local laws that require the registration of pharmaceutical sales representatives; and state and local laws governing 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 compliance with applicable healthcare laws and regulations can involve substantial costs. Violations of healthcare laws can result in significant penalties, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgement, individual imprisonment, possible exclusion from participation in Medicare, Medicaid and other U.S. healthcare programs, integrity oversight and reporting obligations, contractual damages, reputational harm, diminished profits and future earnings, and curtailment or restructuring of operations.

Foreign Regulation

In order to market any product outside of the United States, we would need to 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 our products. Whether or not we obtain FDA approval for a product, we would need to obtain the necessary approvals by the comparable foreign regulatory authorities before we can commence clinical trials or marketing of the product in foreign countries and jurisdictions. Although many of the issues discussed above with respect to the United States apply similarly in the context of the European Union, or EU, the approval process 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.

To market a medicinal product in the European Economic Area, or EEA (which is comprised of the 28 Member States of the EU plus Norway, Iceland and Liechtenstein), we must obtain a Marketing Authorization, or MA. There are two types of marketing authorizations:

- the Community MA, which is issued by the European Commission through the Centralized Procedure, based on the opinion of the Committee for Medicinal Products for Human Use of the European Medicines Agency, or EMA, and which is valid throughout the entire territory of the EEA. The Centralized Procedure is mandatory for certain types of products, such as biotechnology medicinal products, orphan medicinal products, advanced therapy products, and medicinal products containing a new active substance indicated for the treatment certain diseases, such as AIDS, cancer, neurodegenerative disorders, diabetes, auto-immune and viral diseases. The Centralized Procedure is optional for products containing a new active substance not yet authorized in the EEA, or for products that constitute a significant therapeutic, scientific or technical innovation or which are in the interest of public health in the EU; and

- National MAs, which are issued by the competent authorities of the Member States of the EEA and only cover their respective territory, are available for products not falling within the mandatory scope of the Centralized Procedure. Where a product has already been authorized for marketing in a Member State of the EEA, this National MA can be recognized in another Member State through the Mutual Recognition Procedure. If the product has not received a National MA in any Member State at the time of application, it can be approved simultaneously in various Member States through the Decentralized Procedure.

Under the above described procedures, before granting the MA, the EMA or the competent authorities of the Member States of the EEA make an assessment of the risk-benefit balance of the product on the basis of scientific criteria concerning its quality, safety and efficacy.

Data and marketing exclusivity

In the EEA, new products authorized for marketing, or reference products, qualify for eight years of data exclusivity and an additional two years of market exclusivity upon marketing authorization. The data exclusivity period prevents generic or biosimilar applicants from relying on the preclinical and clinical trial data contained in the dossier of the reference product when applying for a generic or biosimilar marketing authorization in the EU during a period of eight years from the date on which the reference product was first authorized in the EU. The market exclusivity period prevents a successful generic or biosimilar applicant from commercializing its product in the EU until 10 years have elapsed from the initial authorization of the reference product in the EU. The 10-year market exclusivity period can be extended to a maximum of eleven years if, during the first eight years of those 10 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.

Pediatric investigation plan

In the EEA, marketing authorization applications for new medicinal products not authorized have to include the results of studies conducted in the pediatric population, in compliance with a pediatric investigation plan, or PIP, agreed with the EMA's Pediatric Committee, or PDCO. The PIP sets out the timing and measures proposed to generate data to support a pediatric indication of the drug for which marketing authorization is being sought. The PDCO can grant a deferral of the obligation to implement some or all of the measures of the PIP until there are sufficient data to demonstrate the efficacy and safety of the product in adults. Further, the obligation to provide pediatric clinical trial data can be waived by the PDCO when these data is not needed or appropriate because the product is likely to be ineffective or unsafe in children, the disease or condition for which the product is intended occurs only in adult populations, or when the product does not represent a significant therapeutic benefit over existing treatments for pediatric patients. Once the marketing authorization is obtained in all Member States of the EU and study results are included in the product information, even when negative, the product is eligible for six months' supplementary protection certificate extension.

Orphan drug designation

In the EEA, a medicinal product can be designated as an orphan drug if its sponsor can establish that the product is intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition affecting not more than five in ten thousand persons in the EU when the application is made, or that the product is intended for the diagnosis, prevention or treatment of a life-threatening, seriously debilitating or serious and chronic condition in the European Community and that without incentives it is unlikely that the marketing of the drug in the EU 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.

In the EEA, an application for designation as an orphan product can be made any time prior to the filing of an application for approval to market the product. Marketing authorization for an orphan drug leads to a ten-year period of market exclusivity. During this market exclusivity period, the EMA or the member state competent authorities, cannot accept another application for a marketing authorization, or grant a marketing authorization, for a similar medicinal product for the same indication. The period of market exclusivity is extended by two years for medicines that have also complied with an agreed PIP.

This period may, however, be reduced to six years if, at the end of the fifth year, it is established that the product no longer meets the criteria for orphan drug designation, for example because the product is sufficiently profitable not to justify market exclusivity. Market exclusivity can be revoked only in very selected cases, such as consent from the marketing authorization holder, inability to supply sufficient quantities of the product, demonstration of "clinical superiority" by a similar medicinal product, or, after a review by the Committee for Orphan Medicinal Products, requested by a member state in the fifth year of the marketing exclusivity period (if the designation criteria are believed to no longer apply). Medicinal products designated as orphan drugs pursuant are eligible for incentives made available by the EU and its Member States to support research into, and the development and availability of, orphan drugs.

Clinical trials

Clinical trials of medicinal products in the European Union must be conducted in accordance with European Union and national regulations and the International Conference on Harmonization, or ICH, guidelines on GCPs. Additional GCP guidelines from the European Commission, focusing in particular on traceability, apply to clinical trials of advanced therapy medicinal products. If the sponsor of the clinical trial is not established within the European Union, it must appoint an entity within the European Union to act as its legal representative. The sponsor must take out a clinical trial insurance policy, and in most EU countries, the sponsor is liable to provide 'no fault' compensation to any study subject injured in the clinical trial.

Prior to commencing a clinical trial, the sponsor must obtain a clinical trial authorization from the competent authority, and a positive opinion from an independent ethics committee. The application for a clinical trial authorization must include, among other things, a copy of the trial protocol and an investigational medicinal product dossier containing information about the manufacture and quality of the medicinal product under investigation. Currently, clinical trial authorization applications must be submitted to the competent authority in each EU Member State in which the trial will be conducted. Under the new Regulation on Clinical Trials, which is currently expected to take effect in 2019, there will be a centralized application procedure where one national authority takes the lead in reviewing the application and the other national authorities have only a limited involvement. Any substantial changes to the trial protocol or other information submitted with the clinical trial applications must be notified to or approved by the relevant competent authorities and ethics committees. Medicines used in clinical trials must be manufactured in accordance with cGMP. Other national and European Union-wide regulatory requirements also apply.

Privacy and data protection laws

We are also subject to laws and regulations in non-U.S. countries covering data privacy and the protection of health-related and other personal information. EU member states and other jurisdictions have adopted data protection laws and regulations, which impose significant compliance obligations. Laws and regulations in these jurisdictions apply broadly to the collection, use, storage, disclosure, processing and security of personal information that identifies or may be used to identify an individual, such as names, contact information, and sensitive personal data such as health data. These laws and regulations are subject to frequent revisions and differing interpretations, and have generally become more stringent over time.

As of May 25, 2018, Regulation 2016/676, known as the General Data Protection Regulation, or GDPR, replaced the Data Protection Directive with respect to the processing of personal data in the European Union. The GDPR imposes many requirements for controllers and processors of personal data, including, for example, higher standards for obtaining consent from individuals to process their personal data, more robust disclosures to individuals and a strengthened individual data rights regime, shortened timelines for data breach notifications, limitations on retention and secondary use of information, increased requirements pertaining to health data and pseudonymised (i.e., key-coded) data and additional obligations when we contract third-party processors in connection with the processing of the personal data. The GDPR allows EU member states to make additional laws and regulations further limiting the processing of genetic, biometric or health data. Failure to comply with the requirements of GDPR and the applicable national data protection laws of the EU member states may result in fines of up to €20,000,000 or up to 4% of the total worldwide annual turnover of the preceding financial year, whichever is higher, and other administrative penalties.

Employees

As of February 28, 2019, we had 118 full-time employees and 1 part-time employee, 38 of whom have a Ph.D. or M.D. 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.

Corporate Information

We were incorporated under the laws of the state of Delaware on October 26, 2015 under the name FSG, Bio, Inc. and changed our name to Gossamer Bio, Inc. in 2017. Our principal executive offices are located at 3013 Science Park Road, Suite 200, San Diego, California 92121, and our telephone number is (858) 684-1300.

Available Information

Our internet address is www.gossamerbio.com. Our investor relations website is located at http://ir.gossamerbio.com. We make available free of charge on our investor relations website under "filings" our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, our directors' and officers' Section 16 reports and any amendments to those reports as soon as reasonably practicable after filing or furnishing such materials to the US Securities and Exchange Commission (SEC). They are also available for free on the SEC's website at www.sec.gov. The information in or accessible through the SEC and our website are not incorporated into, and are not considered part of, this filing.

Item 1A. Risk Factors.

You should carefully consider the following risk factors, together with the other information contained in this annual report on Form 10-K, including our financial statements and the related notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations," before making a decision to purchase or sell shares of our common stock. We cannot assure you that any of the events discussed in the risk factors below will not occur. These risks could have a material and adverse impact on our business, results of operations, financial condition and growth prospects. If that were to happen, the trading price of our common stock could decline. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations or financial condition.

Risks Related to Our Limited Operating History, Financial Position and Capital Requirements

We have a limited operating history, have incurred significant operating losses since our inception and expect to incur significant losses for the foreseeable future. We may never generate any revenue or become profitable or, if we achieve profitability, we may not be able to sustain it.

Biopharmaceutical product development is a highly speculative undertaking and involves a substantial degree of risk. We are a clinical-stage biopharmaceutical company with a limited operating history upon which you can evaluate our business and prospects. We commenced operations in 2017, and to date, we have focused primarily on organizing and staffing our company, business planning, raising capital, identifying, acquiring and in-licensing our product candidates and conducting preclinical studies and early clinical trials. GB001, GB002 and GB004 are in clinical development, while our other development programs remain in the preclinical or research stage. We have not yet demonstrated an ability to successfully complete any clinical trials, 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 made about our future success or viability may not be as accurate as they could be if we had a history of successfully developing and commercializing biopharmaceutical products.

We have incurred significant operating losses since our inception. If our product candidates are not successfully developed and approved, we may never generate any revenue. Our net losses were $147.0 million and $6.8 million for the years ended December 31, 2018 and 2017, respectively. As of December 31, 2018, we had an accumulated deficit of $153.9 million. Substantially all of our losses have resulted from expenses incurred in connection with our research and development programs and from general and administrative costs associated with our operations. All of our product candidates will require substantial additional development time and resources before we would be able to apply for or receive regulatory approvals and begin generating revenue from product sales. We expect to continue to incur losses for the foreseeable future, and we anticipate these losses will increase substantially as we continue our development of, seek regulatory approval for and potentially commercialize any of our product candidates and seek to identify, assess, acquire, in-license or develop additional product candidates.

To become and remain profitable, we must succeed in developing and eventually commercializing products that generate significant revenue. This will require us to be successful in a range of challenging activities, including completing clinical trials and preclinical studies of our product candidates, 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. In addition, we have not yet demonstrated an ability to successfully overcome many of the risks and uncertainties frequently encountered by companies in new and rapidly evolving fields, particularly in the biopharmaceutical industry. Because of the numerous risks and uncertainties associated with biopharmaceutical 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 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 will require substantial additional financing to achieve our goals, and a failure to obtain this necessary capital when needed on acceptable terms, or at all, could force us to delay, limit, reduce or terminate our product development programs, commercialization efforts or other operations.

The development of biopharmaceutical product candidates is capital-intensive. We expect our expenses to increase in connection with our ongoing activities, particularly as we conduct our ongoing and planned clinical trials of GB001, GB002 and GB004, continue research and development and initiate clinical trials of our other development programs and seek regulatory approval for our current product candidates and any future product candidates we may develop. In addition, as our product candidates progress through development and toward commercialization, we will need to make milestone payments to the licensors and other third parties from whom we have in-licensed or acquired our product candidates, including GB002 and GB004. Furthermore, if and to the extent we seek to acquire or in-license additional product candidates in the future, we may be required to make significant upfront payments, milestone payments, and/or licensing payments. If we obtain regulatory approval for any of our product candidates, we also expect to incur significant commercialization expenses related to product manufacturing, marketing, sales and distribution. Because the outcome of any clinical trial or preclinical study is highly uncertain, we cannot reasonably estimate the actual amounts necessary to successfully complete the development and commercialization of our product candidates. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. If we are unable to raise capital when needed or on attractive terms, we could be forced to delay, reduce or eliminate our research and development programs or any future commercialization efforts.

We believe that our existing cash, cash equivalents and marketable securities, including the proceeds from our initial public offering, or IPO, will enable us to fund our operations for at least the next 12 months from the date this annual report is filed with the SEC. In particular, we expect that these funds will allow us to complete our ongoing Phase 2b clinical trial for GB001, our planned Phase 1b clinical trial in PAH for GB002 and our planned Phase 1b clinical trial in UC for GB004. We have based these estimates on assumptions that may prove to be wrong, and we could use our capital resources sooner than we currently expect. Our operating plans and other demands on our cash resources may change as a result of many factors currently unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings or other capital sources, including potentially collaborations, licenses and other similar arrangements. 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. Attempting to secure additional financing may divert our management from our day-to-day activities, which may adversely affect our ability to develop our product candidates.

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

- the type, number, scope, progress, expansions, results, costs and timing of, our clinical trials and preclinical studies of our product candidates which we are pursuing or may choose to pursue in the future;
- the costs and timing of manufacturing for our product candidates, including commercial manufacturing if any product candidate is approved;
- the costs, timing and outcome of regulatory review of our product candidates;
- the costs of obtaining, maintaining and enforcing our patents and other intellectual property rights;
- our efforts to enhance operational systems and hire additional personnel to satisfy our obligations as a public company, including enhanced internal controls over financial reporting;
- the costs associated with hiring additional personnel and consultants as our clinical activities increase;
- the timing and amount of the milestone or other payments we must make to the licensors and other third parties from whom we have in-licensed our acquired our product candidates;

- the costs and timing of establishing or securing sales and marketing capabilities if any product candidate is approved;
- our ability to achieve sufficient market acceptance, coverage and adequate reimbursement from third-party payors and adequate market share and revenue for any approved products;
- the terms and timing of establishing and maintaining collaborations, licenses and other similar arrangements; and
- costs associated with any products or technologies that we may in-license or acquire.

Conducting clinical trials and preclinical studies 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, our product candidates, if approved, may not achieve commercial success. Our commercial revenues, if any, will be derived from sales of products that we do not expect to be commercially available for many years, if at all.

Accordingly, we will need to 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.

Raising additional capital may cause dilution to our stockholders, 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 equity offerings, debt financings or other capital sources, including potentially collaborations, licenses and other similar arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common stockholders. 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, making capital expenditures or declaring dividends.

If we raise funds through future collaborations, licenses and other similar arrangements, we may have to relinquish valuable rights to our future revenue streams, research programs or product candidates or grant licenses on terms that may not be favorable to us and/or that may reduce the value of our common stock.

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

We depend heavily on the success of GB001, GB002 and GB004, which are in either Phase 1 or Phase 2 clinical development. If we are unable to advance our product candidates in clinical development, obtain regulatory approval and ultimately commercialize our product candidates, or experience significant delays in doing so, our business will be materially harmed.

Our three clinical-stage product candidates are in Phase 1 or Phase 2 clinical development. We commenced a Phase 2b clinical trial of GB001 in moderate-to-severe eosinophilic asthma in October 2018.

GB002 is currently undergoing Phase 1 clinical studies in healthy volunteers, and we plan to commence a Phase 1b clinical trial in PAH in the first half of 2019 and a Phase 2/3 clinical trial in PAH in the second half of 2019. Our third clinical-stage product candidate, GB004, is currently undergoing a Phase 1 clinical trial in healthy volunteers, and we expect to initiate a Phase 1b clinical trial in UC in the first half of 2019. Our assumptions about why these product candidates are worthy of future development and potential approval in these, or any, indications are based on data primarily collected by other companies. We also have preclinical product candidates that will need to progress through IND-enabling studies prior to clinical development. None of our product candidates have advanced into a pivotal study for the indications for which we are studying. Our ability to generate product revenues, which we do not expect will occur for many years, if ever, will depend heavily on the successful development and eventual commercialization of our product candidates. The success of our product candidates will depend on several factors, including the following:

- successful enrollment in clinical trials and completion of clinical trials and preclinical studies with favorable results;
- acceptance of INDs by the FDA or similar regulatory filing by comparable foreign regulatory authorities for the conduct of clinical trials of GB1275 and our other preclinical product candidates and our proposed design of future clinical trials;
- demonstrating safety and efficacy to the satisfaction of applicable regulatory authorities;

- receipt of marketing approvals from applicable regulatory authorities, including new drug applications, or NDAs, from the FDA and maintaining such approvals;
- making arrangements with our third-party manufacturers for, or establishing, commercial manufacturing capabilities;
- establishing sales, marketing and distribution capabilities and launching commercial sales of our products, if and when approved, whether alone or in collaboration with others;
- establishment and maintenance of patent and trade secret protection or regulatory exclusivity for our product candidates;
- maintaining an acceptable safety profile of our products following approval; and
- maintaining and growing an organization of people who can develop our products and technology.

Certain of our product candidates are subject to regulation as combination products, which means that they are composed of both a drug product and device product. If marketed individually, each component would be subject to different regulatory pathways and reviewed by different centers within the FDA. Our product candidates that are considered to be drug-device combination products will require review and coordination by FDA's drug and device centers prior to approval, which may delay approval. Under FDA regulations, combination products are subject to current good manufacturing practice, or cGMP, requirements applicable to both drugs and devices, including the Quality System, or QS, regulations applicable to medical devices. Combination products are also subject to the Medical Device Directives and Standards in Europe. Problems associated with the device component of the combination product candidate may delay or prevent approval. If the manufacturer of the device products make modifications, or if we elect to change a device component or develop our own proprietary device component, we will need to perform validation testing and obtain FDA and other regulatory approval prior to using the modified device component. If the FDA or any other regulatory body fails to approve use of those modified devices or take significant enforcement action against the manufacturer, we would not be able to market or may have to suspend marketing our products in certain jurisdictions.

The success of our business, including our ability to finance our company and generate any revenue in the future, will primarily depend on the successful development, regulatory approval and commercialization of our product candidates, which may never occur. We have not yet succeeded and may not succeed in demonstrating efficacy and safety for any product candidates in clinical trials or in obtaining marketing approval thereafter. Given our early stage of development, it may be several years, if at all, before we have demonstrated the safety and efficacy of a treatment sufficient to warrant approval for commercialization. If we are unable to develop, or obtain regulatory approval for, or, if approved, successfully commercialize our product candidates, we may not be able to generate sufficient revenue to continue our business.

Clinical drug development involves a lengthy and expensive process with an uncertain outcome, and the results of preclinical studies and early clinical trials are not necessarily predictive of future results. In addition, our assumptions about why our product candidates are worthy of future development and potential approval are based on data primarily collected by other companies. Our product candidates may not have favorable results in later clinical trials, if any, or receive regulatory approval on a timely basis, if at all.

Clinical drug development is expensive and can take many years to complete, and its outcome is inherently uncertain. We cannot guarantee that any clinical trials will be conducted as planned or completed on schedule, if at all, and failure can occur at any time during the preclinical study or clinical trial process. Despite promising preclinical or clinical results, any product candidate can unexpectedly fail at any stage of preclinical or clinical development. The historical failure rate for product candidates in our industry is high.

The results from preclinical studies or clinical trials of a product candidate may not predict the results of later clinical trials of the product candidate, and interim results of a clinical trial are not necessarily indicative of final results. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy characteristics despite having progressed through preclinical studies and initial clinical trials. In particular, while two Phase 2 clinical trials of GB001 had been conducted prior to our acquisition of GB001, we do not know how GB001 will perform in future clinical trials, including as a result of any differences from targeting a population of more severe asthma subjects with elevated eosinophil counts, as well as other differences in our planned trial design. Further, GB001 did not meet its primary efficacy endpoint of improvement in FEV1 over 10 weeks in the first Phase 2 clinical trial conducted by Pulmagen Therapeutics (Asthma) Limited, or Pulmagen, and the second Phase 2 clinical trial conducted by Pulmagen and its partner, Teijin, was limited to only Japanese patients. While we have designed our ongoing Phase 2b trial in a manner intended to address what we believe to be the shortcomings of the first Pulmagen Phase 2 clinical trial, we cannot be certain that such failure was not due to GB001 itself or that the results of our ongoing Phase 2b trial will otherwise be successful in a broader patient population. It is not uncommon to observe results in clinical trials that are unexpected based on preclinical studies and early clinical trials, and many product candidates fail in clinical trials despite very promising early results. For example, our decision to advance GB002 as a potential treatment for PAH is based in part on the efficacy of imatinib (Gleevec), a tyrosine kinase inhibitor with known

activity against PDGF and marketed for oncology indications, observed by Novartis Pharmaceutical Corporation, or Novartis, in a Phase 3 clinical trial; however, we may not observe similar efficacy in our clinical trials of GB002. Moreover, this and any future preclinical and clinical data may be susceptible to varying interpretations and analyses. A number of companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in clinical development even after achieving promising results in earlier studies. Furthermore, we cannot assure you that our preclinical programs will be able to progress from candidate identification to Phase 1 clinical development.

In addition, Teijin, a third party over which we have no control, has the right to develop and commercialize GB001 in Japan. If serious adverse events or other problems occur during any clinical trials of GB001 conducted by Teijin, the FDA or other regulatory authorities may delay, limit or deny approval of GB001 or require us to conduct additional clinical trials as a condition to marketing approval, which would increase our costs. If we receive FDA approval for GB001 and a new and serious safety issue is identified in clinical trials conducted by Teijin, regulatory authorities may withdraw their approval of the product or otherwise restrict our ability to market and sell GB001. In addition, treating physicians may be less willing to prescribe our product due to concerns over such adverse events, which would limit our ability to commercialize GB001.

For the foregoing reasons, we cannot be certain that our ongoing and planned clinical trials and preclinical studies will be successful. Any safety concerns observed in any one of our clinical trials in our targeted indications could limit the prospects for regulatory approval of our product candidates in those and other indications, which could have a material adverse effect on our business, financial condition and results of operations.

Any difficulties or delays in the commencement or completion, or termination or suspension, of our current or planned clinical trials could result in increased costs to us, delay or limit our ability to generate revenue and adversely affect our commercial prospects.

Before obtaining marketing approval from regulatory authorities for the sale of our product candidates, we must conduct extensive clinical studies to demonstrate the safety and efficacy of the product candidates in humans. We are currently conducting a Phase 2b clinical trial of GB001 in moderate-to-severe eosinophilic asthma, and we plan to commence a Phase 1b clinical trial of GB002 in PAH patients in the first half of 2019, a Phase 2/3 clinical trial of GB002 in PAH in the second half of 2019, and a Phase 1b clinical trial of GB004 in UC patients in the first half of 2019, among other planned trials. In addition, before we can initiate clinical development for our preclinical product candidates, we must submit the results of preclinical studies to the FDA along with other information, including information about product candidate chemistry, manufacturing and controls and our proposed clinical trial protocol, as part of an IND application, and we may also be required to submit regulatory filings to foreign regulatory authorities to the extent we initiate clinical trials outside of the United States.

We do not know whether our planned trials will begin on time or be completed on schedule, if at all. The commencement and completion of clinical trials can be delayed for a number of reasons including delays related to:

- the FDA or comparable foreign regulatory authorities disagreeing as to the design or implementation of our clinical studies;
- obtaining regulatory authorizations to commence a trial or reaching a consensus with regulatory authorities on trial design;
- any failure or delay in reaching an agreement with contract research organizations, or CROs, and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- obtaining approval from one or more institutional review boards, or IRBs;
- IRBs refusing to approve, suspending or terminating the trial at an investigational site, precluding enrollment of additional subjects, or withdrawing their approval of the trial;
- changes to clinical trial protocol;
- clinical sites deviating from trial protocol or dropping out of a trial;
- manufacturing sufficient quantities of product candidate or obtaining sufficient quantities of combination therapies for use in clinical trials;
- subjects failing to enroll or remain in our trial at the rate we expect, or failing to return for post- treatment follow-up;

- subjects choosing an alternative treatment for the indication for which we are developing our product candidates, or participating in competing clinical trials;
- lack of adequate funding to continue the clinical trial;
- subjects experiencing severe or unexpected drug-related adverse effects;
- occurrence of serious adverse events in trials of the same class of agents conducted by other companies;
- selection of clinical endpoints that require prolonged periods of clinical observation or analysis of the resulting data;
- a facility manufacturing our product candidates or any of their components, including the device component of orally inhaled GB002, being ordered by the FDA or comparable foreign regulatory authorities to temporarily or permanently shut down due to violations of cGMP regulations or other applicable requirements, or infections or cross-contaminations of product candidates in the manufacturing process;
- any changes to our manufacturing process that may be necessary or desired;
- third-party clinical investigators losing the licenses or permits necessary to perform our clinical trials, not performing our clinical trials on our anticipated schedule or consistent with the clinical trial protocol, good clinical practices, or GCP, or other regulatory requirements; third-party contractors not performing data collection or analysis in a timely or accurate manner; or
- third-party contractors becoming debarred or suspended or otherwise penalized by the FDA or other government or regulatory authorities for violations of regulatory requirements, in which case we may need to find a substitute contractor, and we may not be able to use some or all of the data produced by such contractors in support of our marketing applications.

We could also encounter delays if a clinical trial is suspended or terminated by us, by the IRBs of the institutions in which such trials are being conducted, by a Data Safety Monitoring Board for such trial or by the FDA or comparable foreign regulatory authorities. Such authorities may impose such a suspension or termination due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or comparable foreign regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a drug, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial. In addition, changes in regulatory requirements and policies may occur, and we may need to amend clinical trial protocols to comply with these changes. Amendments may require us to resubmit our clinical trial protocols to IRBs for reexamination, which may impact the costs, timing or successful completion of a clinical trial.

Further, conducting clinical trials in foreign countries, as we may do for our product candidates, presents additional risks that may delay completion of our clinical trials. These risks include the failure of enrolled patients in foreign countries to adhere to clinical protocol as a result of differences in healthcare services or cultural customs, managing additional administrative burdens associated with foreign regulatory schemes, as well as political and economic risks relevant to such foreign countries.

Moreover, principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and receive compensation in connection with such services. Under certain circumstances, we may be required to report some of these relationships to the FDA or comparable foreign regulatory authorities. The FDA or comparable foreign regulatory authority may conclude that a financial relationship between us and a principal investigator has created a conflict of interest or otherwise affected interpretation of the study. The FDA or comparable foreign regulatory authority may therefore question the integrity of the data generated at the applicable clinical trial site and the utility of the clinical trial itself may be jeopardized. This could result in a delay in approval, or rejection, of our marketing applications by the FDA or comparable foreign regulatory authority, as the case may be, and may ultimately lead to the denial of marketing approval of one or more of our product candidates.

If we experience delays in the completion of, or termination of, any clinical trial of our product candidates, the commercial prospects of our product candidates will be harmed, and our ability to generate product revenues from any of these product candidates will be delayed. Moreover, any delays in completing our clinical trials will increase our costs, slow down our product candidate development and approval process and jeopardize our ability to commence product sales and generate revenues.

In addition, many of the factors that cause, or lead to, termination or suspension of, or a delay in the commencement or completion of, clinical trials may also ultimately lead to the denial of regulatory approval of a product candidate. We may make

formulation or manufacturing changes to our product candidates, in which case we may need to conduct additional preclinical studies to bridge our modified product candidates to earlier versions. Any delays to our clinical trials that occur as a result could shorten any period during which we may have the exclusive right to commercialize our product candidates and our competitors may be able to bring products to market before we do, and the commercial viability of our product candidates could be significantly reduced. Any of these occurrences may harm our business, financial condition and prospects significantly.

We may find it difficult to enroll patients in our clinical trials. If we encounter difficulties enrolling subjects in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected.

We may not be able to initiate or continue clinical trials for our product candidates if we are unable to identify and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or similar regulatory authorities outside the United States. Subject enrollment, a significant factor in the timing of clinical trials, is affected by many factors including the size and nature of the patient population, the proximity of patients to clinical sites, the eligibility and exclusion criteria for the trial, the design of the clinical trial, the risk that enrolled patients will not complete a clinical trial, our ability to recruit clinical trial investigators with the appropriate competencies and experience, competing clinical trials and clinicians' and patients' perceptions as to the potential advantages and risks of the product candidate being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating as well as any drugs under development. We will be required to identify and enroll a sufficient number of subjects for each of our clinical trials. Potential subjects for any planned clinical trials may not be adequately diagnosed or identified with the diseases which we are targeting or may not meet the entry criteria for such trials. For example, a limited number of patients are affected by PAH, which is our target indication for GB002. We also may encounter difficulties in identifying and enrolling subjects with a stage of disease appropriate for our planned clinical trials and monitoring such subjects adequately during and after treatment. We may not be able to initiate or continue clinical trials if we are unable to locate a sufficient number of eligible subjects to participate in the clinical trials required by the FDA or comparable foreign regulatory authorities. In addition, the process of finding and diagnosing subjects may prove costly.

The timing of our clinical trials depends, in part, on the speed at which we can recruit patients to participate in our trials, as well as completion of required follow-up periods. For certain of our product candidates, including GB002, the conditions which we currently plan to evaluate are orphan or rare diseases with limited patient pools from which to draw for clinical trials. The eligibility criteria of our clinical trials, once established, will further limit the pool of available trial participants. If patients are unwilling to participate in our trials for any reason, including the existence of concurrent clinical trials for similar patient populations, if they are unwilling to enroll in a clinical trial with a placebo-controlled design or the availability of approved therapies, or we otherwise have difficulty enrolling a sufficient number of patients, the timeline for recruiting subjects, conducting studies and obtaining regulatory approval of our product candidates may be delayed. Our inability to enroll a sufficient number of subjects for any of our future clinical trials would result in significant delays or may require us to abandon one or more clinical trials altogether. In addition, we expect to rely on CROs and clinical trial sites to ensure proper and timely conduct of our future clinical trials and, while we intend to enter into agreements governing their services, we will have limited influence over their actual performance.

We cannot assure you that our assumptions used in determining expected clinical trial timelines are correct or that we will not experience delays in enrollment, which would result in the delay of completion of such trials beyond our expected timelines.

Use of our product candidates could be associated with side effects, adverse events or other properties or safety risks, which could delay or preclude approval, cause us to suspend or discontinue clinical trials, abandon a product candidate, limit the commercial profile of an approved label or result in other significant negative consequences that could severely harm our business, prospects, results of operations and financial condition.

As is the case with pharmaceuticals generally, it is likely that there may be side effects and adverse events associated with our product candidates' use. Results of our clinical trials could reveal a high and unacceptable severity and prevalence of side effects or unexpected characteristics. Undesirable side effects caused by our product candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or comparable foreign regulatory authorities. The drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. Any of these occurrences may harm our business, financial condition and prospects significantly.

Moreover, if our product candidates are associated with undesirable side effects in clinical trials or have characteristics that are unexpected, we may elect to abandon their development or limit their development to more narrow uses or subpopulations in which the undesirable side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective, which may limit the commercial expectations for the product candidate if approved. We may also be required to modify our study plans based on findings in our ongoing clinical trials. GB001 was generally well tolerated with a treatment-emergent adverse event rate similar to placebo in completed Phase 2 clinical trials. In Phase 1 studies conducted by Pulmagen and Teijin, a single serious adverse event deemed by the investigator likely to be related to GB001 was observed in a Japanese patient who had received a 160mg

dose. The patient experienced intrahepatic cholestasis, which resolved after treatment discontinuation. We are also currently conducting Phase 1a SAD and MAD double-blind, placebo-controlled, randomized trials of orally inhaled GB002 in healthy adult volunteers, and no treatment related safety issues have been reported to date. However, further analysis may reveal adverse events inconsistent with the safety profile observed to date. Additionally, while we have not yet completed clinical trials for GB002 and have only completed a Phase 1 SAD study in healthy volunteers for GB004, it is likely that there may be side effects associated with their use. For example, in 2013, results from a Phase 3 clinical trial in PAH of imatinib (Gleevec) showed statistically significant improvement in its primary efficacy endpoint, but systemic toxicities were also observed. We cannot be certain that GB002 will not exhibit similar toxicities. Many compounds that initially showed promise in early-stage testing have later been found to cause side effects that prevented further development of the compound. In addition, regulatory authorities may draw different conclusions or require additional testing to confirm these determinations.

It is possible that as we test our product candidates in larger, longer and more extensive clinical trials, or as the use of these product candidates becomes more widespread if they receive regulatory approval, illnesses, injuries, discomforts and other adverse events that were observed in earlier trials, as well as conditions that did not occur or went undetected in previous trials, will be reported by subjects. If such side effects become known later in development or upon approval, if any, such findings may harm our business, financial condition and prospects significantly.

In addition, if one or more of our product candidates receives marketing approval, and we or others later identify undesirable side effects caused by such products, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw, suspend or limit approvals of such product;
- we may be required to recall a product or change the way such product is administered to patients;
- regulatory authorities may require additional warnings on the label, such as a “black box” warning or a contraindication;
- we may be required to implement a Risk Evaluation and Mitigation Strategy, or REMS, or create a medication guide outlining the risks of such side effects for distribution to patients;
- we may be required to change the way a product is distributed or administered, conduct additional clinical trials or change the labeling of a product or be required to conduct additional post-marketing studies or surveillance;
- we could be sued and held liable for harm caused to patients;
- sales of the product may decrease significantly or the product could become less competitive; and
- our reputation may suffer.

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

As an organization, we are in the process of completing our first Phase 1 clinical trials, have never completed later-stage clinical trials or submitted an NDA, and may be unable to do so for any of our product candidates.

We are early in our development efforts for our product candidates, and we will need to successfully complete later-stage and pivotal clinical trials in order to obtain FDA or comparable foreign regulatory approval to market GB001, GB002, GB004 or any future product candidates. Carrying out later-stage clinical trials and the submission of a successful NDA is a complicated process. As an organization, we are in the process of completing Phase 1 clinical trials for GB002 and GB004 and conducting a Phase 2b clinical trial for GB001. We have not yet conducted any clinical trials for our other product candidates. We have not previously conducted any later stage or pivotal clinical trials, have limited experience as a company in preparing, submitting and prosecuting regulatory filings and have not previously submitted an IND or an NDA or other comparable foreign regulatory submission for any product candidate. We also plan to conduct a number of clinical trials for multiple product candidates in parallel over the next several years, which may be a difficult process to manage with our limited resources and which may divert the attention of management. In addition, we have had limited interactions with the FDA and cannot be certain how many additional clinical trials of GB001, GB002, GB004 or any other product candidates will be required or how such trials should be designed. Consequently, we may be unable to successfully and efficiently execute and complete necessary clinical trials in a way that leads to regulatory submission and approval of any of our 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 submitting NDAs for and commercializing our product candidates.

Our product candidates are subject to extensive regulation and compliance, which is costly and time consuming, and such regulation may cause unanticipated delays or prevent the receipt of the required approvals to commercialize our product candidates.

The clinical development, manufacturing, labeling, storage, record-keeping, advertising, promotion, import, export, marketing and distribution of our product candidates are subject to extensive regulation by the FDA in the United States and by comparable foreign regulatory authorities in foreign markets. In the United States, we are not permitted to market our product candidates until we receive regulatory approval from the FDA. The process of obtaining regulatory approval is expensive, often takes many years following the commencement of clinical trials and can vary substantially based upon the type, complexity and novelty of the product candidates involved, as well as the target indications and patient population. Approval policies or regulations may change, and the FDA has substantial discretion in the drug approval process, including the ability to delay, limit or deny approval of a product candidate for many reasons. Despite the time and expense invested in clinical development of product candidates, regulatory approval is never guaranteed. We are not permitted to market any of our product candidates in the United States until we receive approval of an NDA from the FDA.

Prior to obtaining approval to commercialize a product candidate in the United States or abroad, we must demonstrate with substantial evidence from adequate and well-controlled clinical trials, and to the satisfaction of the FDA or comparable foreign regulatory authorities, that such product candidates are safe and effective for their intended uses. Results from nonclinical studies and clinical trials can be interpreted in different ways. Even if we believe the nonclinical or clinical data for our product candidates are promising, such data may not be sufficient to support approval by the FDA and comparable foreign regulatory authorities. The FDA or comparable foreign regulatory authorities, as the case may be, may also require us to conduct additional preclinical studies or clinical trials for our product candidates either prior to or post-approval, or may object to elements of our clinical development program.

The FDA or comparable foreign regulatory authorities can delay, limit or deny approval of a product candidate for many reasons, including:

- such authorities may disagree with the design or implementation of our clinical trials;
- negative or ambiguous results from our clinical trials or results may not meet the level of statistical significance required by the FDA or comparable foreign regulatory agencies for approval;
- serious and unexpected drug-related side effects may be experienced by participants in our clinical trials or by individuals using drugs similar to our product candidates;
- the population studied in the clinical trial may not be sufficiently broad or representative to assure safety in the full population for which we seek approval;
- such authorities may not accept clinical data from trials which are conducted at clinical facilities or in countries where the standard of care is potentially different from that of the United States;
- we may be unable to demonstrate that a product candidate’s clinical and other benefits outweigh its safety risks;
- such authorities may disagree with our interpretation of data from preclinical studies or clinical trials;
- such authorities may not agree that the data collected from clinical trials of our product candidates are acceptable or sufficient to support the submission of an NDA or other submission or to obtain regulatory approval in the United States or elsewhere, and such authorities may impose requirements for additional preclinical studies or clinical trials
- such authorities may disagree regarding the formulation, labeling and/or the specifications of our product candidates;
- approval may be granted only for indications that are significantly more limited than what we apply for and/or with other significant restrictions on distribution and use;
- such authorities may find deficiencies in the manufacturing processes or facilities of our third-party manufacturers with which we contract for clinical and commercial supplies; or the approval policies;
- regulations of such authorities may significantly change in a manner rendering our or any of our potential future collaborators’ clinical data insufficient for approval; or

- such authorities may not accept a submission due to, among other reasons, the content or formatting of the submission.

With respect to foreign markets, approval procedures vary among countries and, in addition to the foregoing risks, may involve additional product testing, administrative review periods and agreements with pricing authorities. In addition, events raising questions about the safety of certain marketed pharmaceuticals may result in increased cautiousness by the FDA and comparable foreign regulatory authorities in reviewing new drugs based on safety, efficacy or other regulatory considerations and may result in significant delays in obtaining regulatory approvals. Any delay in obtaining, or inability to obtain, applicable regulatory approvals would prevent us or any of our potential future collaborators from commercializing our product candidates.

Of the large number of drugs in development, only a small percentage successfully complete the FDA or foreign regulatory approval processes and are commercialized. The lengthy approval process as well as the unpredictability of future clinical trial results may result in our failing to obtain regulatory approval to market our product candidates, which would significantly harm our business, financial condition, results of operations and prospects.

Even if we eventually complete clinical trials and receive approval of an NDA or foreign marketing application for our product candidates, the FDA or comparable foreign regulatory authority may grant approval contingent on the performance of costly additional clinical trials, including Phase 4 clinical trials, and/or the implementation of a REMS, which may be required to ensure safe use of the drug after approval. The FDA or the comparable foreign regulatory authority also may approve a product candidate for a more limited indication or patient population than we originally requested, and the FDA or comparable foreign regulatory authority may not approve the labeling that we believe is necessary or desirable for the successful commercialization of a product. Any delay in obtaining, or inability to obtain, applicable regulatory approval would delay or prevent commercialization of that product candidate and would materially adversely impact our business and prospects.

Because we have multiple product candidates in our clinical pipeline and are considering a variety of target indications, we may expend our limited resources to pursue a particular product candidate and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we focus on specific product candidates, indications and development programs. We also plan to conduct several clinical trials for multiple product candidates in parallel over the next several years, which may make our decision as to which product candidates to focus on more difficult. As a result, we may forgo or delay pursuit of opportunities with other product candidates that could have had greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific indications may not yield any commercially viable products. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through future collaborations, licenses and other similar arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate.

Additionally, we may pursue additional in-licenses or acquisitions of development-stage assets or programs, which entails additional risk to us. Identifying, selecting and acquiring promising product candidates requires substantial technical, financial and human resources expertise. Efforts to do so may not result in the actual acquisition or license of a particular product candidate, potentially resulting in a diversion of our management's time and the expenditure of our resources with no resulting benefit. For example, if we are unable to identify programs that ultimately result in approved products, we may spend material amounts of our capital and other resources evaluating, acquiring and developing products that ultimately do not provide a return on our investment.

We may not be able to obtain or maintain orphan drug designations for certain of our product candidates, and we may be unable to maintain the benefits associated with orphan drug designation, including the potential for market exclusivity.

Regulatory authorities in some jurisdictions, including the United States and Europe, may designate drugs for relatively small patient populations as orphan drugs. Under the Orphan Drug Act of 1983, the FDA may designate a product as an orphan product if it is 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, or a patient population of greater than 200,000 individuals in the United States, but for which there is no reasonable expectation that the cost of developing the drug will be recovered from sales in the United States. In the European Union, the European Medicines Agency's, or the EMA's, Committee for Orphan Medicinal Products grants orphan drug designation to promote the development of products that are intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition affecting not more than five in 10,000 persons in the European Union. We have received orphan drug designation in the United States for GB002 for patients with PAH, and we may seek orphan drug designation in the European Union for GB002 for patients with PAH, as well as seek orphan drug designation for certain of our other product candidates. There can be no assurance that

the FDA or the EMA's Committee for Orphan Medicinal Products will grant orphan designation for any indication for which we apply, or that we will be able to maintain such designation.

In the United States, orphan designation entitles a party to financial incentives such as opportunities for grant funding toward clinical trial costs, tax advantages and user-fee waivers. In addition, if a product candidate that has orphan designation subsequently receives the first FDA approval for the disease for which it has such designation, the product is entitled to orphan drug exclusivity, which means that the FDA may not approve any other applications, including an NDA, to market the same drug for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity or where the manufacturer is unable to assure sufficient product quantity. The applicable exclusivity period is ten years in Europe, but such exclusivity period can be reduced to six years if a product no longer meets the criteria for orphan designation or if the product is sufficiently profitable so that market exclusivity is no longer justified.

Even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs can be approved for the same condition. Even after an orphan drug is approved, the FDA or comparable foreign regulatory authority can subsequently approve the same drug for the same condition if such regulatory authority concludes that the later drug is clinically superior if it is shown to be safer, more effective or makes a major contribution to patient care. Orphan drug designation neither shortens the development time or regulatory review time of a drug nor gives the drug any advantage in the regulatory review or approval process.

We are currently conducting, and may in the future conduct, certain of our clinical trials for our product candidates outside of the United States. However, the FDA and other foreign equivalents may not accept data from such trials, in which case our development plans will be delayed, which could materially harm our business.

We are currently conducting, and may in the future conduct one or more of our clinical trials for our product candidates outside the United States. Although the FDA may accept data from clinical trials conducted outside the United States, acceptance of this data is subject to certain conditions imposed by the FDA. For example, the FDA requires the clinical trial to have been conducted in accordance with GCPs, and the FDA must be able to validate the data from the clinical trial through an onsite inspection if it deems such inspection necessary. In addition, when studies are conducted only at sites outside of the United States, the FDA generally does not provide advance comment on the clinical protocols for the studies, and therefore there is an additional potential risk that the FDA could determine that the study design or protocol for a non-U.S. clinical trial was inadequate, which would likely require us to conduct additional clinical trials. There can be no assurance the FDA will accept data from clinical trials conducted outside of the United States. If the FDA does not accept data from our clinical trials of our product candidates, it would likely result in the need for additional clinical trials, which would be costly and time consuming and delay or permanently halt our development of our product candidates.

Conducting clinical trials outside the United States also exposes us to additional risks, including risks associated with:

- additional foreign regulatory requirements;
- foreign exchange fluctuations;
- compliance with foreign manufacturing, customs, shipment and storage requirements;
- cultural differences in medical practice and clinical research; and
- diminished protection of intellectual property in some countries.

Interim, topline and preliminary data 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 that could result in material changes in the final data.

From time to time, we may publicly disclose preliminary or topline or data from our clinical studies, which is based on a preliminary analysis of then-available data, and the results and related findings and conclusions are subject to change following a more comprehensive review of the data related to the particular study or trial. We also make assumptions, estimations, calculations and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data. As a result, the topline results that we report may differ from future results of the same studies, or different conclusions or considerations may qualify such results, once additional data have been received and fully evaluated. Topline data 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, topline data should be viewed with caution until the final data are available. From time to time, we may also

disclose interim data from our clinical studies. Interim data 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. Adverse differences between preliminary or interim data and final data could significantly harm our business prospects. For example, we commenced a Phase 2b clinical trial in moderate-to-severe eosinophilic asthma in October 2018 and expect to conduct an interim analysis in the first half of 2020. If the interim analysis is positive, we plan on initiating a Phase 3 clinical trial thereafter. However, if the final data from the Phase 2b clinical trial materially differs in an adverse manner from the interim analysis, we may have unnecessarily expended or committed substantial resources to the Phase 3 clinical trial, which costs we may never be able to recover.

Further, others, including regulatory agencies, may not accept or agree with our assumptions, estimates, calculations, conclusions or analyses or may interpret or weigh the importance of data differently, which could impact the value of the particular program, the approvability or commercialization of the particular product candidate or product and our company in general. In addition, the information we choose to publicly disclose regarding a particular study or clinical trial is based on what is typically extensive information, and others may not agree with what we determine is the material or otherwise appropriate information to include in our disclosure, and any information we determine not to disclose may ultimately be deemed significant with respect to future decisions, conclusions, views, activities or otherwise regarding a particular drug, drug candidate or our business. If the topline data that we report differ from actual results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and commercialize, our product candidates may be harmed, which could harm our business, results of operations, prospects or financial condition.

Risks Related to Our Reliance on Third Parties

We rely on third parties to conduct many of our preclinical studies and clinical trials. Any failure by a third party to conduct the clinical trials according to GCPs and other requirements and in a timely manner may delay or prevent our ability to seek or obtain regulatory approval for or commercialize our product candidates.

We are dependent on third parties to conduct our clinical trials and preclinical studies, including our ongoing clinical trials for GB001, GB002 and GB004 and preclinical studies for our other development programs. Specifically, we have used and relied on, and intend to continue to use and rely on, medical institutions, clinical investigators, CROs and consultants to conduct our clinical trials in accordance with our clinical protocols and regulatory requirements. These CROs, investigators and other third parties play a significant role in the conduct and timing of these trials and subsequent collection and analysis of data. While we have agreements governing the activities of our third-party contractors, we have limited influence over their actual performance. Nevertheless, we are responsible for ensuring that each of our clinical trials is conducted in accordance with the applicable protocol and legal, regulatory and scientific standards, and our reliance on the CROs and other third parties does not relieve us of our regulatory responsibilities. We and our CROs are required to comply with GCP requirements, which are regulations and guidelines enforced by the FDA and comparable foreign regulatory authorities for all of our product candidates in clinical development. Regulatory authorities enforce these GCPs through periodic inspections of trial sponsors, principal investigators and trial sites. If we or any of our CROs or trial sites fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable, and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. In addition, our clinical trials must be conducted with product produced under cGMP regulations. Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process.

There is no guarantee that any such CROs, investigators or other third parties will devote adequate time and resources to such trials or perform as contractually required. If any of these third parties fail to meet expected deadlines, adhere to our clinical protocols or meet regulatory requirements, or otherwise performs in a substandard manner, our clinical trials may be extended, delayed or terminated. In addition, many of the third parties with whom we contract may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other drug development activities that could harm our competitive position. In addition, principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and may receive cash or equity compensation in connection with such services. If these relationships and any related compensation result in perceived or actual conflicts of interest, or the FDA concludes that the financial relationship may have affected the interpretation of the study, the integrity of the data generated at the applicable clinical trial site may be questioned and the utility of the clinical trial itself may be jeopardized, which could result in the delay or rejection of any NDA we submit by the FDA. Any such delay or rejection could prevent us from commercializing our product candidates.

If any of our relationships with these third parties terminate, we may not be able to enter into arrangements with alternative third parties or do so on commercially reasonable terms. Switching or adding additional CROs, investigators and other third parties involves additional cost and requires management time and focus. In addition, there is a natural transition period when a new CRO commences work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines. Though we carefully manage our relationships with our CROs, investigators and other third parties, there can be no

assurance that we will not encounter challenges or delays in the future or that these delays or challenges will not have a material adverse impact on our business, financial condition and prospects.

We rely on third parties for the manufacture of our product candidates for clinical and preclinical development and expect to continue to do so for the foreseeable future. This reliance on third parties increases the risk that we will not have sufficient quantities of our product candidates or products or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

We do not own or operate manufacturing facilities and have no plans to build our own clinical or commercial scale manufacturing capabilities. We rely, and expect to continue to rely, on third parties for the manufacture of our product candidates and related raw materials for clinical and preclinical development, as well as for commercial manufacture if any of our product candidates receive marketing approval. The facilities used by third-party manufacturers to manufacture our product candidates must be approved by the FDA pursuant to inspections that will be conducted after we submit an NDA to the FDA. We do not control the manufacturing process of, and are completely dependent on, third-party manufacturers for compliance with cGMP requirements for manufacture of drug products. If these third-party manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or others, including requirements related to the manufacturing of high potency compounds, they will not be able to secure and/or maintain regulatory approval for their manufacturing facilities. In addition, we have no control over the ability of third-party manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved. 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, 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.

Our or a third party's failure to execute on our manufacturing requirements, to do so on commercially reasonable terms and comply with cGMP could adversely affect our business in a number of ways, including:

- an inability to initiate or continue clinical trials of GB001, GB002, GB004 or any future product candidates under development;
- delay in submitting regulatory applications, or receiving marketing approvals, for our product candidates;
- subjecting third-party manufacturing facilities or our manufacturing facilities to additional inspections by regulatory authorities;
- requirements to cease development or to recall batches of our product candidates; and
- in the event of approval to market and commercialize our product candidates, an inability to meet commercial demands for our product candidates or any other future product candidates.

In addition, we may be unable to establish any agreements with third-party manufacturers or to do so on acceptable terms. Even if we are able to establish agreements with third-party manufacturers, reliance on third-party manufacturers entails additional risks, including:

- failure of third-party manufacturers to comply with regulatory requirements and maintain quality assurance;
- breach of the manufacturing agreement by the third party;
- failure to manufacture our product according to our specifications;
- failure to manufacture our product according to our schedule or at all;
- misappropriation of our proprietary information, including our trade secrets and know-how; and
- termination or nonrenewal of the agreement by the third party at a time that is costly or inconvenient for us.

Our product candidates and any 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, and any related remedial measures may be costly or time consuming to implement. We do not currently have arrangements in place for redundant supply or a second source for all required raw materials used in the manufacture of our product candidates. If our current third-party manufacturers cannot perform as agreed, we may be required to replace such manufacturers and we may be unable to replace them on a timely basis or at all.

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

Our reliance on third parties requires us to share our trade secrets, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.

Because we currently rely on other third parties to manufacture our product candidates and to perform quality testing, we must, at times, share our proprietary technology and confidential information, including trade secrets, with them. We seek to protect our proprietary technology, in part, by entering into confidentiality agreements, consulting agreements or other similar agreements with our advisors, employees and consultants prior to beginning research or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information. Despite the contractual provisions employed when working with third parties, the need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are intentionally or inadvertently incorporated into the technology of others or are disclosed or used in violation of these agreements. Given that our proprietary position is based, in part, on our know-how and trade secrets and despite our efforts to protect our trade secrets, a competitor’s discovery of our proprietary technology and confidential information or other unauthorized use or disclosure would impair our competitive position and may have a material adverse effect on our business, financial condition, results of operations and prospects.

We may seek to enter into collaborations, licenses and other similar arrangements and may not be successful in doing so, and even if we are, we may not realize the benefits of such relationships.

We may seek to enter into collaborations, joint ventures, licenses and other similar arrangements for the development or commercialization of our product candidates, due to capital costs required to develop or commercialize the product candidate or manufacturing constraints. We may not be successful in our efforts to establish such collaborations for our product candidates because our research and development pipeline may be insufficient, our product candidates may be deemed to be at too early of a stage of development for collaborative effort or third parties may not view our product candidates as having the requisite potential to demonstrate safety and efficacy or significant commercial opportunity. In addition, we face significant competition in seeking appropriate strategic partners, and the negotiation process can be time consuming and complex. Further, any future collaboration agreements may restrict us from entering into additional agreements with potential collaborators. We cannot be certain that, following a strategic transaction or license, we will achieve an economic benefit that justifies such transaction.

Even if we are successful in our efforts to establish such collaborations, the terms that we agree upon may not be favorable to us, and we may not be able to maintain such collaborations if, for example, development or approval of a product candidate is delayed, the safety of a product candidate is questioned or sales of an approved product candidate are unsatisfactory.

In addition, any potential future collaborations may be terminable by our strategic partners, and we may not be able to adequately protect our rights under these agreements. Furthermore, strategic partners may negotiate for certain rights to control decisions regarding the development and commercialization of our product candidates, if approved, and may not conduct those activities in the same manner as we do. Any termination of collaborations we enter into in the future, or any delay in entering into collaborations related to our product candidates, could delay the development and commercialization of our product candidates and reduce their competitiveness if they reach the market, which could have a material adverse effect on our business, financial condition and results of operations.

Risks Related to Commercialization of Our Product Candidates

Even if we receive regulatory approval for any product candidate, we will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense. Additionally, our product candidates, if approved, could be subject to labeling and other restrictions on marketing or withdrawal from the market, and we may be subject to penalties if we fail to comply with regulatory requirements or if we experience unanticipated problems with our product candidates, when and if any of them are approved.

Following potential approval of any our product candidates, the FDA may impose significant restrictions on a product’s indicated uses or marketing or impose ongoing requirements for potentially costly and time consuming post-approval studies, post-

market surveillance or clinical trials to monitor the safety and efficacy of the product. The FDA may also require a REMS as a condition of approval of our product candidates, which could include requirements for a medication guide, physician communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. In addition, if the FDA or a comparable foreign regulatory authority approves our product candidates, the manufacturing processes, labeling, packaging, distribution, adverse event reporting, storage, advertising, promotion, import, export and recordkeeping for our products will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with cGMPs and GCP requirements for any clinical trials that we conduct post-approval. Later discovery of previously unknown problems with our products, including adverse events of unanticipated severity or frequency, or with our third-party manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

- restrictions on the marketing or manufacturing of our products, withdrawal of the product from the market or voluntary or mandatory product recalls;
- restrictions on product distribution or use, or requirements to conduct post-marketing studies or clinical trials;
- fines, restitutions, disgorgement of profits or revenues, warning letters, untitled letters or holds on clinical trials;
- refusal by the FDA to approve pending applications or supplements to approved applications filed by us or suspension or revocation of approvals;
- product seizure or detention, or refusal to permit the import or export of our products; and
- injunctions or the imposition of civil or criminal penalties.

The occurrence of any event or penalty described above may inhibit our ability to commercialize our product candidates and generate revenue and could require us to expend significant time and resources in response and could generate negative publicity.

In addition, if any of our product candidates is approved, our product labeling, advertising and promotion will be subject to regulatory requirements and continuing regulatory review. The FDA strictly regulates the promotional claims that may be made about drug products. In particular, a product may not be promoted for uses that are not approved by the FDA as reflected in the product's approved labeling. If we receive marketing approval for a product candidate, physicians may nevertheless prescribe it to their patients in a manner that is inconsistent with the approved label. If we are found to have promoted such off-label uses, we may become subject to significant liability. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant sanctions. The federal government has levied large civil and criminal fines against companies for alleged improper promotion and has enjoined several companies from engaging in off-label promotion. The FDA has also requested that companies enter into consent decrees or permanent injunctions under which specified promotional conduct is changed or curtailed.

The FDA's and other regulatory authorities' policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability.

We also cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. For example, certain policies of the current U.S. administration may impact our business and industry. Namely, the current U.S. 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. It is difficult to predict how these executive actions, including the Executive Orders, 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 the FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted.

If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability, which would adversely affect our business, prospects, financial condition and results of operations.

The commercial success of our product candidates will depend upon the degree of market acceptance of such product candidates by physicians, patients, healthcare payors and others in the medical community.

Our product candidates may not be commercially successful. Even if any of our product candidates receive regulatory approval, they may not gain market acceptance among physicians, patients, healthcare payors or the medical community. The commercial success of any of our current or future product candidates will depend significantly on the broad adoption and use of the resulting product by physicians and patients for approved indications. The degree of market acceptance of our products will depend on a number of factors, including:

- demonstration of clinical efficacy and safety compared to other more-established products;
- the indications for which our product candidates are approved;
- the limitation of our targeted patient population and other limitations or warnings contained in any FDA-approved labeling;
- acceptance of a new drug for the relevant indication by healthcare providers and their patients;
- the pricing and cost-effectiveness of our products, as well as the cost of treatment with our products in relation to alternative treatments and therapies;
- our ability to obtain and maintain sufficient third-party coverage and adequate reimbursement from government healthcare programs, including Medicare and Medicaid, private health insurers and other third-party payors;
- the willingness of patients to pay all, or a portion of, out-of-pocket costs associated with our products in the absence of sufficient third-party coverage and adequate reimbursement;
- any restrictions on the use of our products, and the prevalence and severity of any adverse effects;
- potential product liability claims;
- the timing of market introduction of our products as well as competitive drugs;
- the effectiveness of our or any of our potential future collaborators' sales and marketing strategies; and
- unfavorable publicity relating to the product.

If any product candidate is approved but does not achieve an adequate level of acceptance by physicians, hospitals, healthcare payors or patients, we may not generate sufficient revenue from that product and may not become or remain profitable. Our efforts to educate the medical community and third-party payors regarding the benefits of our products may require significant resources and may never be successful.

The FDA and other regulatory agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses. If we are found or alleged to have improperly promoted off-label uses, we may become subject to significant liability.

The FDA and other regulatory agencies strictly regulate the promotional claims that may be made about prescription products, as our product candidates would be, if approved. In particular, a product may not be promoted for uses that are not approved by the FDA or such other regulatory agencies as reflected in the product's approved labeling. If we are found to have promoted such off-label uses, we may become subject to significant liability. The federal government has levied large civil and criminal fines against companies for alleged improper promotion and has enjoined several companies from engaging in off-label promotion. The FDA has also requested that companies enter into consent decrees or permanent injunctions under which specified promotional conduct is changed or curtailed. If we cannot successfully manage the promotion of our product candidates, if approved, we could become subject to significant liability, which would materially adversely affect our business and financial condition.

The successful commercialization of our product candidates, if approved, will depend in part on the extent to which governmental authorities and health insurers establish coverage, adequate reimbursement levels and favorable pricing policies. Failure to obtain or maintain coverage and adequate reimbursement for our products could limit our ability to market those products and decrease our ability to generate revenue.

The availability of coverage and the adequacy of reimbursement by governmental healthcare programs such as Medicare and Medicaid, private health insurers and other third-party payors are essential for most patients to be able to afford prescription medications such as our product candidates, if approved. Our ability to achieve coverage and acceptable levels of reimbursement for our products by third-party payors will have an effect on our ability to successfully commercialize those products. Even if we obtain coverage for a given product by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. We cannot be sure that coverage and reimbursement in the United States, the European Union or elsewhere will be available for any product that we may develop, and any reimbursement that may become available may be decreased or eliminated in the future.

Third-party payors increasingly are challenging prices charged for pharmaceutical products and services, and many third-party payors may refuse to provide coverage and reimbursement for particular drugs when an equivalent generic drug or a less expensive therapy is available. It is possible that a third-party payor may consider our products as substitutable and only offer to reimburse patients for the less expensive product. Even if we are successful in demonstrating improved efficacy or improved convenience of administration with our products, pricing of existing drugs may limit the amount we will be able to charge for our products. These payors may deny or revoke the reimbursement status of a given product or establish prices for new or existing marketed products at levels that are too low to enable us to realize an appropriate return on our investment in product development. If reimbursement is not available or is available only at limited levels, we may not be able to successfully commercialize our products and may not be able to obtain a satisfactory financial return on products that we may develop.

There is significant uncertainty related to third-party payor coverage and reimbursement of newly approved products. In the United States, third-party payors, including private and governmental payors, such as the Medicare and Medicaid programs, play an important role in determining the extent to which new drugs will be covered. Some third-party payors may require pre-approval of coverage for new or innovative devices or drug therapies before they will reimburse healthcare providers who use such therapies. It is difficult to predict at this time what third-party payors will decide with respect to the coverage and reimbursement for our products.

Obtaining and maintaining reimbursement status is time consuming, costly and uncertain. The Medicare and Medicaid programs increasingly are used as models for how private payors and other governmental payors develop their coverage and reimbursement policies for drugs. However, no uniform policy for coverage and reimbursement for products exists among third-party payors in the United States. Therefore, coverage and reimbursement for products can differ significantly from payor to payor. As a result, the coverage determination process is often a time consuming and costly process that will require us to provide scientific and clinical support for the use of our products to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance. Furthermore, rules and regulations regarding reimbursement change frequently, in some cases at short notice, and we believe that changes in these rules and regulations are likely.

Outside the United States, international operations are generally subject to extensive governmental price controls and other market regulations, and we believe the increasing emphasis on cost-containment initiatives in Europe and other countries has and will continue to put pressure on the pricing and usage of our products. In many countries, the prices of medical products are subject to varying price control mechanisms as part of national health systems. Other countries allow companies to fix their own prices for medical products but monitor and control company profits. Additional foreign price controls or other changes in pricing regulation could restrict the amount that we are able to charge for our products. Accordingly, in markets outside the United States, the reimbursement for our products may be reduced compared with the United States and may be insufficient to generate commercially reasonable revenue and profits.

Moreover, increasing efforts by governmental and third-party payors in the United States and abroad to cap or reduce healthcare costs may cause such organizations to limit both coverage and the level of reimbursement for newly approved products and, as a result, they may not cover or provide adequate payment for our products. We expect to experience pricing pressures in connection with the sale of any of our products due to the trend toward managed healthcare, the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs and surgical procedures and other treatments, has become very intense. As a result, increasingly high barriers are being erected to the entry of new products.

We face significant competition, and if our competitors develop technologies or product candidates more rapidly than we do or their technologies are more effective, our ability to develop and successfully commercialize products may be adversely affected.

The biotechnology and pharmaceutical industries are characterized by rapidly advancing technologies, intense competition and a strong emphasis on proprietary and novel products and product candidates. Our competitors have developed, are developing or

may develop products, product candidates and processes competitive with our product candidates. Any product candidates that we successfully develop and commercialize will compete with existing therapies and new therapies that may become available in the future. We believe that a significant number of products are currently under development, and may become commercially available in the future, for the treatment of conditions for which we may attempt to develop product candidates. In particular, there is intense competition in the fields of immunology, inflammation and oncology. Our competitors include larger and better funded pharmaceutical, biopharmaceutical, biotechnological and therapeutics companies. Moreover, we may also compete with universities and other research institutions who may be active in the indications we are targeting and could be in direct competition with us. We also compete with these organizations to recruit management, scientists and clinical development personnel, which could negatively affect our level of expertise and our ability to execute our business plan. We will also face competition in establishing clinical trial sites, enrolling subjects for clinical trials and in identifying and in-licensing new product candidates. Smaller or early stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies.

We expect to face competition from existing products and products in development for each of our product candidates. GB001, currently in development for the treatment of moderate-to-severe eosinophilic asthma, is an oral DP2 antagonist, a class of medicines with no currently-approved agents. However, other DP2 antagonists are currently in development by Novartis, Chiesi Farmaceutici S.p.A., Merck & Company, Inc., Sunshine Lake Pharma Co., Ltd and Idorsia Pharmaceuticals Ltd. If approved, we will also face branded competition from existing biologics, including Xolair (omalizumab/anti-immunoglobulin E, or anti-IgE, marketed by Genentech and Novartis) and Dupixent (dupilumab/anti-IL-4/IL-13, marketed by Regeneron Pharmaceuticals, Inc., or Regeneron, and Sanofi S.A.), for moderate to severe asthma, and Nucala (mepolizumab/anti-IL-5, marketed by GlaxoSmithKline), Cinqair (reslizumab/anti-IL-5, marketed by Teva Pharmaceutical Industries Ltd.), and Fasenra (benralizumab/anti-IL-5, marketed by AstraZeneca Pharmaceuticals LP) for severe eosinophilic asthma. We will also face competition from generic montelukast, which is utilized in mild to moderate patients. Several other agents are advancing in clinical trials for asthma, including tezepelumab (anti-TSLP; Amgen/AstraZeneca), REGN3500 (anti-IL-33; Regeneron), etokimab (anti-IL-33; AnaptysBio, Inc.), GSK3772847 (anti-IL-33; GlaxoSmithKline) and RG6149 (anti-ST2; Genentech).

Additionally, while there are no agents currently approved beyond corticosteroids for CRSwNP, several agents approved for or in development for asthma are currently in development for CRSwNP, including Xolair, Fasenra, Dupixent and etokimab.

Xolair is currently FDA-approved for the treatment of CSU. We may also face competition from agents currently in development for the indication, including ligelizumab (anti-IgE; Novartis) and AK002 (anti-Siglec-8; Allakos Inc.).

GB002 is a potentially first-in-class PDGF receptor kinase inhibitor initially targeted for intermediate and high-risk PAH patients. While potentially unique in our class, we expect our primary competition in this patient set will include prostanoids, available in oral form as Orenitram (United Therapeutics Corporation, or United Therapeutics) and Uptravi (Janssen Pharmaceuticals, Inc., or Janssen), by inhalation as Tyvaso (United Therapeutics), and by infusion as Remodulin (United Therapeutics). While we may face some competition from products used in class I and II patients, such as the oral PDE5 inhibitors, including Revatio (Pfizer Inc.) and Adcirca (United Therapeutics); the sGC stimulator Adempas (Bayer AG); and oral ERAs, including Tracleer (Janssen), Letairis (Gilead Sciences, Inc.) and Opsumit (Janssen), we believe that, if approved, GB002 would be used along with these background therapies. PAH is also an active indication for investigational drugs, and we may face competition in the future from ralinepag (Arena Pharmaceuticals, Inc. and United Therapeutics), sotatercept (Acceleron Pharma, Inc.) and bardoxolone methyl (Reata Pharmaceuticals, Inc.).

GB004 is potentially a first-in-class HIF-1a stabilizer with the potential to restore epithelial barrier function in patients with IBD. Patients with mild to moderate UC can initially be maintained in remission using a 5-aminosalucylic acid, or 5-ASA. For those patients who do not respond to 5-ASA, or those with more severe and/or extensive disease at diagnosis, corticosteroids are generally the next line of treatment. Patients who have become nonresponsive or intolerant to corticosteroids may move to azathioprine and 6-mercaptopurine. The treatment of severe patients is dominated by anti-TNF biologics, though the paradigm is shifting because of the approval of agents in other classes, such as anti-integrin, IL-12 / IL-23, and Janus kinase, or JAK, inhibitors. Further disruption is expected in the coming years through the introduction of oral S1P1 inhibitors and additional oral JAK inhibitors.

Many of our competitors have significantly greater financial, technical, manufacturing, marketing, sales and supply resources or experience than we do. If we successfully obtain approval for any product candidate, we will face competition based on many different factors, including the safety and effectiveness of our products, the ease with which our products can be administered and the extent to which patients accept relatively new routes of administration, the timing and scope of regulatory approvals for these products, the availability and cost of manufacturing, marketing and sales capabilities, price, reimbursement coverage and patent position. Competing products could present superior treatment alternatives, including by being more effective, safer, more convenient, less expensive or marketed and sold more effectively than any products we may develop. Competitive products may make any products we develop obsolete or noncompetitive before we recover the expense of developing and commercializing our product candidates. If we are unable to compete effectively, our opportunity to generate revenue from the sale of our products we may develop, if approved, could be adversely affected.

If the market opportunities for our products are smaller than we believe they are, our revenue may be adversely affected, and our business may suffer.

The precise incidence and prevalence for all the conditions we aim to address with our product candidates are unknown. 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 our product candidates, 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, and may prove to be incorrect. Further, new trials may change the estimated incidence or prevalence of these diseases. The total addressable market across all of our product candidates will ultimately depend upon, among other things, the diagnosis criteria included in the final label for each of our product candidates approved for sale for these indications, the availability of alternative treatments and the safety, convenience, cost and efficacy of our product candidates relative to such alternative treatments, acceptance by the medical community and patient access, drug pricing and reimbursement. The number of patients in the United States and other major markets and elsewhere may turn out to be lower than expected, patients may not be otherwise amenable to treatment with our products or new patients may become increasingly difficult to identify or gain access to, all of which would adversely affect our results of operations and our business. Further, even if we obtain significant market share for our product candidates, because some of our potential target populations are very small, we may never achieve profitability despite obtaining such significant market share.

We currently have no marketing and sales organization and have no experience as a company in commercializing products, and we may have to invest significant resources to develop these capabilities. If we are unable to establish marketing and sales capabilities or enter into agreements with third parties to market and sell our products, we may not be able to generate product revenue.

We have no internal sales, marketing or distribution capabilities, nor have we commercialized a product. If any of our product candidates ultimately receives regulatory approval, we must build a marketing and sales organization with technical expertise and supporting distribution capabilities to commercialize each such product in major markets, which will be expensive and time consuming, or collaborate with third parties that have direct sales forces and established distribution systems, either to augment our own sales force and distribution systems or in lieu of our own sales force and distribution systems. We have no prior experience as a company in the marketing, sale and distribution of biopharmaceutical products and there are significant risks involved in building and managing a sales organization, including our ability to hire, retain and incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel and effectively manage a geographically dispersed sales and marketing team. Any failure or delay in the development of our internal sales, marketing and distribution capabilities would adversely impact the commercialization of these products. We may not be able to enter into collaborations or hire consultants or external service providers to assist us in sales, marketing and distribution functions on acceptable financial terms, or at all. In addition, our product revenues and our profitability, if any, may be lower if we rely on third parties for these functions than if we were to market, sell and distribute any products that we develop ourselves. 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 are not successful in commercializing our products, either on our own or through arrangements with one or more third parties, we may not be able to generate any future product revenue and we would incur significant additional losses.

Our future growth may depend, in part, on our ability to operate in foreign markets, where we would be subject to additional regulatory burdens and other risks and uncertainties.

Our future growth may depend, in part, on our ability to develop and commercialize our product candidates in foreign markets. We are not permitted to market or promote any of our product candidates before we receive regulatory approval from applicable regulatory authorities in foreign markets, and we may never receive such regulatory approvals for any of our product candidates. To obtain separate regulatory approval in many other countries we must comply with numerous and varying regulatory requirements regarding safety and efficacy and governing, among other things, clinical trials, commercial sales, pricing and distribution of our product candidates. If we obtain regulatory approval of our product candidates and ultimately commercialize our products in foreign markets, we would be subject to additional risks and uncertainties, including:

- different regulatory requirements for approval of drugs in foreign countries;
- reduced protection for intellectual property rights;
- the existence of additional third-party patent rights of potential relevance to our business;
- unexpected changes in tariffs, trade barriers and regulatory requirements;
- economic weakness, including inflation, or political instability in particular foreign economies and markets; compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;

- foreign currency fluctuations, which could result in increased operating expenses and reduced revenues, and other obligations incident to doing business in another country;
- foreign reimbursement, pricing and insurance regimes;
- workforce uncertainty in countries where labor unrest is common;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad; and
- business interruptions resulting from geopolitical actions, including war and terrorism, or natural disasters including earthquakes, typhoons, floods and fires.

Risks Related to Our Business Operations and Industry

Our results of operations may fluctuate significantly, which makes our future results of operations difficult to predict and could cause our results of operations to fall below expectations or any guidance we may provide.

Our quarterly and annual results of operations may fluctuate significantly, which makes it difficult for us to predict our future results of operations. These fluctuations may occur due to a variety of factors, many of which are outside of our control, including, but not limited to:

- the timing and cost of, and level of investment in, research, development, regulatory approval and commercialization activities relating to our product candidates, which may change from time to time;
- coverage and reimbursement policies with respect to our product candidates, if approved, and potential future drugs that compete with our products;
- the cost of manufacturing our product candidates, which may vary depending on the quantity of production and the terms of our agreements with third-party manufacturers;
- the timing and amount of the milestone or other payments we must make to the licensors and other third parties from whom we have in-licensed our acquired our product candidates, including payments due upon a change in control of our subsidiaries;
- expenditures that we may incur to acquire, develop or commercialize additional product candidates and technologies;
- the level of demand for any approved products, which may vary significantly;
- future accounting pronouncements or changes in our accounting policies; and
- the timing and success or failure of preclinical studies or clinical trials for our product candidates or competing product candidates, or any other change in the competitive landscape of our industry, including consolidation among our competitors or partners.

The cumulative effects of these factors could result in large fluctuations and unpredictability in our quarterly and annual results of operations. As a result, comparing our results of operations on a period-to-period basis may not be meaningful. Investors should not rely on our past results as an indication of our future performance.

This variability and unpredictability could also result in our failing to meet the expectations of industry or financial analysts or investors for any period. If our revenue or results of operations fall below the expectations of analysts or investors or below any forecasts we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met any previously publicly stated revenue or earnings guidance we may provide.

We are dependent on the services of our management and other clinical and scientific personnel, and if we are not able to retain these individuals or recruit additional management or clinical and scientific personnel, our business will suffer.

Our success depends in part on our continued ability to attract, retain and motivate highly qualified management, clinical and scientific personnel. We are highly dependent upon our senior management, particularly our Chief Executive Officer and our Executive Chairman, as well as our senior scientists and other members of our senior management team. The loss of services of any of these individuals could delay or prevent the successful development of our product pipeline, initiation or completion of our planned

clinical trials or the commercialization of our product candidates. Although we have executed employment agreements or offer letters with each member of our senior management team, these agreements are terminable at will with or without notice and, therefore, we may not be able to retain their services as expected. We do not currently maintain "key person" life insurance on the lives of our executives or any of our employees, except for our Chief Executive Officer and Executive Chairman. This lack of insurance means that we may not have adequate compensation for the loss of the services of these individuals.

We will need to expand and effectively manage our managerial, operational, financial and other resources in order to successfully pursue our clinical development and commercialization efforts. We may not be successful in maintaining our unique company culture and continuing to attract or retain qualified management and scientific and clinical personnel in the future due to the intense competition for qualified personnel among pharmaceutical, biotechnology and other businesses, particularly in the San Diego area. Our industry has experienced a high rate of turnover of management personnel in recent years. If we are not able to attract, integrate, retain and motivate necessary personnel to accomplish our business objectives, we may experience constraints that will significantly impede the achievement of our development objectives, our ability to raise additional capital and our ability to implement our business strategy.

We have recently substantially increased the size of our organization, and we may encounter difficulties in managing our growth and expanding our operations successfully.

We have substantially increased our organization from 11 employees in January 2018 to 118 full-time employees and 1 part-time employee as of February 28, 2019. As we continue development and pursue the potential commercialization of our product candidates, as well as function as a public company, we will need to continue to expand our financial, development, regulatory, manufacturing, marketing and sales capabilities or contract with third parties to provide these capabilities for us. As our operations expand, we expect that we will need to manage additional relationships with various strategic partners, suppliers and other third parties. Our future financial performance and our ability to develop and commercialize our product candidates and to compete effectively will depend, in part, on our ability to manage our recent substantial growth and any future growth effectively.

We are subject to various foreign, federal, and state healthcare and privacy laws and regulations, and our failure to comply with these laws and regulations could harm our results of operations and financial condition.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors and customers expose us to broadly applicable foreign, federal and state fraud and abuse and other healthcare and privacy laws and regulations. These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute any products for which we obtain marketing approval. Such laws include:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, offering, receiving or providing any remuneration (including any kickback, bribe or certain rebates), directly or indirectly, overtly or covertly, in cash or in kind, in return for, either the referral of an individual or the purchase, lease, or order, or arranging for or recommending the purchase, lease, or order of any good, facility, item or service, for which payment may be made, in whole or in part, under a federal healthcare program such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the federal Anti- Kickback Statute or specific intent to violate it in order to have committed a violation. In addition, the government may assert that a claim including items or 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 false claims and civil monetary penalties laws, including the civil False Claims Act, which prohibits, among other things, individuals or entities from knowingly presenting, or causing to be presented, to the federal government, claims for payment or approval that are false or fraudulent, knowingly making, using or causing to be made or used, a false record or statement material to a false or fraudulent claim, or from knowingly making or causing to be made a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;

- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which imposes criminal and civil liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, or 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, healthcare benefits, items or services. Similar to the federal Anti-Kickback Statute, 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;

- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, and their implementing regulations, also impose obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information without appropriate authorization by covered entities subject to the rule, such as health plans, healthcare clearinghouses and certain healthcare providers as well as their business associates that perform certain services for or on their behalf involving the use or disclosure of individually identifiable health information;

- the federal Physician Payments Sunshine Act, which requires certain manufacturers of 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 and Medicaid Services, or CMS, information related to payments and other "transfers of value" made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, as well as ownership and investment interests held by the physicians described above and their immediate family members; and

- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to our business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by non- governmental third-party payors, including private insurers, or by the patients themselves; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws and regulations that require drug manufacturers to file reports relating to pricing and marketing information or which require tracking gifts and other remuneration and items of value provided to physicians, other healthcare providers and entities; state and local laws that require the registration of pharmaceutical sales representatives; state and foreign laws governing 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; state and foreign governments that have enacted or proposed requirements regarding the collection, distribution, use, security, and storage of personally identifiable information and other data relating to individuals (including the EU General Data Protection Regulation 2016/679, or GDPR, and the California Consumer Protection Act, or CCPA), and federal and state consumer protection laws are being applied to enforce regulations related to the online collection, use, and dissemination of data, thus complicating compliance efforts.

As of May 25, 2018, the GDPR replaced the Data Protection Directive with respect to the processing of personal data in the European Union. The GDPR imposes many requirements for controllers and processors of personal data, including, for example, higher standards for obtaining consent from individuals to process their personal data, more robust disclosures to individuals and a strengthened individual data rights regime, shortened timelines for data breach notifications, limitations on retention and secondary use of information, increased requirements pertaining to health data and pseudonymised (i.e., key-coded) data and additional obligations when we contract third-party processors in connection with the processing of the personal data. The GDPR allows EU member states to make additional laws and regulations further limiting the processing of genetic, biometric or health data. Failure to comply with the requirements of GDPR and the applicable national data protection laws of the EU member states may result in fines of up to €20,000,000 or up to 4% of the total worldwide annual turnover of the preceding financial year, whichever is higher, and other administrative penalties.

Ensuring that our internal operations and business arrangements with third parties comply with applicable healthcare laws and regulations could involve substantial costs. It is possible that governmental authorities will conclude that our business practices, including our consulting and advisory board arrangements with physicians and other healthcare providers, some of whom received stock options as compensation for services provided, do not comply with current or future statutes, regulations, agency guidance or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of the laws described above or any other governmental laws and regulations that may apply to us, we may be subject to significant penalties, including civil, criminal and administrative penalties, damages, fines, exclusion from U.S. government funded healthcare programs, such as Medicare and Medicaid, or similar programs in other countries or jurisdictions, disgorgement, individual imprisonment, contractual damages, reputational harm, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, diminished profits and the curtailment or restructuring of our operations. Further, defending against any such actions can be costly, time consuming and may require significant financial and personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired. If any of the physicians or other providers or entities with whom we expect to do business are found to not be in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusion from government funded healthcare programs and imprisonment. If any of the above occur, it could adversely affect our ability to operate our business and our results of operations.

Recently enacted legislation, future legislation and healthcare reform measures may increase the difficulty and cost for us to obtain marketing approval for and commercialize our product candidates and may affect the prices we may set.

In the United States and some foreign jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes to the healthcare system, including cost-containment measures that may reduce or limit coverage and reimbursement for newly approved drugs and affect our ability to profitably sell any product candidates for which we obtain

marketing approval. In particular, there have been and continue to be a number of initiatives at the U.S. federal and state levels that seek to reduce healthcare costs and improve the quality of healthcare.

For example, in March 2010, the ACA was enacted in the United States. Among the provisions of the ACA of importance to our potential product candidates, the ACA: establishes an annual, nondeductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents; extends manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations; expands eligibility criteria for Medicaid programs; expands the entities eligible for discounts under the Public Health program; increases the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program; creates a new Medicare Part D coverage gap discount program; establishes a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in and conduct comparative clinical effectiveness research, along with funding for such research; and establishes a Center for Medicare Innovation at CMS to test innovative payment and service delivery models to lower Medicare and Medicaid spending.

At this time, we are unsure of the full impact that the ACA will have on our business. There have been judicial and political challenges to certain aspects of the ACA. For example, since January 2017, President Trump has signed two executive orders and other directives designed to delay, circumvent, or loosen certain requirements of the ACA. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the ACA. While Congress has not passed comprehensive repeal legislation, two bills affecting the implementation of certain taxes under the ACA have been signed into law. The Tax Cuts and Jobs Act of 2017, or Tax Act, includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate." On January 22, 2018, President Trump signed a continuing resolution on appropriations for fiscal year 2018 that delayed the implementation of certain Affordable Care Act-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. The Bipartisan Budget Act of 2018, or the BBA, among other things, amends the ACA, effective January 1, 2019, to close the coverage gap in most Medicare drug plans, commonly referred to as the "donut hole," by increasing from 50 percent to 70 percent the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D. In July 2018, CMS published a final rule permitting further collections and payments to and from certain ACA qualified health plans and health insurance issuers under the ACA risk adjustment program in response to the outcome of federal district court litigation regarding the method CMS uses to determine this risk adjustment. On December 14, 2018, a U.S. District Court Judge in the Northern District of Texas, or Texas District Court Judge, ruled that the individual mandate is a critical and inseverable feature of the ACA, and therefore, because it was repealed as part of the Tax Act, the remaining provisions of the ACA are invalid as well. While the Texas District Court Judge, as well as the Trump Administration and CMS, have stated that the ruling will have no immediate effect, it is unclear how this decision, subsequent appeals, and other efforts to repeal and replace the ACA will impact the ACA and our business.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. On August 2, 2011, the Budget Control Act of 2011 was signed into law, which, among other things, resulted in reductions to Medicare payments to providers of 2% per fiscal year, which went into effect on April 1, 2013 and, due to subsequent legislative amendments to the statute, including the BBA, will remain in effect through 2027 unless additional Congressional action is taken. On January 2, 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, reduced Medicare payments to several providers, including hospitals, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Further, there has been heightened governmental scrutiny in the United States of pharmaceutical pricing practices in light of the rising cost of prescription drugs. Such scrutiny has resulted in several recent congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for products.

We expect that the ACA, new laws and 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. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability or commercialize our product candidates, if approved.

At the federal level, the Trump administration's budget proposal for fiscal year 2019 contains further drug price control measures that could be enacted during the 2019 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. Additionally, the Trump administration

released a “Blueprint” to lower drug prices through proposals to increase 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 U.S. Department of Health and Human Services has begun the process of soliciting feedback on some of these measures and, at the same time, is implementing others under its existing authority. Although some of these, and other, proposals will require authorization through additional legislation to become effective, Congress and the Trump administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs.

At the state level, legislatures have increasingly passed legislation and implemented 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. Legally mandated price controls on payment amounts by third-party payors or other restrictions could harm our business, results of operations, financial condition and prospects. 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. This could reduce the ultimate demand for our product candidates, if approved, or put pressure on our product pricing, which could negatively affect our business, results of operations, financial condition and prospects.

Additionally, on May 30, 2018, the Trickett Wendler, Frank Mongiello, Jordan McLinn, and Matthew Bellina Right to Try Act of 2017, or Right to Try Act, was signed into law. The law, among other things, provides a federal framework for certain patients with life-threatening diseases or conditions to access certain investigational new drug products that have completed a Phase 1 clinical trial. Under certain circumstances, eligible patients can seek treatment without enrolling in clinical trials and without obtaining FDA approval under the FDA expanded access program. There is no obligation for a drug manufacturer to make its drug products available to eligible patients as a result of the Right to Try Act.

We and any of our third-party manufacturers or suppliers may use potent chemical agents and hazardous materials, and any claims relating to improper handling, storage or disposal of these materials could be time consuming or costly.

We and any of our third-party manufacturers or suppliers will use biological materials, potent chemical agents and may use hazardous materials, including chemicals and biological agents and compounds that could be dangerous to human health and safety of the environment. Our operations and the operations of our third-party manufacturers and suppliers also produce hazardous waste products. Federal, state and local laws and regulations govern the use, generation, manufacture, storage, handling and disposal of these materials and wastes. Compliance with applicable environmental laws and regulations may be expensive, and current or future environmental laws and regulations may impair our product development efforts. In addition, we cannot eliminate the risk of accidental injury or contamination from these materials or wastes. We do not carry specific biological or hazardous waste insurance coverage, and our property, casualty and general liability insurance policies specifically exclude coverage for damages and fines arising from biological or hazardous waste exposure or contamination. In the event of contamination or injury, we could be held liable for damages or be penalized with fines in an amount exceeding our resources, and our clinical trials or regulatory approvals could be suspended.

Although we maintain workers’ compensation insurance for certain costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials or other work-related injuries, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for toxic tort claims that may be asserted against us in connection with our storage or disposal of biologic, 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, which have tended to become more stringent over time. These current or future laws and regulations may impair our research, development or production efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions or liabilities, which could materially adversely affect our business, financial condition, results of operations and prospects.

If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of our products.

We face an inherent risk of product liability as a result of the clinical trials of our product candidates and will face an even greater risk if we commercialize our product candidates. For example, we may be sued if our product candidates allegedly cause injury or are found to be otherwise unsuitable during product testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product candidate, negligence, strict liability and a breach of warranties. Claims may be brought against us by clinical trial participants, patients or others using, administering or selling products that may be approved in the future. Claims could also be asserted under state consumer protection acts.

If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit or cease the commercialization of our products. Even a successful defense would require significant financial and management resources. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for our products;
- injury to our reputation and significant negative media attention;
- withdrawal of clinical trial participants;
- costs to defend the related litigation;
- a diversion of management's time and our resources;
- substantial monetary awards to trial participants or patients;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- significant negative financial impact;
- the inability to commercialize our product candidates; and
- a decline in our stock price.

We currently hold approximately $10 million in product liability insurance coverage in the aggregate. We may need to increase our insurance coverage as we expand our clinical trials or if we commence commercialization of our product candidates. Insurance coverage is increasingly expensive. Our inability to obtain and retain sufficient product liability insurance at an acceptable cost to protect against potential product liability claims could prevent or inhibit the commercialization of our product candidates. Although we maintain such insurance, any claim that may be brought against us could result in a court judgment or settlement in an amount that is not covered, in whole or in part, by our insurance or that is in excess of the limits of our insurance coverage. Our insurance policies will also have various exclusions, and we may be subject to a product liability claim for which we have no coverage. We may have to pay any amounts awarded by a court or negotiated in a settlement that exceed our coverage limitations or that are not covered by our insurance, and we may not have, or be able to obtain, sufficient capital to pay such amounts.

We and any of our potential future collaborators will be required to report to regulatory authorities if any of our approved products cause or contribute to adverse medical events, and any failure to do so would result in sanctions that would materially harm our business.

If we and any of our potential future collaborators are successful in commercializing our products, the FDA and foreign regulatory authorities would require that we and any of our potential future collaborators report certain information about adverse medical events if those products may have caused or contributed to those adverse events. The timing of our obligation to report would be triggered by the date we become aware of the adverse event as well as the nature of the event. We and any of our potential future collaborators or CROs may fail to report adverse events within the prescribed timeframe. If we or any of our potential future collaborators or CROs fail to comply with such reporting obligations, the FDA or a foreign regulatory authority could take action, including criminal prosecution, the imposition of civil monetary penalties, seizure of our products or delay in approval or clearance of future products.

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

The United States federal and various state and foreign governments have adopted or proposed requirements regarding the collection, distribution, use, security, and storage of personally identifiable information and other data relating to individuals, and federal and state consumer protection laws are being applied to enforce regulations related to the online collection, use, and dissemination of data. Despite the implementation of security measures, our internal computer systems and those of our current and any future CROs and other contractors, consultants and collaborators are vulnerable to damage from computer viruses, cybersecurity threats, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. If such an event were to occur and cause interruptions in our operations or result in the unauthorized disclosure of or access to personally identifiable information or individually identifiable health information (violating certain privacy laws such as GDPR), 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 similar disruptions. Some of the federal, state and foreign government requirements include obligations of companies to notify individuals of security breaches involving particular personally identifiable information, which could result from breaches experienced by us or by our vendors, contractors, or organizations with which we have formed strategic relationships. Even though we may have contractual protections with such vendors, contractors, or other organizations, notifications and follow-up actions related to a security breach could impact our reputation, cause us to incur significant costs, including legal expenses, harm customer confidence, hurt our expansion into new markets, cause us to incur remediation costs, or cause us to lose existing customers. 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. We also rely on third parties to manufacture our product candidates, and similar events relating to their computer systems could also have a material adverse effect on our business. 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, the further development and commercialization of our product candidates could be delayed, and we could be subject to significant fines, penalties or liabilities for any noncompliance to certain privacy and security laws.

Business disruptions could seriously harm our future revenue and financial condition and increase our costs and expenses.

Our operations could be subject to earthquakes, power shortages, telecommunications failures, water shortages, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics and other natural or manmade disasters or business interruptions, for which we are predominantly self-insured. We rely on third- party manufacturers to produce our product candidates. Our ability to obtain clinical supplies of our product candidates could be disrupted if the operations of these suppliers were affected by a man-made or natural disaster or other business interruption. In addition, our corporate headquarters is located in San Diego, California near major earthquake faults and fire zones, and the ultimate impact on us of being located near major earthquake faults and fire zones and being consolidated in a certain geographical area is unknown. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses.

Our employees and independent contractors, including principal investigators, CROs, consultants and vendors, may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements.

We are exposed to the risk that our employees and independent contractors, including principal investigators, CROs, consultants and vendors may engage in misconduct or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or disclosure of unauthorized activities to us that violate: (1) the laws and regulations of the FDA and other similar regulatory requirements, including those laws that require the reporting of true, complete and accurate information to such authorities, (2) manufacturing standards, including cGMP requirements, (3) federal and state data privacy, security, fraud and abuse and other healthcare laws and regulations in the United States and abroad or (4) laws that require the true, complete and accurate reporting of financial information or data. Activities subject to these laws also involve the improper use or misrepresentation of information obtained in the course of clinical trials, the creation of fraudulent data in our preclinical studies or clinical trials, or illegal misappropriation of drug product, which could result in regulatory sanctions and cause serious harm to our reputation. It is not always possible to identify and deter misconduct by employees and other third parties, 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 or regulations. In addition, we are subject to the risk that a person or government could allege such fraud or other misconduct, even if none occurred. 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 financial results, including, without limitation, the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgements, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, individual imprisonment, contractual damages, reputational harm, diminished profits and future earnings, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

We are subject to U.S. and certain foreign export and import controls, sanctions, embargoes, anti-corruption laws and anti-money laundering laws and regulations. Compliance with these legal standards could impair our ability to compete in domestic and international markets. We could face criminal liability and other serious consequences for violations, which could harm our business.

We are subject to export control and import laws and regulations, including the U.S. Export Administration Regulations, U.S. Customs regulations, and various economic and trade sanctions regulations administered by the U.S. Treasury Department’s Office of Foreign Assets Controls, and anti-corruption and anti-money laundering laws and regulations, including the U.S. Foreign Corrupt Practices Act of 1977, as amended, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, the USA PATRIOT Act, and other state and national anti-bribery and anti-money laundering laws in the countries in which we conduct activities. Anti-corruption laws are interpreted broadly and prohibit companies and their employees, agents, clinical research

organizations, contractors and other collaborators and partners from authorizing, promising, offering, providing, soliciting or receiving, directly or indirectly, improper payments or anything else of value to recipients in the public or private sector. We may engage third parties for clinical trials outside of the United States, to sell our products abroad once we enter a commercialization phase, and/or to obtain necessary permits, licenses, patent registrations and other regulatory approvals. We have direct or indirect interactions with officials and employees of government agencies or government-affiliated hospitals, universities and other organizations. We can be held liable for the corrupt or other illegal activities of our employees, agents, clinical research organizations, contractors and other collaborators and partners, even if we do not explicitly authorize or have actual knowledge of such activities. Any violations of the laws and regulations described above may result in substantial civil and criminal fines and penalties, imprisonment, the loss of export or import privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm and other consequences.

We may engage in strategic transactions that could impact our liquidity, increase our expenses and present significant distractions to our management.

From time to time, we may consider strategic transactions, such as acquisitions of companies, asset purchases and out-licensing or in-licensing of intellectual property, products or technologies, similar to our approach in in-licensing and acquiring our current product candidates. Any future transactions could increase our near and long-term expenditures, result in potentially dilutive issuances of our equity securities, including our common stock, or the incurrence of debt, contingent liabilities, amortization expenses or acquired in process research and development expenses, any of which could affect our financial condition, liquidity and results of operations. Additional potential transactions that we may consider in the future include a variety of business arrangements, including spin-offs, strategic partnerships, joint ventures, restructurings, divestitures, business combinations and investments. Future acquisitions may also require us to obtain additional financing, which may not be available on favorable terms or at all. These transactions may never be successful and may require significant time and attention of management. In addition, the integration of any business that we may acquire in the future may disrupt our existing business and may be a complex, risky and costly endeavor for which we may never realize the full benefits of the acquisition. Accordingly, although there can be no assurance that we will undertake or successfully complete any additional transactions of the nature described above, any additional transactions that we do complete could have a material adverse effect on our business, results of operations, financial condition and prospects.

Risks Related to Our Intellectual Property

Our success depends on our ability to protect our intellectual property and our proprietary technologies.

Our commercial success depends in part on our ability to obtain and maintain patent protection and trade secret protection for our product candidates, proprietary technologies and their uses as well as our ability to operate without infringing upon the proprietary rights of others. If we are unable to protect our intellectual property rights or if our intellectual property rights are inadequate for our technology or our product candidates, our competitive position could be harmed. We generally seek to protect our proprietary position by filing patent applications in the United States and abroad related to our product candidates, proprietary technologies and their uses that are important to our business. Our patent applications cannot be enforced against third parties practicing the technology claimed in such applications unless, and until, patents issue from such applications, and then only to the extent the issued claims cover the technology. There can be no assurance that our patent applications will result in patents being issued or that issued patents will afford sufficient protection against competitors with similar technology, nor can there be any assurance that the patents if issued will not be infringed, designed around or invalidated by third parties. Even issued patents may later be found invalid or unenforceable or may be modified or revoked in proceedings instituted by third parties before various patent offices or in courts. The degree of future protection for our proprietary rights is uncertain. Only limited protection may be available and may not adequately protect our rights or permit us to gain or keep any competitive advantage. These uncertainties and/or limitations in our ability to properly protect the intellectual property rights relating to our product candidates could have a material adverse effect on our financial condition and results of operations.

Although we own issued patents in the United States and foreign countries, we cannot be certain that the claims in our other U.S. pending patent applications, corresponding international patent applications and patent applications in certain foreign countries will be considered patentable by the United States Patent and Trademark Office, or USPTO, courts in the United States or by the patent offices and courts in foreign countries, nor can we be certain that the claims in our issued patents will not be found invalid or unenforceable if challenged.

The patent application process is subject to numerous risks and uncertainties, and there can be no assurance that we or any of our potential future collaborators will be successful in protecting our product candidates by obtaining and defending patents. These risks and uncertainties include the following:

- the USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent process, the noncompliance with which can result in abandonment or lapse of a patent or patent application, and partial or complete loss of patent rights in the relevant jurisdiction;
- patent applications may not result in any patents being issued;
- patents may be challenged, invalidated, modified, revoked, circumvented, found to be unenforceable or otherwise may not provide any competitive advantage;
- our competitors, many of whom have substantially greater resources than we do and many of whom have made significant investments in competing technologies, may seek or may have already obtained patents that will limit, interfere with or block our ability to make, use and sell our product candidates;
- there may be significant pressure on the U.S. government and international governmental bodies to limit the scope of patent protection both inside and outside the United States for disease treatments that prove successful, as a matter of public policy regarding worldwide health concerns; and
- countries other than the United States may have patent laws less favorable to patentees than those upheld by U.S. courts, allowing foreign competitors a better opportunity to create, develop and market competing products.

The patent prosecution process is also expensive and time consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner or in all jurisdictions where protection may be commercially advantageous. 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 do not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents, directed to technology that we license from third parties. We may also require the cooperation of our licensor in order to enforce the licensed patent rights, and such cooperation may not be provided. Therefore, these patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. We cannot be certain that patent prosecution and maintenance activities by our licensors have been or will be conducted in compliance with applicable laws and regulations, which may affect the validity and enforceability of such patents or any patents that may issue from such applications. If they fail to do so, this could cause us to lose rights in any applicable intellectual property that we in-license, and as a result our ability to develop and commercialize products or product candidates may be adversely affected and we may be unable to prevent competitors from making, using and selling competing products.

In addition, although we enter into non-disclosure and confidentiality agreements with parties who have access to patentable aspects of our research and development output, such as our employees, outside scientific collaborators, CROs, third-party manufacturers, consultants, advisors and other third parties, any of these parties may breach such agreements and disclose such output before a patent application is filed, thereby jeopardizing our ability to seek patent protection.

If we fail to comply with our obligations in the agreements under which we license intellectual property rights from third parties, including our GB002 and GB004, or otherwise experience disruptions to our business relationships with our licensors, we could lose license rights that are important to our business. Additionally, several of our license agreements include sublicenses from a third party, including for GB002 and GB004, and we must rely on the direct licensor's compliance with its obligations under its original license agreement.

We are a party to a number of license agreements under which we are granted rights to intellectual property that are important to our business and we may enter into additional license agreements in the future. For example, in October 2017, we entered into an exclusive license agreement with Pulmokine, Inc. to obtain an exclusive license to certain intellectual property rights to develop and commercialize GB002. In June 2018, we entered into an exclusive license agreement with Aerpio Pharmaceuticals, Inc., or Aerpio, to obtain an exclusive license to certain intellectual property rights to develop, manufacture and commercialize GB004.

These and our other existing license agreements impose, and we expect that any future license agreements where we in-license intellectual property, will impose on us, various development, regulatory and/or commercial diligence obligations, payment of milestones and/or royalties and other obligations. If we fail to comply with our obligations under these agreements, or we are subject to bankruptcy-related proceedings, the licensor may have the right to terminate the license, in which event we would not be able to market products covered by the license. Additionally, several of our existing license agreements include sublicenses from a third party

who is not the original licensor of the intellectual property at issue, including for GB002 and GB004. Under these agreements, we must rely on our direct licensor to comply with its obligations under the primary license agreements under which such licensor obtained rights in the applicable intellectual property, where we may have no relationship with the original licensor of such rights. If our licensors fail to comply with their obligations under these upstream license agreements, the original third-party licensor may have the right to terminate the original license, which may terminate our sublicense. If this were to occur, we would no longer have rights to the applicable intellectual property unless we are able to secure our own direct license with the owner of the relevant rights, which we may not be able to do on reasonable terms, or at all, which may impact our ability to continue to develop and commercialize our product candidates incorporating the relevant intellectual property.

We may need to obtain licenses from third parties to advance our research or allow commercialization of our product candidates, and we cannot provide any assurances that third-party patents do not exist which might be enforced against our product candidates in the absence of such a license. We may fail to obtain any of these licenses on commercially reasonable terms, if at all. 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. In that event, we may be required to expend significant time and resources to develop or license replacement technology. If we are unable to do so, 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, with respect to our sales, an obligation on our part to pay royalties and/or other forms of compensation. Licensing of intellectual property is of critical importance to our business and involves complex legal, business and scientific issues. Disputes may arise between us and our licensors regarding intellectual property subject to a license agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- whether and the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- our right to sublicense patents and other rights to third parties;
- our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our product candidates, and what activities satisfy those diligence obligations;
- our right to transfer or assign the license; and
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on acceptable terms, we may not be able to successfully develop and commercialize the affected product candidates, which would have a material adverse effect on our business.

In addition, certain of our agreements may limit or delay our ability to consummate certain transactions, may impact the value of those transactions, or may limit our ability to pursue certain activities. For example, if we choose to sublicense or assign to any third parties our rights under our existing license agreements with Aerpio or Pulmokine with respect to any licensed product, we may be required to pay to Pulmokine or Aerpio, as applicable, a specified percentage of all revenue to be received in connection with such transaction.

If the scope of any patent protection we obtain is not sufficiently broad, or if we lose any of our patent protection, our ability to prevent our competitors from commercializing similar or identical product candidates would be adversely affected.

The patent position of biopharmaceutical companies generally is highly uncertain, involves complex legal and factual questions, and has been the subject of much litigation in recent years. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued which protect our product candidates or which effectively prevent others from commercializing competitive product candidates.

Moreover, 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 patent applications we own currently or in the future issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors or other third parties from competing with us, or otherwise provide us with any competitive advantage. Any patents that we own may be challenged or circumvented by third parties or may be narrowed or invalidated as a result of challenges by third parties. Consequently, we do not know whether our product candidates will be protectable or remain protected by valid and enforceable patents. Our competitors or other third parties may be able to circumvent our patents by developing similar or alternative technologies or products in a non-infringing manner which could materially adversely affect our business, financial condition, results of operations and prospects.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our patents may not cover our product candidates or may be challenged in the courts or patent offices in the United States and abroad. We may be subject to a third party pre-issuance submission of prior art to the USPTO, or become involved in opposition, derivation, revocation, reexamination, post-grant review, or PGR, and inter partes review, or IPR, or other similar proceedings in the USPTO or foreign patent offices challenging our patent rights. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to the validity question, for example, we cannot be certain that there is no invalidating prior art, of which we or our predecessors and the patent examiner were unaware during prosecution. There is no assurance that all potentially relevant prior art relating to our patents and patent applications or those of our licensors has been found. There is also no assurance that there is not prior art of which we, our predecessors or licensors are aware, but which we do not believe affects the validity or enforceability of a claim in our patents and patent applications or those of our licensors, which may, nonetheless, ultimately be found to affect the validity or enforceability of a claim. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate or render unenforceable, our patent rights, allow third parties to commercialize our product candidates and compete directly with us, without payment to us. Such loss of patent rights, loss of exclusivity or in patent claims being narrowed, invalidated or held unenforceable 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 product candidates. Such proceedings also may result in substantial cost and require significant time from our scientists and management, even if the eventual outcome is favorable to us. In addition, 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.

The patent protection and patent prosecution for some of our product candidates may be dependent on third parties.

We or our licensors may fail to identify patentable aspects of inventions made in the course of development and commercialization activities before it is too late to obtain patent protection on them. Therefore, we may miss potential opportunities to strengthen our patent position. It is possible that defects of form in the preparation or filing of our patents or patent applications may exist, or may arise in the future, for example with respect to proper priority claims, inventorship, claim scope, or requests for patent term adjustments. If we or our licensors, whether current or future, fail to establish, maintain or protect such patents and other intellectual property rights, such rights may be reduced or eliminated. If our licensors are not fully cooperative or disagree with us as to the prosecution, maintenance or enforcement of any patent rights, such patent rights could be compromised. If there are material defects in the form, preparation, prosecution, or enforcement of our patents or patent applications, such patents may be invalid and/or unenforceable, and such applications may never result in valid, enforceable patents. Any of these outcomes could impair our ability to prevent competition from third parties, which may have an adverse impact on our business.

As a licensee of third parties, we rely on third parties to file and prosecute patent applications and maintain patents and otherwise protect the licensed intellectual property under some of our license agreements. We have not had and do not have primary control over these activities for certain of our patents or patent applications and other intellectual property rights. We cannot be certain that such activities by third parties have been or will be conducted in compliance with applicable laws and regulations or will result in valid and enforceable patents or other intellectual property rights. Pursuant to the terms of the license agreements with some of our licensors, the licensors may have the right to control enforcement of our licensed patents or defense of any claims asserting the invalidity of these patents and even if we are permitted to pursue such enforcement or defense, we will require the cooperation of our licensors. We cannot be certain that our licensors will allocate sufficient resources or prioritize their or our enforcement of such patents or defense of such claims to protect our interests in the licensed patents. Even if we are not a party to these legal actions, an adverse outcome could harm our business because it might prevent us from continuing to license intellectual property that we may need to operate our business. If any of our licensors or any of our future licensors or future collaborators fail to appropriately prosecute and maintain patent protection for patents covering any of our product candidates, our ability to develop and commercialize those product candidates may be adversely affected and we may not be able to prevent competitors from making, using and selling competing products.

In addition, even where we have the right to control patent prosecution of patents and patent applications we have acquired or licensed from third parties, we may still be adversely affected or prejudiced by actions or inactions of our predecessors or licensors and their counsel that took place prior to us assuming control over patent prosecution.

Our technology acquired or licensed from various third parties may be subject to retained rights. Our predecessors or licensors often retain certain rights under their agreements with us, including the right to use the underlying technology for noncommercial academic and research use, to publish general scientific findings from research related to the technology, and to make customary scientific and scholarly disclosures of information relating to the technology. It is difficult to monitor whether our predecessors or licensors limit their use of the technology to these uses, and we could incur substantial expenses to enforce our rights to our licensed technology in the event of misuse.

If we are limited in our ability to utilize acquired or licensed technologies, or if we lose our rights to critical in-licensed technology, we may be unable to successfully develop, out-license, market and sell our products, which could prevent or delay new product introductions. Our business strategy depends on the successful development of licensed and acquired technologies into commercial products. Therefore, any limitations on our ability to utilize these technologies may impair our ability to develop, out-license or market and sell our product candidate.

Some of our intellectual property has been discovered through government-funded programs and thus may be subject to federal regulations such as "march-in" rights, certain reporting requirements and a preference for U.S.-based companies. Compliance with such regulations may limit our exclusive rights, and limit our ability to contract with non-U.S. manufacturers.

Some of the intellectual property rights we have acquired or licensed or may acquire or license in the future may have been generated through the use of U.S. government funding and may therefore be subject to certain federal regulations. For example, some of the research and development work on GB002 was funded by government research grants. As a result, the U.S. government may have certain rights to intellectual property embodied in our product candidates pursuant to the Bayh-Dole Act of 1980, or Bayh-Dole Act. These U.S. government rights include a non-exclusive, non-transferable, irrevocable worldwide license to use inventions for any governmental purpose. In addition, the U.S. government has the right, under certain limited circumstances, to require us to grant exclusive, partially exclusive, or non-exclusive licenses to any of these inventions to a third party if it determines that: (i) adequate steps have not been taken to commercialize the invention; (ii) government action is necessary to meet public health or safety needs; or (iii) government action is necessary to meet requirements for public use under federal regulations (also referred to as "march-in rights"). The U.S. government also has the right to take title to these inventions if the grant recipient fails to disclose the invention to the government or fails to file an application to register the intellectual property within specified time limits. Intellectual property generated under a government funded program is also subject to certain reporting requirements, compliance with which may require us to expend substantial resources. In addition, the U.S. government requires that any products embodying any of these inventions or produced through the use of any of these inventions be manufactured substantially in the United States. This preference for U.S. industry may be waived by the federal agency that provided the funding if the owner or assignee of the intellectual property can show that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible. This preference for U.S. industry may limit our ability to contract with non-U.S. product manufacturers for products covered by such intellectual property. To the extent any of our future intellectual property is also generated through the use of U.S. government funding, the provisions of the Bayh-Dole Act may similarly apply.

Intellectual property rights do not necessarily address all potential threats to our competitive advantage.

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 develop products that are similar to our product candidates but that are not covered by the claims of the patents that we own or license;
- we or our licensors or predecessors might not have been the first to make the inventions covered by the issued patents or patent application that we own or license;
- we or our licensors or predecessors might not have been the first to file patent applications covering certain of our inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights;
- it is possible that our pending patent applications will not lead to issued patents;
- issued patents that we own or license may be held invalid or unenforceable, 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 may not develop additional proprietary technologies that are patentable; and
- the patents of others may have an adverse effect on our business.

Should any of these events occur, it could significantly harm our business, results of operations and prospects.

Our commercial success depends significantly on our ability to operate without infringing the patents and other proprietary rights of third parties. Claims by third parties that we infringe their proprietary rights may result in liability for damages or prevent or delay our developmental and commercialization efforts.

Our commercial success depends in part on avoiding infringement of the patents and proprietary rights of third parties. However, our research, development and commercialization activities may be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. Other entities may have or obtain patents or proprietary rights that could limit our ability to make, use, sell, offer for sale or import our product candidates and products that may be approved in the future, or impair our competitive position. There is a substantial amount of litigation, both within and outside the United States, involving patent and other intellectual property rights in the biopharmaceutical industry, including patent infringement lawsuits, oppositions, reexaminations, IPR proceedings and PGR proceedings before the USPTO and/or foreign patent offices. Numerous third-party U.S. and foreign issued patents and pending patent applications exist in the fields in which we are developing product candidates. There may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our product candidates.

As the biopharmaceutical industry expands and more patents are issued, the risk increases that our product candidates may be subject to claims of infringement of the patent rights of third parties. Because patent applications are maintained as confidential for a certain period of time, until the relevant application is published we may be unaware of third-party patents that may be infringed by commercialization of any of our product candidates, and we cannot be certain that we were the first to file a patent application related to a product candidate or technology. Moreover, because patent applications can take many years to issue, there may be currently-pending patent applications that may later result in issued patents that our product candidates may infringe. In addition, identification of third-party patent rights that may be relevant to our technology is difficult because patent searching is imperfect due to differences in terminology among patents, incomplete databases and the difficulty in assessing the meaning of patent claims. In addition, third parties may obtain patents in the future and claim that use of our technologies infringes upon these patents. Any claims of patent infringement asserted by third parties would be time consuming and could:

- result in costly litigation that may cause negative publicity;
- divert the time and attention of our technical personnel and management;
- cause development delays;
- prevent us from commercializing any of our product candidates until the asserted patent expires or is held finally invalid or not infringed in a court of law;
- require us to develop non-infringing technology, which may not be possible on a cost-effective basis;
- subject us to significant liability to third parties; or
- require us to enter into royalty or licensing agreements, which may not be available on commercially reasonable terms, or at all, or which might be non-exclusive, which could result in our competitors gaining access to the same technology.

Although no third party has asserted a claim of patent infringement against us as of the date of this annual report on Form 10-K, others may hold proprietary rights that could prevent our product candidates from being marketed. Any patent-related legal action against us claiming damages and seeking to enjoin activities relating to our product candidates or processes could subject us to potential liability for damages, including treble damages if we were determined to willfully infringe, and require us to obtain a license to manufacture or develop our product candidates. 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. We cannot predict whether we would prevail in any such actions or that any license required under any of these patents would be made available on commercially acceptable terms, if at all. Moreover, even if we or our future strategic partners were able to obtain a license, the rights may be nonexclusive, which could result in our competitors gaining access to the same intellectual property. In addition, we cannot be certain that we could redesign our product candidates or processes to avoid infringement, if necessary. Accordingly, an adverse determination in a judicial or administrative proceeding, or the failure to obtain necessary licenses, could prevent us from developing and commercializing our product candidates, which could harm our business, financial condition and results of operations.

Parties making claims against us may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation or administrative proceedings, there is a risk that some of our confidential information could be compromised by disclosure. In addition, any uncertainties resulting from the initiation and continuation of any litigation could have a material adverse effect on our ability to raise additional funds or otherwise have a material adverse effect on our business, results of operations, financial condition and prospects.

We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, which could be expensive, time consuming and unsuccessful. Further, our issued patents could be found invalid or unenforceable if challenged in court.

Competitors may infringe our intellectual property rights or those of our licensors. To prevent infringement or unauthorized use, we and/or our licensors may be required to file infringement claims, which can be expensive and time consuming. In addition, in a patent infringement proceeding, a court may decide that a patent we own or license is not valid, is unenforceable and/or is not infringed. If we or any of our licensors or potential future collaborators were to initiate legal proceedings against a third party to enforce a patent directed at one of our product candidates, the defendant could counterclaim that our patent is invalid and/or unenforceable in whole or in part. In patent litigation, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge include an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, written description or non-enablement. Grounds for an unenforceability assertion could include an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO or made a misleading statement during prosecution.

If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on such product candidate. In addition, if the breadth or strength of protection provided by our patents and patent applications or those of our licensors is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates. Such a loss of patent protection would have a material adverse impact on our business.

Even if resolved in our favor, litigation or other legal proceedings relating to our intellectual property rights may cause us to incur significant expenses, and could distract our technical and management personnel from their normal responsibilities. 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. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could compromise our ability to compete in the marketplace. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation or other legal proceedings relating to our intellectual property rights, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation or other proceedings.

Intellectual property litigation may lead to unfavorable publicity that harms our reputation and causes the market price of our common shares to decline.

During the course of any intellectual property litigation, there could be public announcements of the initiation of the litigation as well as results of hearings, rulings on motions, and other interim proceedings in the litigation. If securities analysts or investors regard these announcements as negative, the perceived value of our existing products, programs or intellectual property could be diminished. Accordingly, the market price of shares of our common stock may decline. Such announcements could also harm our reputation or the market for our future products, which could have a material adverse effect on our business.

Derivation or interference proceedings may be necessary to determine priority of inventions, and an unfavorable outcome may require us to cease using the related technology or to attempt to license rights from the prevailing party.

Derivation or interference proceedings provoked by third parties or brought by us or declared by the USPTO or similar proceedings in foreign patent offices 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. Our defense of such 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 such proceedings 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 or manufacturing partnerships that would help us bring our product candidates to market.

Recent patent reform legislation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents.

On September 16, 2011, the Leahy-Smith America Invents Act, or Leahy-Smith Act, was signed into law. The Leahy-Smith Act includes a number of significant changes to U.S. patent law. These include provisions that affect the way patent applications will be prosecuted and may also affect patent litigation. In particular, under the Leahy-Smith Act, the United States transitioned in March 2013 to a "first inventor to file" system in which, assuming that other requirements of patentability are met, the first inventor to file a patent application will be entitled to the patent regardless of whether a third party was first to invent the claimed invention. A third party that files a patent application in the USPTO after March 2013 but before us could therefore be awarded a patent covering an invention of ours even if we had made the invention before it was made by such third party. This will require us to be cognizant going forward of the time from invention to filing of a patent application. Furthermore, our ability to obtain and maintain valid and enforceable patents depends on whether the differences between our technology and the prior art allow our technology to be patentable over the prior art. Since patent applications in the United States and most other countries are confidential for a period of time after filing or until issuance, we cannot be certain that we were the first to either (1) file any patent application related to our product candidates or (2) invent any of the inventions claimed in our patents or patent applications.

The Leahy-Smith Act also includes a number of significant changes that affect the way patent applications will be prosecuted and also may affect patent litigation. These include allowing third-party submission of prior art to the USPTO during patent prosecution and additional procedures to attack the validity of a patent by USPTO administered post-grant proceedings, including PGR, IPR, and derivation proceedings. An adverse determination in any such submission or proceeding could reduce the scope or enforceability of, or invalidate, our patent rights, which could adversely affect our competitive position.

Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in United States federal courts necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action. Thus, 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.

Changes in U.S. patent law, or laws in other countries, could diminish the value of patents in general, thereby impairing our ability to protect our product candidates.

As is the case with other biopharmaceutical companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biopharmaceutical industry involve a high degree of technological and legal complexity. Therefore, obtaining and enforcing biopharmaceutical patents is costly, time consuming and inherently uncertain. Changes in either the patent laws or in the interpretations of patent laws in the United States and other countries may diminish the value of our intellectual property and may increase the uncertainties and costs surrounding the prosecution of patent applications and the enforcement or defense of issued patents. We cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party patents. In addition, Congress or other foreign legislative bodies may pass patent reform legislation that is unfavorable to us.

For example, the U.S. Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by the U.S. Congress, the U.S. federal courts, the USPTO, or similar authorities in foreign jurisdictions, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents we might obtain in the future.

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

We may also be subject to claims that former employees or other third parties have an ownership interest in our patents or other intellectual property. Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and distraction to management and other employees.

Patent terms may be inadequate to protect our competitive position on our 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 our product candidates are obtained, once the patent life has expired, we may be open to competition from competitive products. Given the amount of time required for the development, testing and regulatory review of product candidates, patents protecting our product candidates might expire before or shortly after such candidates are commercialized. As a result, our patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

If we do not obtain patent term extension for our product candidates, our business may be materially harmed.

Depending upon the timing, duration and specifics of FDA marketing approval of our product candidates, one or more of our U.S. patents may be eligible for limited patent term restoration under the Drug Price Competition and Patent Term Restoration Act of 1984, or the Hatch-Waxman Amendments. The Hatch- Waxman Amendments permit a patent restoration term of up to five years as compensation for patent term lost during product development and the FDA regulatory review process. A maximum of one patent may be extended per FDA approved product as compensation for the patent term lost during the FDA regulatory review process. A patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval and only those claims covering such approved drug product, a method for using it or a method for manufacturing it may be extended. Patent term extension may also be available in certain foreign countries upon regulatory approval of our product candidates. However, we may not be granted an extension because of, for example, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than we request. If we are unable to obtain patent term extension or restoration or the term of any such extension is less than we request, our competitors may obtain approval of competing products following our patent expiration, and our revenue could be reduced, possibly materially. Further, if this occurs, our competitors may take advantage of our investment in development and trials by referencing our clinical and preclinical data and launch their product earlier than might otherwise be the case.

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

Although we have issued patents pending patent applications in the United States and certain other countries, filing, prosecuting and defending patents in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. 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 but enforcement is not as strong as that in the United States. These products may compete with our product candidates, 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 foreign jurisdictions. The legal systems of many foreign countries do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights. Proceedings to enforce our patent rights in foreign 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 and 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 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 are 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.

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

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to the USPTO and various foreign patent offices at various points over the lifetime of our patents and/or applications. We have systems in place to remind us to pay these fees, and we rely on third parties to pay these fees when due. Additionally, the USPTO and various foreign patent offices require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. We employ reputable law firms and other professionals to help us comply, and in many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with rules applicable to the particular jurisdiction. However, there are situations in which noncompliance 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. If such an event were to occur, it could have a material adverse effect on our business.

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

In addition, we rely on the protection of our trade secrets, including unpatented know-how, technology and other proprietary information to maintain our competitive position. Although we have taken steps to protect our trade secrets and unpatented know-how, including entering into confidentiality agreements with third parties, and confidential information and inventions agreements with employees, consultants and advisors, we cannot provide any assurances that all such agreements have been duly executed, and 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. 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 the United States are less willing or unwilling to protect trade secrets.

Moreover, third parties may still obtain this information or may come upon this or similar information independently, and we would have no right to prevent them from using that technology or information to compete with us. If any of these events occurs or if we otherwise lose protection for our trade secrets, the value of this information may be greatly reduced and our competitive position would be harmed. If we do not apply for patent protection prior to such publication or if we cannot otherwise maintain the confidentiality of our proprietary technology and other confidential information, then our ability to obtain patent protection or to protect our trade secret information may be jeopardized.

We may be subject to claims that we have wrongfully hired an employee from a competitor or that we or our employees have wrongfully used or disclosed alleged confidential information or trade secrets of their former employers.

As is common in the biopharmaceutical industry, in addition to our employees, we engage the services of consultants to assist us in the development of our product candidates. Many of these consultants, and many of our employees, were previously employed at, or may have previously provided or may be currently providing consulting services to, other biopharmaceutical companies including our competitors or potential competitors. We may become subject to claims that we, our employees or a consultant inadvertently or otherwise used or disclosed trade secrets or other information proprietary to their former employers or their former or current clients. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel, which could adversely affect our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to our management team and other employees.

Risks Related to Our Common Stock

An active, liquid and orderly market for our common stock may not be maintained

Prior to our IPO, there had been no public market for our common stock. Our common stock only recently began trading on the Nasdaq Global Select Market, or Nasdaq, but we can provide no assurance that we will be able to develop and sustain an active trading market for our common stock. Even if an active trading market is developed, it may not be sustained. The lack of an active market may impair your ability to sell your shares at the time you wish to sell them or at a price that you consider reasonable. An inactive market may also impair our ability to raise capital by selling shares and may impair our ability to acquire other businesses or technologies using our shares as consideration, which, in turn, could materially adversely affect our business.

The trading price of the shares of our common stock could be highly volatile, and purchasers of our common stock could incur substantial losses.

Our stock price is likely to be volatile. The stock market in general and the market for stock of 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, investors may not be able to sell their common stock at or above the price at which they paid. The market price for our common stock may be influenced by those factors discussed in this "Risk Factors" section and many others, including:

- our ability to enroll subjects in our ongoing and planned clinical trials;
- results of our clinical trials and preclinical studies, and the results of trials of our competitors or those of other companies in our market sector;
- regulatory approval of our product candidates, or limitations to specific label indications or patient populations for its use, or changes or delays in the regulatory review process;
- regulatory developments in the United States and foreign countries;
- changes in the structure of healthcare payment systems, especially in light of current reforms to the U.S. healthcare system;
- the success or failure of our efforts to acquire, license or develop additional product candidates;
- innovations or new products developed by us or our competitors;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- manufacturing, supply or distribution delays or shortages;
- any changes to our relationship with any manufacturers, suppliers, licensors, future collaborators or other strategic partners;
- achievement of expected product sales and profitability;
- variations in our financial results or those of companies that are perceived to be similar to us;
- market conditions in the biopharmaceutical sector and issuance of securities analysts' reports or recommendations;
- trading volume of our common stock;
- an inability to obtain additional funding;
- sales of our stock by insiders and stockholders;
- general economic, industry and market conditions other events or factors, many of which are beyond our control;
- additions or departures of key personnel; and
- intellectual property, product liability or other litigation against us.

In addition, in the past, stockholders have initiated class action lawsuits against biopharmaceutical companies following periods of volatility in the market prices of these companies' stock. Such litigation, if instituted against us, could cause us to incur substantial costs and divert management's attention and resources, which could have a material adverse effect on our business, financial condition and results of operations.

Our failure to meet the continued listing requirements of the Nasdaq could result in a delisting of our common stock.

If we fail to satisfy the continued listing requirements of the Nasdaq, such as the corporate governance requirements or the minimum closing bid price requirement, Nasdaq may take steps to delist our common stock. Such a delisting would likely have a negative effect on the price of our common stock and would impair your ability to sell or purchase our common stock when you wish to do so. In the event of a delisting, we can provide no assurance that any action taken by us to restore compliance with listing requirements would allow our common stock to become listed again, stabilize the market price or improve the liquidity of our common stock, prevent our common stock from dropping below the Nasdaq minimum bid price requirement or prevent future non-compliance with Nasdaq's listing requirements.

Our executive officers, directors and principal stockholders, if they choose to act together, have the ability to control or significantly influence all matters submitted to stockholders for approval. Furthermore, many of our current directors were appointed by our principal stockholders.

Our executive officers, directors and greater than 5% stockholders, in the aggregate, own approximately 49.3% of our outstanding common stock as of March 18, 2019. As a result, such persons or their appointees to our board of directors, acting together, have the ability to control or significantly influence all matters submitted to our board of directors or stockholders for approval, including the appointment of our management, the election and removal of directors and approval of any significant transaction, as well as our management and business affairs. This concentration of ownership may have the effect of delaying, deferring or preventing a change in control, impeding a merger, consolidation, takeover or other business combination involving us, or discouraging a potential acquiror from making a tender offer or otherwise attempting to obtain control of our business, even if such a transaction would benefit other stockholders.

We do not currently intend to pay dividends on our common stock, and, consequently, your ability to achieve a return on your investment will depend on appreciation, if any, in the price of our common stock.

We have never declared or paid any cash dividend on our common stock. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. In addition, the terms of any future debt agreements may preclude us from paying dividends. Any return to stockholders will therefore be limited to the appreciation of their stock. There is no guarantee that shares of our common stock will appreciate in value or even maintain the price at which stockholders have purchased their shares.

Sales of a substantial number of shares of our common stock by our existing stockholders in the public market could cause our stock price to fall.

Sales of a substantial number of shares of our common stock in the public market or the perception that these sales might occur could significantly reduce the market price of our common stock and impair our ability to raise adequate capital through the sale of additional equity securities.

In connection with our IPO, our directors and executive officers and holders of substantially all of our outstanding securities entered into lock-up agreements with the underwriters pursuant to which they may not, with limited exceptions, for a period of 180 days from the date of the prospectus for the IPO, offer, sell or otherwise transfer or dispose of any of our securities, without the prior written consent of Merrill Lynch, Pierce, Fenner & Smith Incorporated, SVB Leerink LLC and Barclays Capital Inc. Such exceptions include the ability of certain of our executive officers to sell up to $8.0 million of shares of common stock to satisfy certain tax liabilities related to their previous acquisition of shares. The underwriters may permit our officers, directors and other stockholders and the holders of our outstanding options who are subject to the lock-up agreements to sell shares prior to the expiration of the lock-up agreements, subject to limitations. Sales of these shares, or perceptions that they will be sold, could cause the trading price of our common stock to decline. After the lock-up agreements expire, these shares of common stock will be eligible for sale in the public market of which shares are held by directors, executive officers and other affiliates and will be subject to volume limitations under Rule 144 under the Securities Act.

The holders of 30,493,460 shares of our outstanding common stock, or approximately 46.3% of our total outstanding common stock as of March 18, 2019, will be entitled to rights with respect to the registration of their shares under the Securities Act, subject to vesting and the 180-day lock-up agreements described above. Registration of these shares under the Securities Act would result in the shares becoming freely tradable without restriction under the Securities Act, except for shares held by affiliates, as defined

in Rule 144 under the Securities Act. Any sales of securities by these stockholders could have a material adverse effect on the trading price of our common stock.

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, as defined in the JOBS Act, and may remain an emerging growth company until the last day of the fiscal year following the fifth anniversary of the completion of our IPO in February 2019. 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 revenues exceed $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. For so long as we remain an emerging growth company, we are permitted and intend to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include:

- being permitted to provide only two years of audited financial statements, 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 shareholder approval of any golden parachute payments not previously approved.

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 reduced or more volatile. In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This allows an emerging growth company to delay the adoption of these accounting standards until they would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this exemption and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

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

As a public company, we incur significant legal, accounting and other expenses. We are be subject to the reporting requirements of the Exchange Act, which require, among other things, that we file with the SEC annual, quarterly and current reports with respect to our business and financial condition. In addition, Sarbanes-Oxley, as well as rules subsequently adopted by the SEC and Nasdaq to implement provisions of Sarbanes-Oxley, impose significant requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. Further, pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, the SEC has adopted additional rules and regulations in these areas, such as mandatory "say on pay" voting requirements that will apply to us when we cease to be an emerging growth company. Stockholder activism, the current political environment and the current high level of government intervention and regulatory reform may lead to substantial new regulations and disclosure obligations, which may lead to additional compliance costs and impact the manner in which we operate our business in ways we cannot currently anticipate.

We expect the rules and regulations applicable to public companies to substantially increase our legal and financial compliance costs and to make some activities more time consuming and costly. If these requirements divert the attention of our management and personnel from other business concerns, they could have a material adverse effect on our business, financial condition and results of operations. The increased costs will decrease our net income or increase our net loss, and may require us to reduce costs in other areas of our business or increase the prices of our products or services. For example, we expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to incur substantial costs to maintain the same or similar coverage. We cannot predict or estimate the amount or timing of additional costs we may incur to respond to these requirements. The impact of these requirements could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees or as executive officers.

If securities or industry analysts do not publish research or reports or publish unfavorable research or reports about our business, our stock price and trading volume could decline.

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us, our business, our market or our competitors. We currently have limited research coverage by securities and industry analysts. If these analysts cease coverage of our company, the trading price for our stock would be negatively impacted. If one or more of the analysts who covers us downgrades our stock, our stock price would likely decline. If one or more of these analysts ceases to cover us or fails to regularly publish reports on us, interest in our stock could decrease, which could cause our stock price or trading volume to decline.

If we fail to maintain proper and effective internal control over financial reporting, our ability to produce accurate and timely financial statements could be impaired, investors may lose confidence in our financial reporting and the trading price of our common stock may decline.

Pursuant to Section 404 of Sarbanes-Oxley, our management will be required to report upon the effectiveness of our internal control over financial reporting beginning with the annual report for our fiscal year ending December 31, 2019. When we lose our status as an “emerging growth company” and reach an accelerated filer threshold, our independent registered public accounting firm will be required to attest to the effectiveness of our internal control over financial reporting. The rules governing the standards that must be met for management to assess our internal control over financial reporting are complex and require significant documentation, testing and possible remediation. To comply with the requirements of being a reporting company under the Exchange Act, we will need to upgrade our information technology systems; implement additional financial and management controls, reporting systems and procedures; and hire additional accounting and finance staff. If we or, if required, our auditors are unable to conclude that our internal control over financial reporting is effective, investors may lose confidence in our financial reporting and the trading price of our common stock may decline.

We cannot assure you that there will not be material weaknesses or significant deficiencies in our internal control over financial reporting in the future. Any failure to maintain internal control over financial reporting could severely inhibit our ability to accurately report our financial condition, results of operations or cash flows. If we are unable to conclude that our internal control over financial reporting is effective, or if our independent registered public accounting firm determines we have a material weakness or significant deficiency in our internal control over financial reporting once that firm begin its Section 404 reviews, investors may lose confidence in the accuracy and completeness of our financial reports, the market price of our common stock could decline, and we could be subject to sanctions or investigations by Nasdaq, the SEC or other regulatory authorities. Failure to remedy any material weakness in our internal control over financial reporting, or to implement or maintain other effective control systems required of public companies, could also restrict our future access to the capital markets.

Provisions in our charter documents and under Delaware law could discourage a takeover that stockholders may consider favorable and may lead to entrenchment of management.

Our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that could significantly reduce the value of our shares to a potential acquiror or delay or prevent changes in control or changes in our management without the consent of our board of directors. The provisions in our charter documents include the following:

- a classified board of directors with three-year staggered terms, which may delay the ability of stockholders to change the membership of a majority of our board of directors;
- no cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- the exclusive right of our board of directors, unless the board of directors grants such right to the stockholders, to elect a director to fill a vacancy created by the expansion of the board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;

- the required approval of at least 66-2/3% of the shares entitled to vote to remove a director for cause, and the prohibition on removal of directors without cause;
- the ability of our board of directors to authorize the issuance of shares of preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquiror;
- the ability of our board of directors to alter our amended and restated bylaws without obtaining stockholder approval;
- the required approval of at least 66-2/3% of the shares entitled to vote to adopt, amend or repeal our amended and restated bylaws or repeal the provisions of our amended and restated certificate of incorporation regarding the election and removal of directors;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders;
- an exclusive forum provision providing that the Court of Chancery of the State of Delaware will be the exclusive forum for certain actions and proceedings;
- the requirement that a special meeting of stockholders may be called only by the board of directors, which may delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors; and
- advance notice procedures that stockholders must comply with in order to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting, which may discourage or deter a potential acquiror from conducting a solicitation of proxies to elect the acquiror's own slate of directors or otherwise attempting to obtain control of us.

We are also subject to the anti-takeover provisions contained in Section 203 of the Delaware General Corporation Law. Under Section 203, a corporation may not, in general, engage in a business combination with any holder of 15% or more of its capital stock unless the holder has held the stock for three years or, among other exceptions, the board of directors has approved the transaction.

Our amended and restated certificate of incorporation and amended and restated bylaws provide that the Court of Chancery of the State of Delaware will be the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our amended and restated certificate of incorporation and amended and restated bylaws provide that the Court of Chancery of the State of Delaware is the exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a breach of fiduciary duty, any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our amended and restated certificate of incorporation or our amended and restated bylaws, or any action asserting a claim against us that is governed by the internal affairs doctrine; provided, that, this provision would not apply to suits brought to enforce a duty or liability created by the Exchange Act. Furthermore, our amended and restated certificate of incorporation also provides that unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States shall be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. These choice of forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. By agreeing to this provision, however, stockholders will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder. Furthermore, the enforceability of similar choice of forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that a court could find these types of provisions to be inapplicable or unenforceable. If a court were to find the choice of forum provisions in our amended and restated 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 adversely affect our business and financial condition.

Our ability to use net operating loss carryforwards and other tax attributes may be limited.

We have incurred substantial losses during our history and do not expect to become profitable in the near future, and we may never achieve profitability. To the extent that we continue to generate taxable losses, unused losses will carry forward to offset future taxable income, if any, until such unused losses expire (if at all). At December 31, 2018, the company had federal and state net operating loss, or NOL, carryforwards of approximately $44.8 million and $1.1 million, respectively. Such federal and state NOL carryforwards will begin to expire in 2034, unless previously utilized.

Under recently enacted U.S. tax legislation, federal NOL carryforwards generated in periods after December 31, 2017, may be carried forward indefinitely but may only be used to offset 80% of our taxable income annually. Our NOL carryforwards are subject to review and possible adjustment by the Internal Revenue Service, or the IRS, and state tax authorities. Under Section 382 of the

Internal Revenue Code of 1986, as amended, or the Code, our federal NOL carryforwards may become subject to an annual limitation in the event of certain cumulative changes in the ownership interest of significant stockholders over a three-year period in excess of 50 percentage points. Our ability to utilize our NOL carryforwards and other tax attributes to offset future taxable income or tax liabilities may be limited as a result of ownership changes, including potential changes in connection with our IPO or future offerings. Similar rules may apply under state tax laws. We have not yet determined the amount of the cumulative change in our ownership resulting from our IPO, or any resulting limitations on our ability to utilize our NOL carryforwards and other tax attributes. If we earn taxable income, such limitations could result in increased future tax liability to us and our future cash flows could be adversely affected. We have recorded a full valuation allowance related to our NOLs and other deferred tax assets due to the uncertainty of the ultimate realization of the future benefits of those assets.

Recent U.S. tax legislation may materially adversely affect our financial condition, results of operations and cash flows.

The Tax Act has significantly changed the U.S. federal income taxation of U.S. corporations, including by reducing the U.S. corporate income tax rate and revising the rules governing NOLs. Many of these changes became effective beginning in 2018, without any transition periods or grandfathering for existing transactions. The legislation is unclear in many respects and could be subject to potential amendments and technical corrections, as well as interpretations and implementing regulations by the U.S. Treasury Department and the IRS, any of which could lessen or increase certain adverse impacts of the legislation. In addition, it is unclear how these U.S. federal income tax changes will affect state and local taxation, which often uses federal taxable income as a starting point for computing state and local tax liabilities. As a result of the rate reduction from the Tax Act, our deferred tax asset balance as of December 31, 2017 was reduced by $0.8 million. However, due to our full valuation allowance position, there was no net impact on our income tax provision at December 31, 2017, as the reduction in the deferred tax asset balance was fully offset by a corresponding decrease in the valuation allowance.

There may be other material adverse effects resulting from the legislation that we have not yet identified. While some of the changes made by the tax legislation may adversely affect us in one or more reporting periods and prospectively, other changes may be beneficial on a going forward basis. We continue to work with our tax advisors to determine the full impact that the recent tax legislation as a whole will have on us. We urge our investors to consult with their legal and tax advisors with respect to such legislation and the potential tax consequences of investing in our common stock.

We could be subject to securities class action litigation.

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us, because biotechnology and pharmaceutical companies have experienced significant stock price volatility in recent years. If we face such litigation, it could result in substantial costs and a diversion of management’s attention and resources, which could harm our business.

Item 1B. Unresolved Staff Comments.

Not Applicable.

Item 2. Properties.

Our corporate headquarters are located in San Diego, California, where we currently lease approximately 63,667 square feet of office, laboratory and vivarium space. We use our corporate headquarters primarily for corporate, research, development, clinical, regulatory, manufacturing and quality functions. Our primary lease for this facility expires in January 2025, and our lease with respect to 31,628 square feet of such space expires in December 2022. We believe that our facilities are adequate to meet our current needs, and that suitable additional alternative spaces will be available in the future on commercially reasonable terms, if required.

Item 3. Legal Proceedings.

We are not currently subject to any material legal proceedings. From time to time, we may be involved in legal proceedings or subject to claims incident to the ordinary course of business. Regardless of the outcome, such proceedings or claims can have an adverse impact on us because of defense and settlement costs, diversion of resources and other factors, and there can be no assurances that favorable outcomes will be obtained.

Item 4. Mine Safety Disclosures.

Not Applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Market Information

Our common stock has been publicly traded on the Nasdaq Global Select Market under the symbol "GOSS" since our initial public offering on February 8, 2019, which was completed at a price to the public of $16.00 per share. Prior to our initial public offering, there was no public market for our common stock.

Holders of Common Stock

As of March 18, 2019, there were 65,875,521 shares of our common stock outstanding held by approximately 106 holders of record of our common stock. This number was derived from our shareholder records and does not include beneficial owners of our common stock whose shares are held in the name of various dealers, clearing agencies, banks, brokers and other fiduciaries.

Dividend Policy

We have never declared or paid any cash dividends on our capital stock. We intend to retain future earnings, if any, to finance the operation of our business and do not anticipate paying any cash dividends in the foreseeable future. Any future determination related to dividend policy will be made at the discretion of our board of directors after considering our financial condition, results of operations, capital requirements, business prospects and other factors the board of directors deems relevant, and subject to the restrictions contained in any future financing instruments.

Securities Authorized for Issuance Under Equity Compensation Plans

See Item 12 of Part III of this Annual Report on Form 10-K for information about our equity compensation plans which is incorporated by reference herein.

Performance Graph

Not applicable.

Unregistered Sales of Equity Securities

From January 1, 2018 through December 31, 2018, we issued and sold the equity securities described below.

1. In January and March 2018, we issued an aggregate of 45,714,286 shares of our Series A convertible preferred stock to investors at a purchase price of $1.75 per share, for aggregate consideration of approximately $80.0 million, including the conversion of a convertible promissory note.

2. In May 2018, we issued 503,094 shares of common stock to our founders at a purchase price of $2.61 per share, in consideration for services rendered for aggregate consideration of $1.3 million.

3. In July 2018, we issued an aggregate of 71,506,513 shares of our Series B convertible preferred stock to investors at a purchase price of $3.2167 per share, for aggregate consideration of approximately $230.0 million.

4. In September 2018, we issued 3,590,046 shares of common stock to our founders at a purchase price of $4.59 per share, in consideration for services rendered for aggregate consideration of $16.5 million.

5. From January 1, 2018 through December 31, 2018, we granted stock options to purchase an aggregate of 5,143,551 shares of our common stock at a weighted-average exercise price of $7.49 per share, to certain of our employees, consultants and directors in connection with services provided to us by such persons. 36,222 of these options have been canceled and none of these options have been exercised through December 31, 2018.

The securities described in paragraphs (1) through (4) above 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 Regulation D promulgated

thereunder relative to transactions by an issuer not involving any public offering, to the extent an exemption from such registration was required. All holders of securities described above represented to us in connection with their purchase or issuance that they were accredited investors and were acquiring the securities for their own account for investment purposes only and not with a view to, or for sale in connection with, any distribution thereof and that they could bear the risks of the investment and could hold the securities for an indefinite period of time. The holders received written disclosures that the securities had not been registered under the Securities Act and that any resale must be made pursuant to a registration statement or an available exemption from such registration.

The stock options and the common stock issuable upon the exercise of such options as described in this section (5) above were issued pursuant to written compensatory plans or arrangements with our employees and directors, in reliance on the exemption from the registration requirements of the Securities Act provided by Rule 701 promulgated under the Securities Act or the exemption set forth in Section 4(a)(2) under the Securities Act and Regulation D promulgated thereunder relative to transactions by an issuer not involving any public offering. All recipients either received adequate information about us or had access, through employment or other relationships, to such information.

All of the foregoing securities are deemed restricted securities for purposes of the Securities Act. All of the foregoing securities included appropriate legends setting forth that the securities had not been registered and the applicable restrictions on transfer. No underwriters were involved in the foregoing sales of securities.

Use of Proceeds

On February 7, 2019, our registration statement on Form S-1 (File No. 333-228984) was declared effective by the SEC for our initial public offering. At the closing of the offering on February 12, 2019, we sold 19,837,500 shares of common stock, which included the exercise in full by the underwriters of their option to purchase 2,587,500 additional shares, at an initial public offering price of $16.00 per share and received gross proceeds of $317.4 million, which resulted in net proceeds to us of approximately $291.5 million, after deducting underwriting discounts and commissions of approximately $22.2 million and offering-related transaction costs of approximately $3.7 million. None of the expenses associated with the initial public offering were paid to directors, officers, persons owning ten percent or more of any class of equity securities, or to their associates, or to our affiliates. Merrill Lynch, Pierce, Fenner & Smith Incorporated, SVB Leerink LLC, Barclays Capital Inc. and Evercore Group L.L.C. acted as joint book-running managers for the offering.

There has been no material change in the planned use of proceeds from our initial public offering from that described in the final prospectus filed by us with the SEC on February 8, 2019

Issuer Repurchases of Equity Securities

None.

Item 6. Selected Financial Data.

The following tables set forth our selected financial data as of, and for the periods ended on, the dates indicated. We have derived the statement of operations data from our audited consolidated financial statements included elsewhere in this annual report. You should read this data together with our consolidated financial statements and related notes and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included elsewhere in this annual report. Our historical results for any prior period are not

indicative of our future results.

	Year Ended December 31,		
	2018	2017	2016
	(in thousands, except share and per share amounts)		
Operating expenses:			
Research and development	$ 55,283	$ 891	$ —
In process research and development	49,659	5,500	—
General and administrative	44,051	262	83
Total operating expenses	148,993	6,653	83
Loss from operations	**(148,993)**	**(6,653)**	(83)
Other income (expense)			
Interest income	1,720	—	—
Interest expense	(12)	(118)	—
Other income (expense)	316	—	—
Total other income (expense), net	2,024	(118)	—
Net loss	**$ (146,969)**	**$ (6,771)**	**$ (83)**
Net loss per share, basic and diluted (1)	$ (22.59)	$ (0.74)	$ (0.01)
Weighted-average shares outstanding, basic and diluted (1)(2)	6,504,871	9,160,888	9,160,888

(1) See Note 2 to our consolidated financial statements included elsewhere in this annual report for an explanation of the method used to calculate the historical net loss per share, basic and diluted, and the number of shares used in the computation of the per share amounts.

(2) In connection with the issuance of the Series A convertible preferred stock in January 2018, certain of our founders entered into stock restriction agreements, whereby 4,580,444 of previously unrestricted shares of common stock became subject to forfeiture to us upon the founders' termination of employment or service, which obligation lapses as the shares vest.

	December 31,		
	2018	2017	2016
	(in thousands)		
Consolidated Balance Sheet Data:			
Cash, cash equivalents, and marketable securities	$ 228,658	$ 315	$ 60
Working capital (1)	211,550	(821)	(83)
Total assets	239,419	445	60
Convertible preferred stock	338,367	—	—
Accumulated deficit	(153,863)	(6,894)	(123)
Total stockholders' deficit	(120,069)	(6,862)	(123)

(1) We define working capital as current assets less current liabilities. See our consolidated financial statements included elsewhere in this annual report for further details regarding our current assets and current liabilities.

Item 7. 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 our consolidated financial statements and related notes included elsewhere in this annual report. This discussion and analysis contains forward-looking statements based upon our current beliefs, plans and expectations that involve risks, uncertainties and assumptions. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth under "Risk Factors" or in other parts of this annual report.

Overview

We are a clinical-stage biopharmaceutical company focused on discovering, acquiring, developing and commercializing therapeutics in the disease areas of immunology, inflammation and oncology. Our goal is to be an industry leader in each of these therapeutic areas and enhance and extend the lives of patients suffering from such diseases. To accomplish this goal, we have assembled a deeply experienced and highly skilled group of industry veterans, scientists, clinicians and key opinion leaders from leading biotechnology and pharmaceutical companies, as well as leading academic centers from around the world. Our collective immunology and translational discovery and development expertise serves as the foundation of our company.

We are pursuing product candidates with strong scientific rationale to address indications where there is both a high unmet need and an opportunity to develop best-in-class or first-in-class programs. We currently have six programs: three clinical-stage product candidates and three preclinical programs. We commenced a Phase 2b clinical trial for our most advanced product candidate, GB001, in moderate-to-severe eosinophilic asthma in October 2018 and expect to conduct an interim analysis in the first half of 2020. If the interim analysis is positive, we plan on initiating a Phase 3 clinical trial thereafter. We also expect to initiate proof-of-concept Phase 2 clinical trials of GB001 in CRS and CSU in 2019. We are developing GB002 for the treatment of PAH, and plan to commence a Phase 1b clinical trial in PAH in the first half of 2019 and a Phase 2/3 clinical trial in PAH in the second half of 2019. We are developing GB004 for the treatment of IBD, including UC and CD, and expect to initiate a Phase 1b clinical trial in UC in the first half of 2019. We also plan to initiate a Phase 2 clinical trial in UC in the first half of 2020. We currently have three programs in preclinical development. GB1275 is an oral small molecule, CD11b agonist in preclinical development for the treatment of oncology indications for which we plan to submit an IND application and, after acceptance, initiate a Phase 1/2 clinical trial in 2019. We are also currently evaluating a portfolio of novel BTK inhibitors for the treatment of autoimmune indications and small molecule cancer metabolism modulators for the treatment of solid tumors.

We were incorporated in October 2015 and commenced operations in 2017. To date, we have focused primarily on organizing and staffing our company, business planning, raising capital, identifying, acquiring and in-licensing our product candidates and conducting preclinical studies and early clinical trials. We have funded our operations primarily through equity financings. We raised $310.0 million from October 2017 through July 2018 through Series A and B convertible preferred stock financings and a convertible note financing. In addition, we received $12.8 million in cash in connection with the January 2018 acquisition of AA Biopharma Inc., of which Pulmagen Therapeutics (Asthma) Limited is a wholly-owned subsidiary. As of December 31, 2018, we had $228.7 million in cash, cash equivalents and marketable securities.

On February 12, 2019, we closed our IPO and the underwriters in the IPO purchased 19,837,500 shares, including the full exercise of their option to purchase additional shares of common stock. The net proceeds were $291.5 million, after deducting underwriting discounts and commissions and estimated offering costs.

We have incurred significant operating losses since our inception and expect to continue to incur significant operating losses for the foreseeable future. For the years ended December 31, 2018 and 2017, our net loss was $147.0 million and $6.8 million, respectively. As of December 31, 2018, we had an accumulated deficit of $153.9 million. We expect our expenses and operating losses will increase substantially as we conduct our ongoing and planned clinical trials, continue our research and development activities and conduct preclinical studies, and seek regulatory approvals for our product candidates, as well as hire additional personnel, protect our intellectual property and incur additional costs associated with being a public company. In addition, as our product candidates progress through development and toward commercialization, we will need to make milestone payments to the licensors and other third parties from whom we have in-licensed or acquired our product candidates, including GB002 and GB004. Our net losses may fluctuate significantly from quarter-to-quarter and year-to-year, depending in particular on the timing of our clinical trials and preclinical studies and our expenditures on other research and development activities.

We do not expect to generate any revenue from product sales unless and until we successfully complete development and obtain regulatory approval for one or more of our product candidates, which we expect will take a number of years. If we obtain regulatory approval for any of our product candidates, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution. Accordingly, until such time as we can generate substantial product revenues to support our cost structure, if ever, we expect to finance our cash needs through equity offerings, debt financings or other capital sources, including potentially

collaborations, licenses and other similar arrangements. However, we may be unable to raise additional funds or enter into such other arrangements when needed on favorable terms or at all. Our failure to raise capital or enter into such other arrangements when needed could have a negative impact on our financial condition and on our ability to pursue our business plans and strategies. If we are unable to raise additional capital when needed, we could be forced to delay, limit, reduce or terminate our product candidate development or future commercialization efforts or grant rights to develop and market our product candidates even if we would otherwise prefer to develop and market such product candidates ourselves.

Components of Results of Operations

Revenue

We have not generated any revenue since our inception and do not expect to generate any revenue from the sale of products for the foreseeable future.

Operating expenses

Research and development

Research and development expenses have related primarily to preclinical and clinical development of our product candidates and discovery efforts. Research and development expenses are recognized as incurred and payments made prior to the receipt of goods or services to be used in research and development are capitalized until the goods or services are received.

Research and development expenses include or could include:

- salaries, payroll taxes, employee benefits, and stock-based compensation charges for those individuals involved in research and development efforts;
- external research and development expenses incurred under agreements with contract research organizations, or CROs, investigative sites and consultants to conduct our clinical trials and preclinical and non-clinical studies;
- laboratory supplies;
- costs related to manufacturing our product candidates for clinical trials and preclinical studies, including fees paid to third-party manufacturers;
- costs related to compliance with regulatory requirements; and
- facilities, depreciation and other allocated expenses, which include direct and allocated expenses for rent, maintenance of facilities, insurance, equipment and other supplies.

Our direct research and development expenses consist principally of external costs, such as fees paid to CROs, investigative sites and consultants in connection with our clinical trials, preclinical and non-clinical studies, and costs related to manufacturing clinical trial materials. For the year ended December 31, 2018, the majority of our third-party expenses related to the research and development of GB001 and GB002. We deploy our personnel and facility related resources across all of our research and development activities. We track external costs and personnel expense on a program-by-program basis and allocate common expenses, such as facility related resources, to each program based on the personnel resources allocated to such program. Stock-based compensation and personnel and common expenses not attributable to a specific program are considered unallocated research and development expenses.

We plan to substantially increase our research and development expenses for the foreseeable future as we continue the development of our product candidates and conduct discovery and research activities for our preclinical programs. We cannot determine with certainty the timing of initiation, the duration or the completion costs of current or future preclinical studies and clinical trials of our product candidates due to the inherently unpredictable nature of preclinical and clinical development. Clinical and preclinical development timelines, the probability of success and development costs can differ materially from expectations. We anticipate that we will make determinations as to which product candidates to pursue and how much funding to direct to each product candidate on an ongoing basis in response to the results of ongoing and future preclinical studies and clinical trials, regulatory developments and our ongoing assessments as to each product candidate’s commercial potential. We will need to raise substantial additional capital in the future.

Our clinical development costs may vary significantly based on factors such as:

- per patient trial costs;
- the number of trials required for approval;
- the number of sites included in the trials;
- the countries in which the trials are conducted;
- the length of time required to enroll eligible patients;
- the number of patients that participate in the trials;
- the number of doses that patients receive;
- the drop-out or discontinuation rates of patients;
- potential additional safety monitoring requested by regulatory agencies;
- the duration of patient participation in the trials and follow-up;
- the cost and timing of manufacturing our product candidates;
- the phase of development of our product candidates; and
- the efficacy and safety profile of our product candidates.

In process research and development

In process research and development, or IPR&D, expenses include in process research and development acquired as part of an asset acquisition or in-license for which there is no alternative future use, are expensed as incurred.

IPR&D expenses consist of our upfront payments made to Pulmokine, Inc., in connection with the in-license of GB002, the value of our stock issued to former AA Biopharma Inc. shareholders, in connection with the acquisition of GB001, and our upfront payments made to Aerpio Pharmaceuticals, Inc., or Aerpio, in connection with the in-license of GB004, our upfront payments made to Adhaere Pharmaceuticals, Inc., or Adhaere, in connection with the acquisition of GB1275, and upfront payments made in connection with the acquisition of our other preclinical programs.

General and administrative

General and administrative expenses consist primarily of salaries and employee-related costs, including stock-based compensation, for personnel in executive, finance and other administrative functions. Other significant costs include facility-related costs, legal fees relating to intellectual property and corporate matters, professional fees for accounting and consulting services and insurance costs.

We expect our general and administrative expenses will increase for the foreseeable future to support our expanded infrastructure and increased costs of operating as a public company. These increases will likely include increased expenses related to audit, legal, regulatory, and tax-related services associated with maintaining compliance with exchange listing and SEC requirements, director and officer insurance premiums, and investor relations costs associated with operating as a public company.

Other income (expense), net

Other income (expense), net consists of (1) interest income on our cash, cash equivalents and marketable securities, (2) other miscellaneous income (expense) and (3) interest expense related to the convertible promissory note issued in October 2017. The note converted into shares of our Series A convertible preferred stock in January 2018.

Critical Accounting Policies and Estimates

Our consolidated financial statements are prepared in accordance with generally accepted accounting principles in the United States, or GAAP. The preparation of our consolidated financial statements requires us to make estimates, assumptions and judgments that affect the reported amounts of assets, liabilities, costs and expenses. We base our estimates and assumptions on historical experience and other factors that we believe to be reasonable under the circumstances. We evaluate our estimates and assumptions on an ongoing basis. We base our estimates on historical experience, known trends and events, and various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Our actual results may differ from these estimates under different assumptions or conditions (See Note 2).

Accrued expenses

As part of the process of preparing our consolidated financial statements, we are required to estimate our accrued 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. 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 expense accordingly. 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 actually 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 actually incurred.

Stock-based compensation

We measure and recognize compensation expense for all options based on the estimated fair value of the award on the grant date. We use the Black-Scholes option-pricing model to estimate the fair value of option awards. The fair value is recognized as expense on a straight-line basis over the requisite service period. We account for forfeitures as they occur. We record expense for awards subject to performance-based milestone vesting over the remaining service period when management determines that achievement of the milestone is probable. Management evaluates when the achievement of a performance-based milestone is probable based on the expected satisfaction of the performance conditions at each reporting date.

The determination of the grant date fair value of options using an option pricing model is affected principally by our estimated fair value of shares of our common stock and requires management to make a number of other assumptions, including the expected life of the option, the volatility of the underlying shares, the risk-free interest rate and expected dividends. The assumptions used in our Black-Scholes option-pricing model represent management's best estimates at the time of measurement. These estimates are complex, involve a number of variables, uncertainties and assumptions and the application of management's judgment, as they are inherently subjective. If any assumptions change, our stock-based compensation expense could be materially different in the future. See Note 9 to our consolidated financial statements included elsewhere in this annual report on Form 10-K for information concerning certain of the specific assumptions we used in applying the Black-Scholes option pricing model to determine the estimated fair value of our stock options granted in the year ended December 31, 2018.

As of December 31, 2018, the unrecognized stock-based compensation expense related to employee stock options and unvested restricted stock was $24.0 million and $30.0 million, respectively, and is expected to be recognized as expense over a weighted-average period of approximately 3.6 years. The intrinsic value of all outstanding stock options as of December 31, 2018 was approximately $16.3 million, of which approximately $0.4 million related to vested options and approximately $15.9 million related to unvested options.

Fair value of common stock

We are required to estimate the fair value of the common stock underlying our stock-based awards when performing fair value calculations, which is the most subjective input into the Black-Scholes option pricing model. Prior to our IPO, the fair value of the common stock underlying our stock-based awards was determined on each grant date by our board of directors, taking into account input from management and independent third-party valuation analyses. All options to purchase shares of our common stock are intended to be granted with an exercise price per share no less than the fair value per share of our common stock underlying those options on the date of grant, based on the information known to us on the date of grant. Prior to our IPO, in the absence of a public trading market for our common stock, on each grant date we developed an estimate of the fair value of our common stock in order to determine an exercise price for the option grants. Our determinations of the fair value of our common stock were made using methodologies, approaches and assumptions consistent with the American Institute of Certified Public Accountants Audit and Accounting Practice Aid Series: *Valuation of Privately Held Company Equity Securities Issued as Compensation, or the Practice Aid*.

Our board of directors considered various objective and subjective factors, along with input from management, to determine the fair value of our common stock, including:

- valuations of our common stock performed by independent third-party valuation specialists;
- our stage of development and business strategy, including the status of research and development efforts of our product candidates, and the material risks related to our business and industry;
- our results of operations and financial position, including our levels of available capital resources;
- the valuation of publicly traded companies in the life sciences and biotechnology sectors, as well as recently completed mergers and acquisitions of peer companies;
- the lack of marketability of our common stock as a private company;
- the prices of our convertible preferred stock sold to investors in arm's length transactions and the rights, preferences, and privileges of our convertible preferred stock relative to those of our common stock;
- the likelihood of achieving a liquidity event for the holders of our common stock, such as an initial public offering or a sale of our company, given prevailing market conditions;
- trends and developments in our industry; and
- external market conditions affecting the life sciences and biotechnology industry sectors.

Our valuations were prepared in accordance with the guidelines in the Practice Aid, which prescribes several valuation approaches for setting the value of an enterprise, such as the cost, income and market approaches, and various methodologies for allocating the value of an enterprise to its common stock. The cost approach establishes the value of an enterprise based on the cost of reproducing or replacing the property less depreciation and functional or economic obsolescence, if present. The income approach establishes the value of an enterprise based on the present value of future cash flows that are reasonably reflective of our company's future operations, discounting to the present value with an appropriate risk adjusted discount rate or capitalization rate. The market approach is based on the assumption that the value of an asset is equal to the value of a substitute asset with the same characteristics. Each valuation methodology was considered in our valuations. In determining a fair value for our common stock, we estimated the enterprise value of our business using either the market approach or the back-solve method. The back-solve method assigns an implied enterprise value based on the most recent round of funding or investment and allows for the incorporation of the implied future benefits and risks of the investment decision assigned by an outside investor. In accordance with the Practice Aid, we considered the various methods for allocating the enterprise value across our classes and series of capital stock to determine the fair value of our common stock at each valuation date. We only granted restricted stock awards prior to January 2018. From January 2018 to July 2018, we concluded that a hybrid of the Option Pricing Method, or OPM, and the guideline transaction method with current value method allocation, or CVM, was the most appropriate for each of the valuations of our common stock performed by our independent third-party valuation specialist. Under the OPM, shares are valued by creating a series of call options with exercise prices based on the liquidation preferences and conversion terms of each equity class. The values of the preferred and common stock are inferred by analyzing these options. Under the CVM, the enterprise value is calculated based on an assumed forced asset sale at a future date and the corresponding allocation of proceeds based on the rights and preferences of each class of equity. The valuations assigned a relative weighting to each of the OPM back-solve and asset sale scenarios, based on the likelihood that the Company would be able to successfully advance its development programs to the next development stage with its current capital resources. We believed this hybrid method was the most appropriate given the expectation of various potential

liquidity outcomes and the difficulty of selecting appropriate enterprise values given our early stage of development, while allowing us to accurately capture the potential downside risk of our clinical-stage assets. In November 2018, we changed to a hybrid of the OPM and Probability-Weighted Expected Return Method, or PWERM. The PWERM is a scenario-based analysis that estimates the value per share based on the probability-weighted present value of expected future investment returns, considering each of the possible outcomes available to us, as well as the economic and control rights of each share class. Under this hybrid method, we considered the expected initial public offering liquidity scenario, but also used the OPM to capture all other scenarios in the event a near-term initial public offering does not occur.

Following the closing of our IPO, the fair value per share of our common stock for purposes of determining stock-based compensation expense is based on the closing price of our common stock as reported on the applicable grant date.

Results of Operations for the Years Ended December 31, 2018 and 2017

The following table sets forth our selected statements of operations data for the years ended December 31, 2018 and 2017:

	Years Ended December 31,		2018 vs 2017 Change
	2018	2017	
	(in thousands)		
Operating expenses:			
Research and development	$ 55,283	$ 891	$ 54,392
In process research and development	49,659	5,500	44,159
General and administrative	44,051	262	43,789
Total operating expenses	148,993	6,653	142,340
Loss from operations	(148,993)	(6,653)	(142,340)
Other income (expenses)			
Interest income	1,720	—	1,720
Interest expense	(12)	(118)	106
Other income (expense)	316	—	316
Total other income (expense), net	2,024	(118)	2,142
Net loss	$ (146,969)	$ (6,771)	$ (140,198)

Operating Expenses

Research and development

Research and development expenses were $55.3 million for the year ended December 31, 2018, compared to $0.9 million for the year ended December 31, 2017. The $55.3 million for the year ended December 31, 2018 was primarily attributable to $23.4 million of costs associated with preclinical studies and clinical trials for GB001, $16.0 million of cost associated with preclinical studies and clinical trials for GB002, $6.7 million of cost associated with preclinical studies and clinical trials for GB004, and $6.0 million of costs related to personnel and external consultants.

The following table shows our research and development expenses by program for the years ended December 31, 2018 and 2017:

	Years Ended December 31,	
	2018	2017
	(in thousands)	
GB001	23,409	—
GB002	16,028	241
GB004	6,739	—
Other Programs	3,144	—
Unallocated expenses	5,963	650
Total research and development	$ 55,283	$ 891

In process research and development

IPR&D expenses were $49.7 million for year ended December 31, 2018, compared to $5.5 million for the year ended December 31, 2017. The $49.7 million for the period ended December 31, 2018 was primarily attributable to our $20.0 million upfront payment made to Aerpio in connection with the in-license of GB004, $19.1 million of costs associated with the issuance of our stock in connection with our acquisition of GB001 and AA Biopharma and our $7.5 million upfront payment in connection with our acquisition of GB1275 and Adhaere.

General and administrative

General and administrative expenses were $44.1 million for the year ended December 31, 2018, compared to $0.3 million for the year ended December 31, 2017. The $44.1 million for the year ended December 31, 2018 was primarily attributable to $30.3 million in stock-based compensation costs, $6.0 million in personnel-related costs, $3.7 million in professional fees, $1.3 million in legal fees and $0.8 million in facility-related costs.

Other income (expense), net

Other income (expense), net was $2.0 million for the year ended December 31, 2018, compared to $(0.1) million for the year ended December 31, 2017 related to interest expense on the convertible note. The $2.0 million for the year ended December 31, 2018 was attributable to $1.7 million interest income earned on our cash, cash equivalents and marketable securities during the period and $0.5 million of accretion of investments related to marketable securities held by us at December 31, 2018. This was offset by $0.2 million of franchise taxes and realized losses on marketable securities.

Results of Operations for the Years Ended December 31, 2017 and 2016

The following table sets forth our selected statements of operations data for the years ended December 31, 2017 and 2016:

	Years Ended December 31,		2017 vs 2016 Change
	2017	2016	
	(in thousands)		
Operating expenses:			
Research and development	$ 891	$ —	$ 891
In process research and development	5,500	—	5,500
General and administrative	262	83	179
Total operating expenses	6,653	83	6,570
Loss from operations	(6,653)	(83)	(6,570)
Other expense	(118)	—	(118)
Net loss	$ (6,771)	$ (83)	$ (6,688)

Operating expenses

Research and development

Research and development expenses were approximately $0.9 million for the year ended December 31, 2017, compared to $0 for the year ended December 31, 2016. The $0.9 million was primarily attributable to $0.6 million in legal fees, $0.2 million in external consultant costs and salaries and $0.1 million of employee-related costs for research and development staff. All research and development expenses for the year ended December 31, 2017 were attributable to GB002.

In process research and development

IPR&D expenses were approximately $5.5 million for the year ended December 31, 2017, compared to $0 for the year ended December 31, 2016. The $5.5 million was attributable to our upfront payment for the in-license of GB002 from Pulmokine.

General and administrative

General and administrative expenses were approximately $0.3 million for the year ended December 31, 2017, compared to approximately $0.1 million for the year ended December 31, 2016. The $0.3 million for the year ended December 31, 2017 was primarily related to legal fees.

Other income (expense), net

Other income (expense), net was $0.1 million for the year ended December 31, 2017, compared to $0 for the year ended December 31, 2016. The $0.1 million was primarily related to interest expense on the convertible promissory note.

Liquidity and Capital Resources

We have incurred substantial operating losses since our inception, and expect to continue to incur significant operating losses for the foreseeable future and may never become profitable. As of December 31, 2018 and 2017, we had an accumulated deficit of $153.9 million and $6.9 million, respectively.

Our primary use of cash is to fund operating expenses, which consist primarily of research and development expenditures, and to a lesser extent, general and administrative expenditures. Cash used to fund operating expenses is impacted by the timing of when we pay these expenses, as reflected in the change in our outstanding accounts payable and accrued expenses.

From our inception through the year ended December 31, 2018, our operations have been financed primarily by gross proceeds of $338.4 million from the sale of our convertible preferred stock and a convertible promissory note. In January and March 2018, we issued and sold an aggregate of 45,714,286 shares of Series A convertible preferred stock at $1.75 per share, for approximately $73.9 million in gross proceeds and the cancellation of a $6.1 million convertible promissory note. In January 2018, we acquired GB001 pursuant to a merger agreement with AA Biopharma under which we issued to former AA Biopharma shareholders an aggregate of 20,000,000 shares of our Series Seed convertible preferred stock and 1,101,278 shares of our common stock. In connection with this acquisition, we received $12.8 million in cash. In July 2018, we raised approximately $230.0 million in gross proceeds from the sale of 71,506,513 shares of Series B convertible preferred stock. As of December 31, 2018, we had cash, cash equivalents and marketable securities of $228.7 million. On February 12, 2019, we closed our IPO and the underwriters in the IPO purchased 19,837,500 shares, including the full exercise of their option to purchase additional shares of common stock. The net proceeds from the IPO were $291.5 million, after deducting underwriting discounts and commissions and estimated offering costs. In connection with the closing of the IPO, the outstanding shares of our convertible preferred stock were converted in shares of common stock at a ratio of 4.5-to-one. Cash in excess of immediate requirements is invested in accordance with our investment policy, primarily with a view to capital preservation and liquidity.

The following table shows a summary of our cash flows for each of the years shown below:

	Years Ended December 31,		
	2018	2017	2016
	(in thousands)		
Net cash (used in) provided by operating activities	(51,044)	(5,745)	20
Net cash used in investing activities	(144,711)	—	—
Net cash provided by financing activities	300,859	6,000	40
Net increase in cash, cash equivalents and restricted cash	$ 105,104	$ 255	$ 60

Operating activities

During the year ended December 31, 2018, operating activities used approximately $51.0 million of cash, primarily resulting from a net loss of $147.0 million, partially reduced by in process research and development expenses of $49.7 million, changes in operating assets and liabilities of $15.0 million and stock-based compensation expense of $30.9 million. Net cash provided by changes in operating assets and liabilities consisted primarily of increases in accounts payable, accrued research and development expenses, and accrued expenses of $18.6 million, partially offset by an increase in prepaid expenses due to prepayments for clinical development activities and security deposits of $2.8 million.

During the year ended December 31, 2017, operating activities used approximately $5.7 million of cash, primarily resulting from a net loss of $6.8 million, partially reduced by increases in accounts payable, accrued research and development expenses, and accrued expenses of $1.0 million.

During the year ended December 31, 2016, operating activities were nominal.

Investing activities

During the year ended December 31, 2018, investing activities used approximately $144.7 million of cash, primarily resulting from the upfront payment made to Aerpio of $20.0 million in connection with the in-license of GB004, upfront payments of $10.5 million in connection with the acquisition of our preclinical programs, the purchase of marketable securities of $123.5 million, and the purchase of property and equipment of $3.5 million, partially offset by $12.8 million of cash proceeds received from AA Biopharma in connection with our acquisition.

There were no investing activities for the years ended December 31, 2017 and 2016, respectively.

Financing activities

During the year ended December 31, 2018, financing activities provided $300.9 million of cash, primarily resulting from the net proceeds from issuance of our Series A and B convertible preferred stock of $303.0 million.

During the year ended December 31, 2017, financing activities provided $6.0 million of cash, primarily resulting from the proceeds from issuance of a convertible promissory note.

During the year ended December 31, 2016, financing activities were nominal.

Funding requirements

Based on our current operating plan, we believe that our existing cash, cash equivalents and marketable securities will be sufficient to fund our operations through at least the next 12 months. However, our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement that involves risks and uncertainties, and actual results could vary materially. We have based this estimate on assumptions that may prove to be wrong, and we could use our capital resources sooner than we expect. Additionally, the process of testing product candidates in clinical trials is costly, and the timing of progress and expenses in these trials is uncertain.

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

- the type, number, scope, progress, expansions, results, costs and timing of, our preclinical studies and clinical trials of our product candidates which we are pursuing or may choose to pursue in the future;
- the costs and timing of manufacturing for our product candidates;
- the costs, timing and outcome of regulatory review of our product candidates;
- the costs of obtaining, maintaining and enforcing our patents and other intellectual property rights;
- our efforts to enhance operational systems and hire additional personnel to satisfy our obligations as a public company, including enhanced internal controls over financial reporting;
- the costs associated with hiring additional personnel and consultants as our preclinical and clinical activities increase;
- the timing and amount of the milestone or other payments we must make to the licensors and other third parties from whom we have in-licensed our acquired our product candidates;
- the costs and timing of establishing or securing sales and marketing capabilities if any product candidate is approved;
- our ability to achieve sufficient market acceptance, coverage and adequate reimbursement from third-party payors and adequate market share and revenue for any approved products;
- the terms and timing of establishing and maintaining collaborations, licenses and other similar arrangements; and
- costs associated with any products or technologies that we may in-license or acquire.

Until such time as we can generate substantial product revenues to support our cost structure, if ever, we expect to finance our cash needs through equity offerings, debt financings or other capital sources, including potentially collaborations, licenses and other similar arrangements.

However, we may be unable to raise additional funds or enter into such other arrangements when needed on favorable terms or at all. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our stockholders will be or could be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common stockholders. 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, making capital expenditures or declaring dividends. If we raise funds through collaborations, licenses and other similar 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 and/or may reduce the value of our common stock. Our failure to raise capital or enter into such other arrangements when needed could have a negative impact on our financial condition and on our ability to pursue our business plans and

strategies. If we are unable to raise additional capital when needed, we could be forced to delay, limit, reduce or terminate our product candidate development or future commercialization efforts or grant rights to develop and market our product candidates even if we would otherwise prefer to develop and market such product candidates ourselves.

Contractual Obligations and Commitments

The following table summarizes our contractual obligations at December 31, 2018:

	Total	Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
			(in thousands)		
Contractual obligations:					
Operating leases (1)	$ 15,749	$ 2,944	$ 9,374	$ 3,431	$ —
Purchase obligations (2)	2,182	2,182	—	—	—
Total contractual obligations	$ 17,931	$ 5,126	$ 9,374	$ 3,431	$ —

(1) Operating leases include our continuing rent obligations through December 2024.
(2) As of December 31, 2018 we had $2.2 million of open purchase orders. All of our purchase orders may be cancelled without significant penalty.

Under our license agreements with Pulmokine and Aerpio, as well as our other license and acquisition agreements, we have payment obligations that are contingent upon future events such as our achievement of specified development, regulatory and commercial milestones and are required to make royalty payments in connection with the sale of products developed under those agreements. As of December 31, 2018, we were unable to estimate the timing or likelihood of achieving the milestones or making future product sales and, therefore, any related payments are not included in the table above.

We enter into contracts in the normal course of business with clinical trial sites and clinical supply manufacturers and with vendors for preclinical studies, research supplies and other services and products for operating purposes. These contracts generally provide for termination after a notice period, and, therefore, are cancelable contracts and not included in the table above.

Off-Balance Sheet Arrangements

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined under the rules and regulations of the SEC.

Recent accounting pronouncements

See Note 2 to our consolidated financial statements included elsewhere in this annual report.

JOBS Act

As an emerging growth company under the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, we can take advantage of an extended transition period for complying with new or revised accounting standards. This allows an emerging growth company to delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this exemption and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies. We intend to rely on other exemptions provided by the JOBS Act, including without limitation, not being required to comply with the auditor attestation requirements of Section 404(b) of Sarbanes-Oxley.

We will remain an emerging growth company until the earliest of (i) the last day of the fiscal year following the fifth anniversary of the consummation of our IPO, (ii) the last day of the fiscal year in which we have total annual gross revenue of at least $1.07 billion, (iii) the last day of the fiscal year in which we are deemed to be a “large accelerated filer” as defined in Rule 12b-2 under the Exchange Act, which would occur if the market value of our common stock held by non-affiliates exceeded $700.0 million as of the last business day of the second fiscal quarter of such year, or (iv) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three-year period.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk.

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 investments, including cash equivalents, are in the form of U.S. Treasury securities and a money market fund that is invested in U.S. Treasury securities. Due to the conservative nature of these instruments, we do not believe that we have a

material exposure to interest rate risk. A 100 basis points change in interest rates would not have a significant impact on the total value of our portfolio. We had no debt outstanding as of December 31, 2018.

We are also exposed to market risk related to changes in foreign currency exchange rates. We contract with vendors that are located outside of the United States and certain invoices are denominated in foreign currencies. We are subject to fluctuations in foreign currency rates in connection with these arrangements. We do not currently hedge our foreign currency exchange rate risk. As of December 31, 2018, and 2017, we had minimal or no liabilities denominated in foreign currencies.

Inflation generally affects us by increasing our cost of labor and clinical trial costs. We do not believe that inflation had a material effect on our business, financial condition or results of operations during periods presented.

Item 8. Financial Statements and Supplementary Data.

The consolidated financial statements required pursuant to this item are incorporated by reference herein from the applicable information included in Item 15 of this annual report and are presented beginning on page F-1.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in our periodic and current reports that we file with the SEC is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable and not absolute assurance of achieving the desired control objectives. In reaching a reasonable level of assurance, management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. In addition, the design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, control may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Our management, with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act as of the end of the period covered by this annual report. Based on such evaluation, our principal executive officer and principal financial officer have concluded that as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Management's Annual Report on Internal Control Over Financial Reporting

This annual report does not include a report of management's assessment regarding internal control over financial reporting due to a transition period established by the rules of the SEC for newly public companies.

Attestation Report of the Registered Public Accounting Firm

This annual report does not include an attestation report of our registered public accounting firm due to an exemption provided by the JOBS Act for "emerging growth companies."

Changes in Internal Control Over Financial Reporting

There have been no changes in our internal control over financial reporting during the year ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this item will be contained in our definitive proxy statement to be filed with the Securities and Exchange Commission in connection with our 2019 Annual Meeting of Stockholders, or the Definitive Proxy Statement, which is expected to be filed not later than 120 days after the end of our fiscal year ended December 31, 2018, under the headings “Election of Directors,” “Corporate Governance,” “Our Executive Officers,” and “Section 16(a) Beneficial Ownership Reporting Compliance,” and is incorporated herein by reference.

Code of Business Conduct and Ethics

We have adopted a Code of Business Conduct and Ethics that applies to our officers, directors and employees, which is available on our website at www.gossamerbio.com. The Code of Business Conduct and Ethics contains general guidelines for conducting the business of our company consistent with the highest standards of business ethics and is intended to qualify as a “code of ethics” within the meaning of Section 406 of the Sarbanes-Oxley Act of 2002 and Item 406 of Regulation S-K. In addition, we intend to promptly disclose (1) the nature of any amendment to our Code of Business Conduct and Ethics that applies to our principal executive officer, principal financial officer, principal accounting officer or controller or persons performing similar functions and (2) the nature of any waiver, including an implicit waiver, from a provision of our code of ethics that is granted to one of these specified officers, the name of such person who is granted the waiver and the date of the waiver on our website in the future.

Item 11. Executive Compensation.

The information required by this item will be set forth in the section headed "Executive Compensation and Other Information" in our Definitive Proxy Statement and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by this item will be set forth in the section headed "Security Ownership of Certain Beneficial Owners and Management" in our Definitive Proxy Statement and is incorporated herein by reference.

The information required by Item 201(d) of Regulation S-K will be set forth in the section headed "Executive Compensation" in our Proxy Statement and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by this item will be set forth in the section headed "Certain Relationships and Related Person Transactions," “Board Independence” and “Committees of the Board of Directors” in our Definitive Proxy Statement and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services.

The information required by this item will be set forth in the section headed "Independent Registered Public Accountants’ Fees” in our Definitive Proxy Statement and is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules.

(1) All financial statements

The consolidated financial statements of Gossamer Bio, Inc., together with the report thereon of Ernst & Young LLP, an independent registered public accounting firm, are included in this annual report on Form 10-K beginning on page F-1.

(2) Financial statement schedules

All schedules have been omitted because the information required to be set forth therein is not applicable or is shown in the consolidated financial statements or notes thereto.

(3) Exhibits

A list of exhibits is set form on the Exhibit Index immediately preceding the signature page of this annual report on Form 10-K and is incorporated herein by reference.

Item 16. Form 10–K Summary.

None.

Gossamer Bio, Inc.
Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

To the Stockholders' and the Board of Directors of Gossamer Bio, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Gossamer Bio, Inc. (the Company) as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive loss, convertible preferred stock and stockholders' deficit and cash flows for each of the three years in the period ended December 31, 2018, 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, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

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. 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.

San Diego, California

March 22, 2019

GOSSAMER BIO, INC.
Consolidated Balance Sheets
(in thousands, except share and par value amounts)

	December 31,	
	2018	**2017**
ASSETS		
Current assets		
Cash and cash equivalents	$ 105,219	$ 315
Marketable securities	123,439	—
Restricted cash	200	—
Prepaid expenses and other current assets	3,095	130
Total current assets	231,953	445
Property and equipment, net	3,193	—
Other assets	4,273	—
Total assets	**$ 239,419**	**$ 445**
LIABILITIES, CONVERTIBLE PREFERRED STOCK, AND STOCKHOLDERS' DEFICIT		
Current liabilities		
Accounts payable	$ 2,182	$ 97
Accrued research and development expenses	10,653	126
Accrued expenses	7,568	926
Accrued interest	—	117
Total current liabilities	20,403	1,266
Note payable to related parties	—	40
Convertible note payable	—	6,000
Accrued expenses - long-term	718	1
Total liabilities	**21,121**	**7,307**
Commitments and contingencies - Note 10		
Series Seed convertible preferred stock, $0.0001 par value; 20,000,000 shares authorized as of December 31, 2018 and 0 shares authorized as of December 31, 2017; 20,000,000 shares issued and outstanding as of December 31, 2018 and 0 shares issued and outstanding as of December 31, 2017 and; liquidation preference of $20,000 as of December 31, 2018	29,200	—
Series A convertible preferred stock, $0.0001 par value; 45,714,286 shares authorized as of December 31, 2018 and 0 shares authorized as of December 31, 2017; 45,714,286 shares issued and outstanding as of December 31, 2018 and 0 shares issued and outstanding as of December 31, 2017; liquidation preference of $80,000 as of December 31, 2018	79,615	—
Series B convertible preferred stock, $0.0001 par value; 71,506,513 shares authorized as of December 31, 2018 and 0 shares authorized as of December 31, 2017 and; 71,506,513 shares issued and outstanding as of December 31, 2018 and 0 shares issued and outstanding as of December 31, 2017 and; liquidation preference of $230,000 as of December 31, 2018;	229,552	—
Stockholders' deficit		
Common stock, $0.0001 par value; 49,160,177 and 27,777,777 shares authorized as of December 31, 2018 and 2017; 15,533,450 issued and 8,051,418 outstanding as of December 31, 2018, and 9,160,888 shares issued and outstanding as of December 31, 2017	2	—
Additional paid-in capital	33,853	32
Accumulated deficit	(153,863)	(6,894)
Accumulated other comprehensive loss	(61)	—
Total stockholders' deficit	(120,069)	(6,862)
Total liabilities, convertible preferred stock and stockholders' deficit	**$ 239,419**	**$ 445**

The accompanying notes are an integral part of these consolidated financial statements.

GOSSAMER BIO, INC.
Consolidated Statements of Operations
(in thousands, except share and per share amounts)

	Years Ended December 31,		
	2018	**2017**	**2016**
Operating expenses:			
Research and development	$ 55,283	$ 891	—
In process research and development	49,659	5,500	—
General and administrative	44,051	262	83
Total operating expenses	148,993	6,653	83
Loss from operations	**(148,993)**	**(6,653)**	**(83)**
Other income (expenses)			
Interest income	1,720	—	—
Interest expense	(12)	(118)	—
Other income (expense)	316	—	—
Total other income (expense), net	2,024	(118)	-
Net loss	**$ (146,969)**	**$ (6,771)**	**$ (83)**
Net loss per share, basic and diluted	$ (22.59)	$ (0.74)	$ (0.01)
Weighted average common shares outstanding, basic and diluted	6,504,871	9,160,888	9,160,888

The accompanying notes are an integral part of these consolidated financial statements.

GOSSAMER BIO, INC.
Consolidated Statements of Comprehensive Loss
(in thousands)

	Years Ended December 31,		
	2018	**2017**	**2016**
Net loss	$ (146,969)	$ (6,771)	$ (83)
Other comprehensive loss:			
Unrealized loss on marketable securities, net of tax	(61)	—	—
Other comprehensive loss	(61)	—	—
Comprehensive loss	**$ (147,030)**	**$ (6,771)**	**$ (83)**

The accompanying notes are an integral part of these consolidated financial statements.

GOSSAMER BIO, INC.
Consolidated Statements of Convertible Preferred Stock and Stockholders' Deficit
(in thousands, except share amounts)

	Series Seed convertible preferred stock		Series A convertible preferred stock		Series B convertible preferred stock		Common stock		Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive loss	Total stockholders' deficit
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount				
Balance as of December 31, 2015	—	$ —	—	$ —	—	$ —	9,160,888	$ —	$ —	$ (40)	$ —	$ (40)
Net loss	—	—	—	—	—	—	—	—	—	(83)	—	(83)
Balance as of December 31, 2016	—	$ —	—	$ —	—	$ —	9,160,888	$ —	$ —	$ (123)	$ —	$ (123)
Stock-based compensation	—	—	—	—	—	—		—	32	—	—	32
Net loss	—	—	—	—	—	—	—	—	—	(6,771)	—	(6,771)
Balance as of December 31, 2017	—	$ —	—	$ —	—	$ —	9,160,888	$ —	$ 32	$ (6,894)	$ —	$ (6,862)
Issuance of Series A preferred stock for cash, net of $0.4 million in offering costs	—	—	42,215,077	73,491	—	—	—	—	—	—	—	—
Issuance of stock for acquisition	20,000,000	29,200	—	—	—	—	1,101,278	1	2,874	—	—	2,875
Issuance of Series A preferred stock to convert debt and accrued interest	—	—	3,499,209	6,124	—	—	—	—	—	—	—	—
Issuance of Series B preferred stock for cash, net of $0.5 million in offering costs	—	—	—	—	71,506,513	229,552						
Vesting of restricted stock	—	—	—	—	—	—	2,369,696	1	—	—	—	1
Incremental vesting conditions place on previously issued common shares	—	—	—	—	—	—	(4,580,444)	—	—	—	—	—
Stock-based compensation	—	—	—	—	—	—	—	—	30,947	—	—	30,947
Net loss	—	—	—	—	—	—	—	—	—	(146,969)	—	(146,969)
Other comprehensive income	—	—	—	—	—	—	—	—	—	—	(61)	(61)
Balance as of December 31, 2018	20,000,000	$ 29,200	45,714,286	$ 79,615	71,506,513	$ 229,552	8,051,418	$ 2	$ 33,853	$ (153,863)	$ (61)	$ (120,069)

The accompanying notes are an integral part of these consolidated financial statements.

GOSSAMER BIO, INC.
Consolidated Statements of Cash Flows
(in thousands)

	Years Ended December 31,		
	2018	**2017**	**2016**
Cash flows from operating activities			
Net loss	$ (146,969)	$ (6,771)	$ (83)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:			
Depreciation and amortization	297	—	—
Stock-based compensation expense	30,947	32	—
In process research and development expenses	49,659	—	—
Changes in operating assets and liabilities:			—
Prepaid expenses and other current assets	(2,827)	(130)	—
Other Assets	(584)	—	—
Accounts payable	2,085	57	103
Accrued expenses	5,938	824	—
Accrued research and development expenses	10,527	126	—
Accrued interest - short-term	(117)	117	
Net cash (used in) provided by operating activities	(51,044)	(5,745)	20
Cash flows from investing activities			
Research and development asset acquisitions, net of cash acquired	(17,721)	—	—
Purchase of marketable securities	(123,500)	—	—
Purchase of property and equipment	(3,490)	—	—
Net cash used in investing activities	(144,711)	—	—
Cash flows from financing activities			
Proceeds from issuance of convertible note	—	6,000	—
Proceeds from long term note payable	—	—	40
Proceeds from issuance of Series A convertible preferred stock, net	73,491	—	—
Proceeds from issuance of Series B convertible preferred stock, net	229,552	—	—
Repayment of notes payable to related parties	(40)	—	—
Payment of deferred offering costs	(2,144)	—	—
Net cash provided by financing activities	300,859	6,000	40
Net increase in cash, cash equivalents and restricted cash	105,104	255	—
Cash, cash equivalents and restricted cash, at the beginning of the period	315	60	60
Cash, cash equivalents and restricted cash, at the end of the period	**$ 105,419**	**$ 315**	**$ 60**
Supplemental disclosure of cash flow information:			
Cash paid for interest	$ 119	$ —	$ —
Supplemental disclosure of noncash investing and financing activities:			
Acquisition of in process research and development through issuance of stock	$ 19,284	$ —	$ —
Issuance of Series A convertible preferred stock to convert debt and accrued interest	$ 6,124	$ —	$ —
Unpaid deferred offering costs - net	$ 1,545	$ —	$ —
Change in unrealized gain on marketable securities, net of tax	$ (61)	$ —	$ —

The accompanying notes are an integral part of these consolidated financial statements.

Note 1—Organization and Basis of Presentation

Gossamer Bio, Inc. (the "Company") is a clinical-stage biopharmaceutical company focused on discovering, acquiring, developing and commercializing therapeutics in the disease areas of immunology, inflammation and oncology. The Company was incorporated in the state of Delaware on October 25, 2015 (originally as FSG Bio, Inc.) and is based in San Diego, California.

The consolidated financial statements include the accounts of Gossamer Bio, Inc. and its wholly owned subsidiaries. All intercompany balances and transactions among the consolidated entity have been eliminated in consolidation.

Stock Split

In January 2019, the board of directors of the Company approved a reverse stock split of the Company's common stock at a ratio of one for every 4.5 shares previously held. The reverse stock split became effective on January 23, 2019. All share and per share data included in these financial statements reflect the stock split.

Initial Public Offering in February 2019

On February 12, 2019, the Company completed its initial public offering ("IPO") with the sale of 19,837,500 shares of common stock, including shares of common stock issued upon the exercise in full of the underwriters' option to purchase additional shares, at a public offering price of $16.00 per share, resulting in net proceeds of $291.5 million, after deducting underwriting discounts, commissions, and offering expenses.

Liquidity and Capital Resources

The Company has incurred significant operating losses since its inception. As of December 31, 2018 and 2017, the Company had an accumulated deficit of $153.9 million and $6.9 million, respectively.

From the Company's inception through the year ended December 31, 2018, the Company has funded its operations primarily through equity financings. The Company raised $601.5 million from October 2017 through February 2019 through Series A and Series B Convertible Preferred Stock, convertible note financings, and the completed IPO, after deducting underwriting discounts, commissions, and offering expenses. In addition, the Company received $12.8 million in cash in connection with the January 2018 acquisition of AA Biopharma Inc. The Company expects to continue to incur significant operating losses for the foreseeable future and may never become profitable. As a result, the Company will need to raise capital through equity offerings, debt financings other capital sources, including potential collaborations, licenses and other similar arrangements. Management believes that it has sufficient working capital on hand to fund operations through at least the next twelve months from the date these consolidated financial statements were available to be issued. There can be no assurance that the Company will be successful in acquiring additional funding, that the Company's projections of its future working capital needs will prove accurate, or that any additional funding would be sufficient to continue operations in future years.

Note 2—Summary of Significant Accounting Policies

Basis of Presentation

The Company's consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP").

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 and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of expenses during the reporting period. The most significant estimates in the Company's consolidated financial statements relate to accrued research and development expenses, the valuation of preferred and common stock, the valuation of stock options and the valuation allowance of deferred tax assets resulting from net operating losses. These estimates and assumptions are based on current facts, historical experience and various other factors believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities and the recording of expenses that are not readily apparent from other sources. Actual results could differ from those estimates.

Segments

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision-maker in making decisions regarding resource allocation and assessing performance. The Company views its operations and manages its business in one operating segment.

Cash and Cash Equivalents

The Company considers all highly liquid investments with original maturities of three months or less to be cash equivalents. The carrying amounts reported in the consolidated balance sheets for cash and cash equivalents are valued at cost, which approximate their fair value.

Marketable Securities

The Company considers securities with original maturities of greater than 90 days to be marketable securities. These marketable securities consist of U.S. Treasury securities. Marketable securities are recorded at fair value and unrealized gains and losses are recorded within accumulated other comprehensive loss. The estimated fair value of the marketable securities is determined based on quoted market prices or rates for similar instruments. The Company evaluates securities with unrealized losses to determine whether such losses, if any, are other than temporary. Realized gains and losses are calculated using the specific identification method and recorded as interest income or expense. We do not generally intend to sell the investments and it is not more likely than not that we will be required to sell the investments before recovery of their amortized cost bases, which may be at maturity. The Company has determined that there were no other than temporary declines in fair values of its investments as of December 31, 2018.

As of December 31, 2018, the Company held U.S. Treasury securities with an amortized cost of $123.0 million, an unrealized gain of $1,000, an unrealized loss of $8,000, a fair market value of $123.4 million and are scheduled to mature in less than twelve months. As of December 31, 2017, the Company did not hold any marketable securities.

Restricted Cash

Restricted cash serves as collateral for the Company's corporate credit card program.

Concentrations of Credit Risk and Off-Balance Sheet Risk

Cash, cash equivalents and marketable securities are financial instruments that are potentially subject to concentrations of credit risk. The Company's cash and cash equivalents are deposited in accounts at large financial institutions, and amounts may exceed federally insured limits. The Company believes it is not exposed to significant credit risk due to the financial strength of the depository institutions in which the cash and cash equivalents are held. The Company maintains its cash equivalents in U.S. Treasury securities with maturities less than three months and in money market funds that invest in U.S. Treasury securities.

The Company's available for sale securities are also invested in U.S. Treasury securities. The Company has not recognized any losses from credit risks on such accounts during any of the periods presented. The Company believes it is not exposed to significant credit risk on its cash, cash equivalents and available for sale securities.

Property and Equipment, Net

Property and equipment, net, which consists mainly of office equipment and leasehold improvements, are carried at cost less accumulated depreciation. Depreciation is computed over the estimated useful lives of the respective assets, generally three to seven years, using the straight-line method.

Deferred Offering Costs

The Company capitalizes certain legal and other third-party fees that are directly associated with in process equity financings as deferred offering costs until such financings are consummated. After consummation of the equity financing, these costs are recorded as a reduction of the proceeds generated as a result of the offering. Deferred offering costs amounted to $2.1 million and $0 as of December 31, 2018 and 2017, respectively, and are recorded as a component of Other assets on the consolidated balance sheets.

Leases

The Company records rent expense on a straight-line over the term of the lease. The difference between rent payments and straight-line rent expense is recorded as deferred rent.

Research and Development

All research and development costs are expensed as incurred. Research and development costs consist primarily of salaries, employee benefits, costs associated with preclinical studies and clinical trials (including amounts paid to clinical research organizations and other professional services), in process research and development expenses and license agreement expenses. Payments made prior to the receipt of goods or services to be used in research and development are capitalized until the goods or services are received.

The Company records accruals for estimated research and development costs, comprising payments for work performed by third party contractors, laboratories, participating clinical trial sites, and others. Some of these contractor's bill monthly based on actual services performed, while others bill periodically based upon achieving certain contractual milestones. For the latter, the Company accrues the expenses as goods or services are used or rendered. Clinical trial site costs related to patient enrollment are accrued as patients enter and progress through the trial. Upfront costs, such as costs associated with setting up clinical trial sites for participation in the trials, are expensed immediately once incurred as research and development expenses.

Patent Costs

Costs related to filing and pursuing patent applications are expensed as incurred, as recoverability of such expenditures is uncertain. These costs are included in general and administrative expenses.

Income Taxes

Income taxes are recorded in accordance with Financial Accounting Standards Board ("FASB") Standards Codification ("ASC") No. 740, *Income Taxes* ("ASC 740"), which provides for deferred taxes using an asset and liability approach. The Company recognizes deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements or tax returns. Deferred tax assets and liabilities are determined based on the difference between the financial statement and tax bases of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. Valuation allowances are provided, if based upon the weight of available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized.

The Company accounts for uncertain tax positions in accordance with the provisions of ASC 740. When uncertain tax positions exist, the Company recognizes the tax benefit of tax positions to the extent that the benefit would more likely than not be realized assuming examination by the taxing authority. The determination as to whether the tax benefit will more likely than not be realized is based upon the technical merits of the tax position as well as consideration of the available facts and circumstances.

Deferred tax assets and liabilities reflect the future tax consequences of the differences between the financial reporting and tax bases of assets and liabilities using current enacted tax rates. Valuation allowances are recorded when the realizability of such deferred tax assets does not meet a more-likely-than-not threshold. For tax benefits to be recognized, a tax position must be more likely than not to be sustained upon examination by taxing authorities. The Company is subject to taxation in the United States and state jurisdictions. As of December 31, 2018, the Company's tax years since inception are subject to examination by taxing authorities.

Stock-Based Compensation

The Company expenses stock-based compensation to employees and non-employees over the requisite service period based on the estimated grant-date fair value of the awards. The Company records the expense for stock-based compensation awards subject to performance-based milestone vesting over the remaining service period when management determines that achievement of the milestone is probable. Management evaluates when the achievement of a performance-based milestone is probable based on the expected satisfaction of the performance conditions at each reporting date. The Company estimates the fair value of stock option grants using the Black-Scholes option pricing model, and the assumptions used in calculating the fair value of stock-based awards represent management's best estimates and involve inherent uncertainties and the application of management's judgment. All share-based compensation costs are recorded in the statements of operations based upon the underlying employees or non-employee's roles within the Company.

Recent Accounting Pronouncements—To Be Adopted

In February 2016, the FASB issued Accounting Standards Update ("ASU") No. 2016-02, *Leases (Topic 842)*, which requires an entity to recognize assets and liabilities arising from a lease for both financing and operating leases, along with additional qualitative and quantitative disclosures. ASU 2016-02 is effective for fiscal periods beginning after December 15, 2018, with early adoption permitted. Additionally, in July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements*, which permits entities to continue applying legacy guidance in *ASC 840, Leases*, including its disclosure requirements, in the comparative periods presented in the year that the entity adopts the new leasing standard. The Company will adopt the lease standard on January 1, 2019 using the optional transition under ASU 2018-11 and apply the new guidance prospectively as of January 1, 2019, rather than as of the earliest period presented.

The Company has identified the population of leases subject to this new guidance, and expects to utilize the package of practical expedients and the practical expedient related to not separating lease and nonlease components. Although the Company is currently evaluating the impact of the adoption of the new lease standard on its financial statements, the Company currently believes the most significant changes will be related to the recognition of right of use assets and the associated lease liabilities on the Company's consolidated balance sheets for real estate operating leases. The Company expects to record lease assets and lease liabilities upon adoption of this guidance, and is in the process of completing its calculation of these amounts.

Recently Adopted Accounting Pronouncements

In February 2018, the FASB issued ASU No. 2018-02, *Income Statement—Reporting Comprehensive Income, (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*, which allows a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the newly enacted federal corporate income tax rate under the Tax Act. The amount of the reclassification would be the difference between the historical corporate income tax rate and the newly enacted 21% corporate income tax rate. The new standard is effective for fiscal years, including interim periods within those fiscal years, beginning after December 15, 2018 with early adoption in any interim period permitted. The Company has elected to early adopt ASU 2018-02, as of January 1, 2018. The adoption of ASU 2018-02 did not have a material impact on its consolidated financial statements and related disclosures.

In January 2017, the FASB issued ASU No. 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business*. 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. The guidance is effective for fiscal periods beginning after December 15, 2017, including interim periods within those periods. The Company early adopted ASU 2017-01 as appropriate. The adoption of this guidance did not have a material impact on its consolidated financial statements and related disclosures.

In November 2016, the FASB issued ASU No. 2016-18, *Statement of Cash Flows (Topic 230): Restricted Cash*, which clarifies the presentation of restricted cash in the statements of cash flows. Under ASU 2016-18, restricted cash is included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statements of cash flows. The Company adopted ASU 2016-18 as of January 1, 2018. Cash, cash equivalents and restricted cash total as presented in the statements of cash flows consist of cash and cash equivalents of $105.2 million and restricted cash of $0.2 million.

In October 2016, the FASB issued ASU 2016-16, Income Taxes (Topic 740): *Intra-Entity Transfers of Assets Other Than Inventory*, that will require companies to account for the income tax effects of intercompany transfers of assets, other than inventory, in the income statement as income tax expense (or benefit) in the period the sale or transfer occurs. The exception to recognizing the income tax effects of intercompany sales or transfers of assets remains in place for intercompany inventory sales and transfers. Under the new guidance, companies will evaluate whether the tax effects of intercompany sales or transfers of non-inventory assets should be included in their estimates of annual effective tax rates by using existing interim guidance on income tax accounting. The guidance is effective for public business entities (PBEs) for annual periods beginning after December 15, 2017 (i.e., January 1, 2018 for a calendar-year entity), and interim periods within those annual periods. Early adoption is permitted for all entities as of the beginning of an annual period (i.e., early adoption is permitted only in the first interim period). The Company has elected to early adopt the standard as of January 1, 2018.

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers*, which created a single, principle-based revenue recognition model that will supersede and replace nearly all existing U.S. GAAP revenue recognition guidance. Entities will recognize revenue in a manner that depicts the transfer of goods or services to customers at an amount that reflects the consideration to which the entity expects to be entitled to receive in exchange for those goods or services. The model provides that entities follow five steps: (i) identify the contract with a customer, (ii) identify the performance obligations in the contract, (iii) determine the transaction price, (iv) allocate the transaction price to the performance obligations, and (v) recognize revenue. The Company has elected to early adopt ASU 2014-09, as of January 1, 2017, the adoption of this guidance did not have any impact on its consolidated financial statements and related disclosures.

Net Loss Per Share

Basic net loss per share of common stock is computed by dividing net loss attributable to common stockholders by the weighted average number of shares of common stock outstanding for the period. Diluted net loss per share excludes the potential impact of Series Seed Convertible Preferred Stock, Series A Convertible Preferred Stock, and Series B Convertible Preferred Stock, common stock options and unvested shares of restricted stock because their effect would be anti-dilutive due to the Company's net loss. Since the Company had a net loss in each of the periods presented, basic and diluted net loss per common share are the same.

The table below provides potentially dilutive securities not included in the calculation of the diluted net loss per share because to do so would be anti-dilutive:

	December 31,		
	2018	2017	2016
Shares issuable upon conversion of Series Seed Convertible Preferred Stock	4,444,444	—	—
Shares issuable upon conversion of Series A Convertible Preferred Stock	10,158,726	—	—
Shares issuable upon conversion of Series B Convertible Preferred Stock	15,890,315	—	—
Shares issuable upon exercise of stock options	5,107,329	—	—
Non-vested shares under restricted stock grants	7,482,032	1,305,421	—

Note 3—Accrued Expenses

Accrued expenses consisted of the following (in thousands):

	Years Ended December 31,	
	2018	2017
Accrued compensation	4,102	34
Accrued legal fees	1,310	780
Accrued accounting fees	722	—
Accrued consulting fees	665	33
Accrued other	769	79
Total accrued expenses	$ 7,568	$ 926

Note 4—Fair Value Measurements

The accounting guidance defines fair value, establishes a consistent framework for measuring fair value and expands disclosure for each major asset and liability category measured at fair value on either a recurring or nonrecurring basis. Fair value is defined as an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. As a basis for considering such assumptions, the accounting guidance establishes a three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value as follows:

Level 1: Observable inputs such as quoted prices in active markets;

Level 2: Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly; and

Level 3: Unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

As of December 31, 2018, and 2017, the carrying amounts of the Company's financial instruments, which include cash, accounts payable and accrued expenses, approximate fair values because of their short maturities. Included in marketable securities as of December 31, 2018 are U.S. Treasury Securities with a carrying value and fair value of $123.4 million based upon a Level 1 fair value assessment.

As of December 31, 2018, and 2017, the Company did not have any Level 2 or Level 3 securities.

Note 5—Convertible Note Financing

On October 2, 2017, the Company issued a convertible promissory note (the "Note") in an amount of $6.0 million to an investor. The Note accrued interest at 8% per year and had a maturity date of October 2, 2018. The Note was subject to an automatic conversion upon a qualified equity financing defined as a raise of $40.0 million, excluding the conversion of the Note and other indebtedness. The conversion was equal to the outstanding principal amount of the Note plus all accrued and previously unpaid interest thereon, divided by the lowest price per share paid by investor for qualified equity financing. The carrying value of the Note for the year ended December 31, 2017 was approximately $6.1 million which approximated the fair value of the Note which was determined using Level 3 inputs. On January 4, 2018, the Note converted into 3,499,209 shares of Series A Convertible Preferred Stock. For the year ended December 31, 2017, the Company recorded aggregate interest expense of $0.1 million. There was no expense recognized for the year ended December 31, 2018.

Note 6—Asset Acquisitions

The following purchased assets were accounted for as asset acquisitions as substantially all of the fair value of the assets acquired were concentrated in a group of similar assets and/or the acquired assets were not capable of producing outputs due to the lack of employees and early stage of development. Because the assets had not yet received regulatory approval, the fair value attributable to these assets was recorded as in process research and development ("IPR&D") expenses in the Company's consolidated statement of operations for the year ended December 31, 2018 and 2017. No IPR&D expense was incurred during the year ended December 31, 2016.

The Company accounts for contingent consideration payable upon achievement of certain regulatory, development or sales milestones in such asset acquisitions when the underlying contingency is resolved.

Acquisition of License from Pulmokine, Inc. (GB002)

On October 2, 2017, the Company, entered into a license agreement with Pulmokine, Inc. under which it was granted an exclusive worldwide license and sublicense to certain intellectual property rights owned or controlled by Pulmokine to develop and commercialize GB002 and certain backup compounds for the treatment, prevention and diagnosis of any and all disease or conditions. The Company also has the right to sublicense its rights under the license agreement, subject to certain conditions. The assets acquired are in the early stages of the FDA approval process, and the Company intends to further develop the assets acquired through potential FDA approval as evidenced by the milestone arrangement in the contract. The development activities cannot be performed without significant cost and effort by the Company. The agreement will remain in effect from the effective date, unless terminated earlier, until, on a licensed product-by-licensed product and country-by-country basis, the later of ten years from the date of first commercial sale or when there is no longer a valid patent claim covering such licensed product or specified regulatory exclusivity for the licensed product in such country. The Company is obligated to make future development and regulatory milestone payments of up to $63.0 million, commercial milestone payments of up to $45.0 million, and sales milestone payments of up to $190.0 million. The Company is also obligated to pay tiered royalties on sales for each licensed product, at percentages ranging from the mid-single digits to the high single-digits. The Company made an upfront payment in the year ended December 31, 2017, recorded as IPR&D of $5.5 million. As of December 31, 2018, no milestones had been accrued as the underlying contingencies had not yet been resolved.

AA Biopharma Inc. Acquisition (GB001)

On January 4, 2018, the Company acquired AA Biopharma Inc. pursuant to a merger agreement, and with the acquisition acquired the rights to GB001 and certain backup compounds. In connection with the merger agreement, the Company issued an aggregate of 20,000,000 shares of Series Seed Convertible Preferred Stock and 1,101,278 shares of Common Stock to the AA Biopharma shareholders. The Company recorded IPR&D of $19.3 million in connection with the acquisition of AA Biopharma.

Acquisition of License from Aerpio Pharmaceuticals, Inc. (GB004)

On June 24, 2018, the Company entered into a license agreement with Aerpio Pharmaceuticals, Inc. ("Aerpio") under which the Company was granted an exclusive worldwide license and sublicense to certain intellectual property rights owned or controlled by Aerpio to develop and commercialize GB004, and certain other related compounds for all applications. The Company also has the right to sublicense its rights under the license agreement, subject to certain conditions. The Company is obligated to make future development and regulatory milestone payments of up to $55.0 million, commercial milestone payments of up to $85.0 million and sales milestone payments of up to $260.0 million. The Company is also obligated to pay tiered royalties on sales for each licensed product, at percentages ranging from a high single-digit to mid-teens, subject to certain customary reductions. The Company made an upfront payment of

$20.0 million, which represented the purchase consideration for an asset acquisition. As of December 31, 2018, no milestones had been accrued as the underlying contingencies had not yet been resolved.

Adhaere Pharmaceuticals, Inc. Acquisition (GB1275)

On September 21, 2018, the Company acquired Adhaere Pharmaceuticals, Inc. pursuant to a merger agreement for an upfront payment of $7.5 million in cash, and with the acquisition acquired the rights to GB1275 and certain backup compounds. The Company is obligated to make future regulatory, development and sales milestones of up to $62.0 million and pay tiered royalties on worldwide net sales, at percentages ranging from low to mid-single digits, subject to customary reductions. As of December 31, 2018, no milestones had been accrued as the underlying contingencies had not yet been resolved. The Company recorded IPR&D of $7.5 million in connection with the acquisition of Adhaere.

The Company recorded the following IPR&D expense on the consolidated statements of operations (in thousands):

	Years Ended December 31,	
	2018	2017
GB002	—	5,500
GB001	19,148	—
GB004	20,000	—
GB1275	7,501	—
Other preclinical programs	3,010	—
Total in process research and development	$ 49,659	$ 5,500

Note 7—Income Taxes

The amount of net loss before taxes for the years ended December 31, 2018, 2017, and 2016 is as follows:

	December 31,		
	2018	2017	2016
	(in thousands)		
U.S. loss before taxes	$ 116,920	$ 6,771	$ 83
Foreign loss before taxes	30,049	—	—
Loss before income taxes	146,969	6,771	83

A reconciliation of income tax expense for the years ended December 31, 2018, 2017, and 2016 is as follows:

	December 31,		
	2018	2017	2016
	(in thousands)		
Current:			
Federal	$ —	$ —	$ —
State	—	—	—
Foreign	—	—	—
Total current income tax expense	—	—	—
Deferred:			
Federal	$ —	$ —	$ —
State	—	—	—
Foreign	—	—	—
Total deferred income tax expense	—	—	—
Total income tax expense	$ —	$ —	$ —

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's deferred tax assets and liabilities at December 31, 2018, 2017 and 2016 are shown below. The Company has established a valuation allowance against net

deferred tax assets due to the uncertainty that such assets will be realized. The Company periodically evaluates the recoverability of the deferred assets. At such time as it is determined that it is more likely than not that the deferred tax asset will be realized, the valuation allowance will be reduced. The change in the valuation allowance for the year ended December 31, 2018 was an increase of $23.5 million.

	December 31,		
	2018	2017	2016
	(in thousands)		
Deferred tax assets:			
Net operating losses	$ 10,706	$ 306	$ 49
Amortization	6,267	1,588	—
Stock-based compensation	6,333	1	—
Other	2,119	—	—
Total gross deferred tax assets	25,425	1,895	49
Deferred tax liabilities:			
Property, plant and equipment	(16)	—	—
Total gross deferred tax liabilities	(16)	—	—
Valuation allowance	(25,409)	(1,895)	(49)
Net deferred tax asset	$ —	$ —	$ —

At December 31, 2018, the Company has federal and California net operating losses (“NOL”) carryforwards of approximately $44.8 million and $1.1 million, respectively. The federal NOL carryforwards generated prior to January 1, 2018 begin to expire in 2034. The federal NOL generated in 2018 of $41.2 million can be carried forward indefinitely and be available to offset up to 80% of future taxable income each year. The California NOL carryforwards begin to expire in 2036. At December 31, 2018, the Company has Irish NOL carryforwards of approximately $9.9 million. The Irish NOL can be carried forward indefinitely.

At December 31, 2018, the Company also had federal research tax credit carryforwards of approximately $1.0 million and California research tax credits of $0.6 million. The federal research tax credit carryforwards begin to expire in 2038 and the California research tax credit carryforward does not expire and can be carried forward indefinitely until utilized.

A reconciliation of the federal statutory income tax rate to the Company’s effective income tax rate is as follows:

	December 31,		
	2018	2017	2016
Federal statutory income tax rate	21.00%	34.00%	34.00%
State income taxes, net of federal benefit	—%	5.73%	5.73%
Change in valuation allowance	(15.66%)	(27.97%)	(39.73%)
Change in tax law	—%	(11.85%)	—%
Research and experimentation credits	0.77%	—%	—%
Foreign rate differential	(1.74%)	—%	—%
In process research and development	(3.92%)	—%	—%
Other	(0.45%)	0.09%	0.09%
Provision for income taxes	—%	—%	0.09%

The NOL carryforward may be subject to an annual limitation under Section 382 and 383 of the Internal Revenue Code of 1986, and similar state provisions if the Company experienced one or more ownership changes which would limit the amount of NOL and tax credit carryforwards that can be utilized to offset future taxable income and tax respectively. In general, an ownership change as defined by Section 382 and 383, results from the transactions increasing ownership of certain stockholders or public groups in the stock of the corporation of more than 50 percentage points over a three-year period. The Company has not completed a Section 382 and 383 analysis to assess whether an ownership change has occurred or whether there have been multiple ownership changes since the Company’s formation due to the complexity and cost associated with such study and the fact there may be additional such ownership changes in the future. If a change in ownership were to have occurred or occurs in the future, the NOL and tax credits carryforwards could be eliminated or restricted. If eliminated, the related asset would be removed from the deferred tax asset schedule with a corresponding reduction in the valuation allowance. Due to the existence of the valuation allowance, limitations created by future ownership changes, if any, will not impact the Company’s effective tax rate.

The Company files income tax returns in the United States, California, Ireland, and the United Kingdom. Due to the Company's losses incurred, the Company is subject to the income tax examination by authorities since inception. The Company's policy is to recognize interest expense and penalties related to income tax matters as tax expense. As of December 31, 2018, there were no significant accruals for interest related to unrecognized tax benefits or tax penalties.

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 ("Tax Act") was signed into law making significant changes to the Internal Revenue Code, including, but are not limited to (a) reducing the federal corporate income tax rate from 35% to 21%, effective January 1, 2018; (b) eliminating the federal corporate alternative minimum tax ("AMT") and changing how existing AMT credits can be realized; and (c) eliminating several business deductions and credits, including deductions for certain executive compensation in excess of $1 million.

As a result of the rate reduction, the Company reduced the deferred tax asset balance as of December 31, 2017 by $0.8 million. Due to the Company's full valuation allowance position, there was no net impact on the Company's income tax provision at December 31, 2017 as the reduction in the deferred tax asset balance was fully offset by a corresponding decrease in the valuation allowance.

In December 2017, the SEC issued Staff Accounting Bulletin No. 118 ("SAB 118"), which provides guidance on accounting for the income tax effects of the Tax Act. SAB 118 provides a measurement period that should not extend beyond one year from the Tax Act enactment date for companies to complete the accounting relating to the Tax Act under ASC 740. In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the Tax Act for which the accounting under ASC 740 is complete. To the extent that a company's accounting for Tax Act-related income tax effects is incomplete, but the company is able to determine a reasonable estimate, it must record a provisional estimate in its financial statements. If a company cannot determine a provisional estimate to be included in its financial statements, it should continue to apply ASC 740 on the basis of the provisions of the tax laws that were in effect immediately before the enactment of the Tax Act. The Company has completed its evaluation of the potential impacts as amended by the Act of 2017 prior to December 22, 2018 and there was no change to the Company's previous analysis.

A reconciliation of the beginning and ending amount of unrecognized tax benefits for 2018, 2017, and 2016, excluding interest and penalties, is as follows:

	December 31,		
	2018	2017	2016
	(in thousands)		
Balance at beginning of the year	$ —	$ —	$ —
Increase related to current year positions	408	—	—
Balance at the end of the year	$ 408	$ —	$ —

Included in the balance of unrecognized tax benefits at December 31, 2018 is $0.4 million that, if recognized, would not impact the Company's income tax benefit or effective tax rate as long as our deferred tax asset remains subject to a full valuation allowance. The Company does not expect any significant increases or decreases to our unrecognized tax benefits within the next 12 months.

Note 8—Convertible Preferred Stock and Stockholders' Deficit

Convertible Preferred Stock

Series Seed Convertible Preferred Stock

On January 4, 2018, the Company issued an aggregate of 20,000,000 shares of Series Seed Convertible Preferred Stock in connection with the merger agreement with AA Biopharma Inc. (See Note 6).

Series A Convertible Preferred Stock

In January and March 2018, the Company issued an aggregate of 45,714,286 shares of Series A Convertible Preferred Stock at $1.75 per share for approximately $73.9 million in cash and the conversion of approximately $6.1 million in principal and accrued interest under the Note (See Note 5).

Series B Convertible Preferred Stock

On July 20, 2018, the Company issued an aggregate of 71,506,513 shares of Series B Convertible Preferred Stock at $3.2167 per share for approximately $230.0 million in gross proceeds.

Dividends

Holders of Series Seed Convertible Preferred Stock, Series A Convertible Preferred Stock and Series B Convertible Preferred Stock (collectively, "Series Convertible Preferred Stock"), in preference to the holders of common stock, shall be entitled to receive, but only out of funds that are legally available therefor, cash dividends at the annual per share rate of 6.0% per annum (based on the original issue price). Such dividends shall be payable only when, as and if declared by the Company's board of directors and shall be non-cumulative. No dividends have been declared as of December 31, 2018.

Liquidation

Holders of Series B Convertible Preferred Stock are entitled to receive a liquidation preference (the "Series B Liquidation Amount") prior to any distribution to the holders of Series Seed Convertible Preferred Stock, Series A Convertible Preferred Stock and common stock in the amount per share equal to the greater of (i) $3.2167, plus all declared and unpaid dividends, or (ii) the amount the holders would receive if the Series B Convertible Preferred Stock were converted into common stock prior to such liquidation event. After payment of the full Series B Liquidation Amount, holders of shares of Series Seed Convertible Preferred Stock and Series A Convertible Preferred Stock are entitled to receive a liquidation preference prior to any distribution to the holders of common stock in the amount per share equal to the greater of (i) $1.00 per share with respect to the Series Seed Convertible Preferred Stock and $1.75 per share with respect to the Series A Convertible Preferred Stock, plus all declared and unpaid dividends, or (ii) the amount the holders would receive if the Series Convertible Preferred Stock were converted into common stock prior to such liquidation event. Thereafter, the remaining assets of the Company legally available for distribution, if any, shall be distributed ratably to the holders of the common stock.

Conversion

The shares of Series Convertible Preferred Stock are convertible into shares of common stock at a ratio of 4.5-to-one, at the option of the holder, subject to certain anti-dilution adjustments. Each share of Series Convertible Preferred Stock is automatically converted into common stock (i) upon the closing of a firm-commitment underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended, resulting in at least $100 million of gross proceeds to the Company, or if such offering is otherwise approved by vote or written consent of at least 65% of the outstanding shares of the Series Convertible Preferred Stock, or (ii) the date and time, or the occurrence of an event, specified by vote or written consent of each of the holders of (a) at least 65% of the outstanding shares of the Series Convertible Preferred Stock and (b) at least 65% of the outstanding shares of Series B Convertible Preferred Stock

In connection with the Company's IPO, the outstanding shares of the Company's Series Seed, Series A, and Series B Convertible Preferred Stock automatically converted into 30,493,460 shares of common stock.

Voting Rights

The holder of each share of Series Convertible Preferred Stock is entitled to one vote for each share of common stock into which it would convert and to vote as one class with the common stockholders on all matters.

Presentation of Convertible Preferred Stock

The Series Convertible Preferred is classified outside of stockholders' equity (deficit) because the shares contain certain redemption features that are not solely within the control of the Company. The Company is not adjusting the carrying value of the Series Convertible Preferred as it is uncertain whether or when a redemption event will occur.

Common Stock

On December 3, 2015, the Company issued 9,160,888 shares of common stock as founder shares for services rendered to the Company, valued at $0.0001 par value per share, for a total of approximately $4,100. On January 4, 2018, incremental vesting conditions were placed on the previously issued founder shares. Fifty percent of the previously issued founder shares vested on January 4, 2018, and the remaining founder shares are subject to vesting restrictions over a period of five years.

Pursuant to the employment agreements with the Company's founders executed January 4, 2018, the Company provided for certain potential additional issuances of common stock (the "anti-dilution shares") to each of the founders to ensure the total number of shares of common stock held by them and their affiliates (inclusive of any shares subject to equity awards granted by the Company and the Founders' Equity) would represent 15% of the Company's fully-diluted capitalization until such time as the Company raised $300 million in equity capital, including the capital raised in the Series A financing.

In furtherance of this obligation, on May 21, 2018, the Company issued 251,547 shares of common stock to the founders for services rendered to the Company, valued at $2.61 per share with an additional 251,547 shares of restricted stock subject to the same vesting restrictions and vesting period as the founder shares. In addition, on September 6, 2018, the Company issued 1,795,023 shares of common stock to the founders for services rendered to the Company, valued at $9.63 per share, with an additional 1,795,023 shares of restricted stock subject to the same vesting restrictions and vesting period as the founder shares.

Each share of common stock is entitled to one voting right. Common stock owners are entitled to dividends when funds are legally available and declared by the Board.

Shares of Common Stock Subject to Repurchase

In November 2017, in connection with the issuance of the Series A Convertible Preferred Stock, certain employees entered into stock restriction agreements, whereby 1,305,421 shares are subject to forfeiture by the Company upon the stockholder's termination of employment or service to the Company. In January 2018, the Company's founders entered into stock restriction agreements, whereby 4,580,444 of previously unrestricted shares of common stock were subject to service vesting conditions. These shares are also subject to forfeiture by the Company upon the stockholders' termination of employment or service to the Company. Any shares subject to repurchase by the Company are not deemed, for accounting purposes, to be outstanding until those shares vest. As such, the Company recognizes the measurement date fair value of the restricted stock over the vesting period as compensation expense. For the years ended December 31, 2018, 2017 and 2016, 7,482,032 shares, 1,305,421 shares and 0 shares of common stock, respectively, were subject to repurchase by the Company. The unvested stock liability related to these awards is immaterial to all periods presented.

Note 9—Stock-Based Compensation

The Company's 2017 Equity Incentive Plan (the "2017 Plan") permits the granting of incentive stock options, non-statutory stock options, restricted stock, restricted stock units and other stock-based awards. As of December 31, 2018 and 2017, 6,290,016 shares and 1,308,746 shares of common stock were authorized for issuance under the 2017 Plan, respectively.

At December 31, 2018 and 2017, 5,107,329 and 0 shares outstanding have been awarded and 1,182,687 and 1,308,746 shares, respectively, remain available for issuance under the 2017 Plan.

Stock Options

The fair value of each employee and non-employee stock option grant is estimated on the date of grant using the Black-Scholes option-pricing model. The Company, prior to the IPO on February 12, 2019, is a private company and lacks company-specific historical and implied volatility information. Therefore, it estimates its expected volatility based on the historical volatility of a publicly traded set of peer companies. Due to the lack of historical exercise history, the expected term of the Company's stock options for employees has been determined utilizing the "simplified" method for awards. The expected term of stock options granted to non-employees is equal to the contractual term of the option award. 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. Expected dividend yield is zero based on the fact that the Company has never paid cash dividends and does not expect to pay any cash dividends in the foreseeable future.

The grant date fair value of stock option awards is determined using the Black-Scholes option-pricing model. The following assumptions were used to estimate the fair value of stock option awards:

	Year Ended December 31, 2018
Employee Stock Options	
Expected term (in years)	5.3 - 6.1
Risk-free interest rate	2.65% - 2.96%
Volatility	69.13% - 77.62%
Dividend yield	–

The following table summarizes stock option activity during the year ended December 31, 2018:

	Shares Subject to Options Outstanding		Weighted-Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
	Shares	Weighted-Average Exercise Price		(in thousands)
Outstanding as of December 31, 2017	—	—	—	$ —
Options granted	5,143,551	$ 7.49		
Option exercised	—	—		
Options forfeited/cancelled	(36,222)	$ 4.85		
Outstanding as of December 31, 2018	5,107,329	$ 7.51	9.7	$ 16,343
Options vested and exercisable as of December 31, 2018	53,951	$ 2.61	9.4	$ 437

No stock options were granted for the years ended December 31, 2017 and 2016.

The aggregate intrinsic value in the above table is calculated as the difference between fair value of the Company's common stock price and the exercise price of the stock options. The weighted-average grant date fair value per share for the stock option grants during the year ended December 31, 2018 was $7.49. At December 31, 2018, the total unrecognized compensation related to unvested stock option awards granted was $24.0 million, which the Company expects to recognize over a weighted-average period of approximately 3.6 years.

Restricted Stock

The summary of the Company's restricted stock activity is as follows:

	Number of Restricted Stock Units Outstanding	Weighted-Average Grant Date Fair Value
Nonvested at December 31, 2016	—	$ —
Granted	1,305,421	0.09
Nonvested at December 31, 2017	1,305,421	$ 0.09
Granted	8,673,584	5.53
Vested, net of shares withheld for employee payroll taxes	(2,369,696)	7.58
Forfeited	(127,277)	0.09
Nonvested at December 31, 2018	7,482,032	$ 4.01

At December 31, 2018, the total unrecognized compensation related to unvested restricted stock awards granted was $30.0 million, which the Company expects to recognize over a weighted-average period of approximately 4.1 years.

Stock-based compensation expense has been reported in the Company's consolidated statements of operations as follows (in thousands):

	Year Ended December 31,	
	2018	2017
Research and development	$ 679	$ 17
General and administrative	30,268	15
Total stock-based compensation	$ 30,947	$ 32

For the year ended December 31, 2018, $19.4 million of the stock-based compensation expense related to the issuance of the anti-dilution shares.

Note 10—Property and Equipment, Net

The Company's property and equipment, net consisted of the following (in thousands):

	Estimated Useful Life (in years)	December 31, 2018	December 31, 2017
Office equipment	3-7	$ 918	$ —
Computer equipment	5	15	—
Software	3	50	—
Lab equipment	2-5	1,070	—
Leasehold improvements	6-7	1,243	—
Construction in process	N/A	194	—
Total property and equipment		3,490	—
Less: accumulated depreciation		297	—
Property and equipment, net		$ 3,193	$ —

Depreciation expense for the year ended December 31, 2018 was approximately $297,000 and was recorded in general and administrative expense in the Consolidated Statements of Operations. No depreciation expense was recorded for the years ended December 31, 2017 and 2016.

Note 11—Commitments and Contingencies

Office Lease

The Company subleases certain office and laboratory space under a non-cancelable operating lease expiring in January 2025 for the initial leased space and December 2022 for expansion space leased pursuant to an amendment to the lease agreement entered into in August 2018, with an option to extend for the entire premises through the expiration of the initial terms of the master lease. The sub-lease is subject to charges for common area maintenance and other costs, and base rent is subject to an annual increase in 3% of each subsequent year. The sublease did not commence until January 15, 2018, therefore there was no rent expense for the years ended December 31, 2017 and 2016. For the year ended December 31, 2018, the Company recorded approximately $1.5 million in rent expense.

Future minimum payments under the non-cancelable operating lease as of December 31, 2018 were as follows (in thousands):

Years ending December 31,	
2019	2,944
2020	3,035
2021	3,123
2022	3,216
2023	1,690
Thereafter	1,741
	$ 15,749

Litigation

The Company is not a party to any material legal proceedings and is not aware of any pending or threatened claims. From time to time, the Company may be subject to various legal proceedings and claims that arise in the ordinary course of its business activities.

Note 12—Selected Quarterly Financial Information (Unaudited)

The following is a summary of the quarterly results of the Company for the years ended December 31, 2018 and 2017 (*unaudited, in thousands, except for per share data*):

	Year Ended December 31, 2018			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Operating Loss	(26,126)	(33,036)	(50,024)	(39,807)
Net loss	(26,037)	(32,729)	(49,409)	(38,794)
Per common share:				
Loss per share, basic and diluted	(4.31)	(5.52)	(8.03)	(4.92)

	Year Ended December 31, 2017			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Operating Loss	(23)	(10)	(288)	(6,332)
Net loss	(23)	(10)	(288)	(6,450)
Per common share:				
Loss per share, basic and diluted	(0.00)	(0.00)	(0.03)	(0.70)

Note 13—Subsequent Events

Approval of the 2019 Equity Incentive Plan

In January 2019, the Company's board of directors and stockholders approved and adopted the 2019 Incentive Award Plan (the "2019 Plan"). The 2019 Plan became effective on February 6, 2019, the day prior to the effectiveness of the registration statement filed in connection with the IPO. Under the 2019 Plan, the Company may grant stock options, stock appreciation rights, restricted stock, restricted stock units, and other stock or cash-based awards to individuals who are then employees, officers, directors or consultants of the Company, and employees and consultants of the Company's subsidiaries. A total of 5,750,000 shares of common stock were approved to be initially reserved for issuance under the 2019 Plan. The number of shares that remain available for issuance under the 2017 Plan as of the effective date of the 2019 Plan and shares subject to outstanding awards under the 2017 Plan as of the effective date of the 2019 Plan that are subsequently canceled, forfeited or repurchased by the Company will be added to the shares reserved under the 2019 Plan. In addition, the number of shares of common stock available for issuance under the 2019 Plan will be automatically increased on the first day of each calendar year during the ten-year term of the 2019 Plan, beginning with January 1, 2020 and ending with January 1, 2029, by an amount equal to 5% of the outstanding number of shares of the Company's common stock on December 31st of the preceding calendar year or such lesser amount as determined by the Company's board of directors.

Approval of the 2019 Employee Stock Purchase Plan

In January 2019, the Company's board of directors and stockholders approved and adopted the 2019 Employee Stock Purchase Plan (the "ESPP"). The ESPP became effective as of February 6, 2019, the day prior to the effectiveness of the registration statement filed in connection with the IPO. The ESPP permits participants to purchase common stock through payroll deductions of up to 20% of their eligible compensation. A total of 700,000 shares of common stock were approved to be initially reserved for issuance under the ESPP. In addition, the number of shares of common stock available for issuance under the ESPP will be automatically increased on the first day of each calendar year during the first ten-years of the term of the ESPP, beginning with January 1, 2020 and ending with January 1, 2029, by an amount equal to 1% of the outstanding number of shares of the Company's common stock on December 31st of the preceding calendar year or such lesser amount as determined by the Company's board of directors.

Reverse Stock Split

On January 23, 2019, the Company effected a 1-for-4.5 reverse stock split of its common stock. The par value and the authorized number of shares of the common stock were not adjusted as a result of the reverse stock split. The reverse stock split resulted in an adjustment to the Series Seed, A and B preferred stock conversion prices to reflect a proportional decrease in the number of shares of common stock to be issued upon conversion. The accompanying consolidated financial statements and notes to the consolidated financial statements give retroactive effect to the reverse stock split for all periods presented.

Initial Public Offering

On February 12, 2019, the Company completed its IPO with the sale of 19,837,500 shares of common stock, including shares of common stock issued upon the exercise in full of the underwriters' over-allotment option, at a public offering price of $16.00 per share, resulting in net proceeds of $291.5 million, after deducting underwriting discounts and commissions and offering expenses. In connection

with the Company's IPO, the outstanding shares of the Company's Series Seed, Series A, and Series B Convertible Preferred Stock automatically converted into 30,493,460 shares of common stock.

EXHIBIT INDEX

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Date	Number	
3.1	Amended and Restated Certificate of Incorporation.	8-K	2-12-2019	3.1	
3.2	Amended and Restated Bylaws.	8-K	2-12-2019	3.2	
4.1	Form of Common Stock Certificate.	S-1/A	1-23-2019	4.1	
4.2	Amended and Restated Investors' Rights Agreement, dated July 20, 2018, by and among the Registrant and certain of its stockholders.	S-1	12-21-2018	4.2	
10.1#	Gossamer Bio, Inc. 2017 Equity Incentive Plan, as amended.	S-1	12-21-2018	10.1	
10.2#	Form of stock option grant notice and stock option agreement under Gossamer Bio, Inc. 2017 Equity Incentive Plan, as amended.	S-1	12-21-2018	10.2	
10.3#	Form of restricted stock grant notice and restricted stock agreement under Gossamer Bio, Inc. 2017 Equity Incentive Plan, as amended.	S-1	12-21-2018	10.3	
10.4#	Form of Founder restricted stock grant notice and restricted stock agreement.	S-1	12-21-2018	10.4	
10.5#	Gossamer Bio, Inc. 2019 Incentive Award Plan and form of stock option grant notice and stock option agreement thereunder.	S-1/A	1-23-2019	10.5	
10.6#	Gossamer Bio, Inc. 2019 Employee Stock Purchase Plan.	S-1/A	1-23-2019	10.6	
10.7#	Gossamer Bio, Inc. Non-Employee Director Compensation Program.	S-1/A	1-23-2019	10.7	
10.8#	Employment Letter, dated January 4, 2018, by and between Sheila Gujrathi, M.D. and the Registrant.	S-1	12-21-2018	10.8	
10.9#	Employment Letter, dated January 4, 2018, by and between Faheem Hasnain and the Registrant.	S-1	12-21-2018	10.9	
10.10#	Employment Letter, dated December 4, 2018, by and between Bryan Giraudo and the Registrant.	S-1	12-21-2018	10.10	
10.11#	Employment Letter, dated December 4, 2018, by and between Christian Waage and the Registrant.	S-1	12-21-2018	10.11	
10.12#	Employment Letter, dated December 4, 2018, by and between Jakob Dupont, M.D. and the Registrant.	S-1	12-21-2018	10.12	
10.13#	Employment Letter, dated December 4, 2018, by and between Luisa Salter-Cid, Ph.D. and the Registrant.	S-1	12-21-2018	10.13	
10.14#	Form of Indemnification Agreement.	S-1	12-21-2018	10.14	
10.15	Sublease Agreement, dated December 29, 2017, by and between The Medicines Company and the Registrant.	S-1	12-21-2018	10.15	
10.16	First Amendment to Sublease Agreement, dated August 24, 2018, by and between The Medicines Company and the Registrant.	S-1	12-21-2018	10.16	
10.17†	Exclusive License Agreement, dated October 2, 2017, by and between GB002, Inc., the Registrant and Pulmokine, Inc.	S-1	12-21-2018	10.17	
10.18†	License Agreement, dated June 24, 2018, by and between Aerpio Pharmaceuticals, Inc. and GB004, Inc.	S-1	12-21-2018	10.17	
21.1	List of Subsidiaries of the Registrant.				X
23.1	Consent of Ernst & Young LLP, independent registered public accounting firm.				X
31.1	Certification of Chief Executive Officer of Gossamer Bio, Inc., as required by Rule 13a-14(a) or Rule 15d-14(a) under the Securities Exchange Act of 1934, as amended.				X
31.2	Certification of Chief Financial Officer of Gossamer Bio, Inc., as required by Rule 13a-14(a) or Rule 15d-14(a) under the Securities Exchange Act of 1934, as amended.				X

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Date	Number	
32.1*	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				X
32.2*	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				X

# Indicates management contract or compensatory plan.

† Confidential treatment has been granted for certain information contained in this Exhibit. Such information has been omitted and filed separately with the SEC.

* These certifications are being furnished solely to accompany this annual report pursuant to 18 U.S.C. Section 1350, and are not being filed for purposes of Section 18 of the Securities Exchange Act of 1934 and are not to be incorporated by reference into any filing of the Registrant, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

GOSSAMER BIO, INC.

By: /s/ Sheila Gujrathi
Sheila Gujrathi, M.D.
President and Chief Executive Officer

Date March 22, 2019

SIGNATURES AND POWER OF ATTORNEY

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Sheila Gujrathi Sheila Gujrathi, M.D.	President, Chief Executive Officer and Director (principal executive officer)	March 22, 2019
/s/ Bryan Giraudo Bryan Giraudo	Chief Financial Officer (principal financial and accounting officer)	March 22, 2019
/s/ Faheen Hasnain Faheem Hasnain	Executive Chairman of the Board of Directors	March 22, 2019
/s/ Joshua H. Bilenker Joshua H. Bilenker, M.D.	Director	March 22, 2019
/s/ Kristina Burow Kristina Burow	Director	March 22, 2019
/s/ Russell Cox Russell Cox	Director	March 22, 2019
/s/ Thomas Daniel, M.D. Thomas Daniel, M.D.	Director	March 22, 2019
/s/ Renée Galá Renée Galá	Director	March 22, 2019
/s/ Otello Stampacchia, Ph.D. Otello Stampacchia, Ph.D.	Director	March 22, 2019

Exhibit 21.1

List of Subsidiaries of
Gossamer Bio, Inc.

Name	Jurisdiction of Incorporation or Organization
GB001, Inc.	Delaware
GB002, Inc.	Delaware
GB004, Inc.	Delaware
Gossamer Bio Services, Inc.	Delaware

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (Form S-8 No. 333-229586) pertaining to the 2017 Equity Incentive Plan, 2019 Incentive Award Plan, and 2019 Employee Stock Purchase Plan of Gossamer Bio, Inc. of our report dated March 22, 2019, with respect to the consolidated financial statements of Gossamer Bio, Inc. included in this Annual Report (Form 10-K) for the year ended December 31, 2018.

/s/ Ernst & Young LLP

San Diego, California
March 22, 2019

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Sheila Gujrathi, certify that:

1. I have reviewed this annual report on Form 10-K of Gossamer Bio, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) [paragraph omitted in accordance with Exchange Act Rule 13a-14(a)];

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 22, 2019

/s/ Sheila Gujrathi

Sheila Gujrathi, M.D.
President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Bryan Giraudo, certify that:

1. I have reviewed this annual report on Form 10-K of Gossamer Bio, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) [paragraph omitted in accordance with Exchange Act Rule 13a-14(a)];

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 22, 2019

/s/ Bryan Giraudo
Bryan Giraudo
Chief Financial Officer

Exhibit 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER

Pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officer of Gossamer Bio, Inc. (the "Company") hereby certifies, to his knowledge, that:

(i) the accompanying Annual Report on Form 10-K of the Company for the fiscal year ended December 31, 2018 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Sheila Gujrathi
Sheila Gujrathi, M.D.
President and Chief Executive Officer

Date: March 22, 2019

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document.

Exhibit 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER

Pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officer of Gossamer Bio, Inc. (the "Company") hereby certifies, to his knowledge, that:

(i) the accompanying Annual Report on Form 10-K of the Company for the fiscal year ended December 31, 2018 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Bryan Giraudo
Bryan Giraudo
Chief Executive Officer

Date: March 22, 2019

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document.