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

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**FORM 10-K**

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

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2016

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

FOR THE TRANSITION PERIOD FROM \_\_\_\_\_ TO \_\_\_\_\_.

COMMISSION FILE NUMBER: 001-37348

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**Corbus Pharmaceuticals Holdings, Inc.**

(Exact name of registrant as specified in its charter)

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Delaware  
(State or other jurisdiction of  
incorporation or organization)

46-4348039  
(I.R.S. Employer  
Identification No.)

100 River Ridge Drive  
Norwood, Massachusetts  
(Address of principal executive offices)

02062  
(Zip Code)

(617) 963-0100

Registrant's telephone number, including area code:

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

Title of Each Class	Name of Each Exchange on which Registered
Common Stock, par value \$0.0001 per share	NASDAQ Global Market

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

Title of each class  
Common Stock, par value \$0.0001 per share

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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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes  No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the 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, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer

Accelerated filer

Non-accelerated filer  (Do not check if a smaller reporting company)

Smaller reporting company

EXPLANATORY NOTE

The registrant met the “accelerated filer” requirements as of the end of its 2016 fiscal year pursuant to Rule 12b-2 of the Securities Exchange Act of 1934, as amended. However, pursuant to Rule 12b-2 and SEC Release No. 33-8876, the registrant (as a smaller reporting company transitioning to the larger reporting company system based on its public float as of June 30, 2016) is not required to satisfy the larger reporting company requirements until its first quarterly report on Form 10-Q for the 2017 fiscal year and thus is eligible to check the “Smaller Reporting Company” box on the cover of this Form 10-K.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes  No

As of June 30, 2016, the last business day of the registrant’s most recently completed second fiscal quarter, the aggregate market value of the common stock held by non-affiliates of the registrant was approximately \$121,536,402, based on the closing price of the registrant’s common stock on June 30, 2016.

As of March 6, 2017, the number of shares outstanding of the registrant’s common stock, \$0.0001 par value per share, was 48,701,626.

**Documents incorporated by reference**

Portions of the registrant’s proxy statement for the 2017 annual meeting of stockholders to be filed pursuant to Regulation 14A within 120 days after the registrant’s fiscal year ended December 31, 2016, are incorporated by reference in Part III of this Form 10-K.

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**CORBUS PHARMACEUTICALS HOLDINGS, INC.**  
**ANNUAL REPORT ON FORM 10-K**  
**FOR THE YEAR ENDED DECEMBER 31, 2016**  
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## PART I

### SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report on Form 10-K contains forward-looking statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 under Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements include statements with respect to our beliefs, plans, objectives, goals, expectations, anticipations, assumptions, estimates, intentions and future performance, and involve known and unknown risks, uncertainties and other factors, which may be beyond our control, and which may cause our actual results, performance or achievements to be materially different from future results, performance or achievements expressed or implied by such forward-looking statements. All statements other than statements of historical fact are statements that could be forward-looking statements. You can identify these forward-looking statements through our use of words such as “may,” “can,” “anticipate,” “assume,” “should,” “indicate,” “would,” “believe,” “contemplate,” “expect,” “seek,” “estimate,” “continue,” “plan,” “point to,” “project,” “predict,” “could,” “intend,” “target,” “potential” and other similar words and expressions of the future.

There are a number of important factors that could cause the actual results to differ materially from those expressed in any forward-looking statement made by us. These factors include, but are not limited to:

- our lack of operating history;
- our current and future capital requirements and our ability to satisfy our capital needs;
- our ability to complete required clinical trials of our product and obtain approval from the FDA or other regulatory agents in different jurisdictions;
- our ability to maintain or protect the validity of our patents and other intellectual property;
- our ability to retain key executive members;
- our ability to internally develop new inventions and intellectual property;
- interpretations of current laws and the passages of future laws;
- acceptance of our business model by investors;
- the accuracy of our estimates regarding expenses and capital requirements; and
- our ability to adequately support growth.

The foregoing does not represent an exhaustive list of matters that may be covered by the forward-looking statements contained herein or risk factors that we are faced with that may cause our actual results to differ from those anticipate in our forward-looking statements. Please see “Risk Factors” for additional risks which could adversely impact our business and financial performance.

All forward-looking statements are expressly qualified in their entirety by this cautionary notice. You are cautioned not to place undue reliance on any forward-looking statements, which speak only as of the date of this report or the date of the document incorporated by reference into this report. We have no obligation, and expressly disclaim any obligation, to update, revise or correct any of the forward-looking statements, whether as a result of new information, future events or otherwise. We have expressed our expectations, beliefs and projections in good faith and we believe they have a reasonable basis. However, we cannot assure you that our expectations, beliefs or projections will result or be achieved or accomplished.

#### **Item 1. BUSINESS**

##### **Overview**

This report and the information incorporated herein by reference contain references to trademarks, service marks and trade names owned by us or other companies. Solely for convenience, trademarks, service marks and trade names referred to in this report and the information incorporated herein, including logos, artwork, and other visual displays, may appear without the ® or ™ symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks, service marks and trade names. We do not intend our use or display of other companies’ trade names, service marks or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies. Other trademarks, trade names and service marks appearing in this report are the property of their respective owners.

We are a clinical stage pharmaceutical company, focused on the development and commercialization of novel therapeutics to treat rare, chronic and serious inflammatory and fibrotic diseases with clear unmet medical needs. Our product JBT-101 is a novel synthetic oral endocannabinoid-mimetic drug that is intended to resolve chronic inflammation and halt fibrotic processes without causing immunosuppression. JBT-101 is currently being developed to treat four life-threatening diseases: systemic sclerosis, cystic fibrosis, diffuse cutaneous, skin-predominant dermatomyositis and systemic lupus erythematosus (“SLE”).

In November 2016, we reported positive clinical data in a Phase 2 JBT-101 study for the treatment of systemic sclerosis. We conducted an end of Phase 2 meeting with the FDA in late February 2017 and we expect to begin a Phase 3 clinical program in systemic sclerosis by the end of the third quarter of 2017. Based on the positive Phase 2 clinical results in systemic sclerosis, we also filed an application with the FDA in March 2017 for Breakthrough Therapy designation.

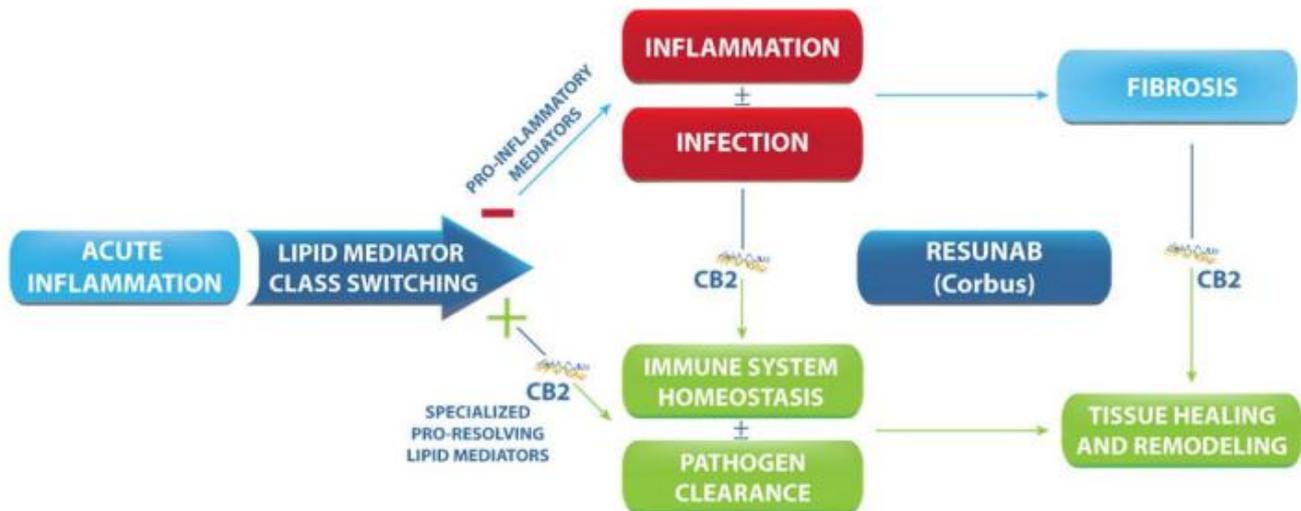
In December 2016, we completed a second Phase 2 study in cystic fibrosis study and expect to report top-line data from this study by the end of March 2017. A third Phase 2 study in dermatomyositis is expected to be completed in the third quarter of 2017 and a fourth Phase 2 in SLE is planned to start during the second quarter of 2017. The United States Food and Drug Administration (“FDA”) has granted JBT-101 Orphan Designation as well as Fast Track Status for both cystic fibrosis and systemic sclerosis.

Since our inception, we have devoted substantially all of our efforts to business planning, research and development, recruiting management and technical staff, acquiring operating assets and raising capital. Our research and development activities have included conducting pre-clinical studies, developing manufacturing methods and the manufacturing of our drug JBT-101 for clinical trials and conducting clinical studies in patients. Three of the four clinical programs for JBT-101 are being supported by non-dilutive awards and grants. The NIH is funding the majority of the Phase 2 clinical development costs for the dermatomyositis and SLE Phase clinical trials and the Phase 2 clinical trial in cystic fibrosis has been supported by a \$5 million award from the Cystic Fibrosis Foundation Therapeutics, Inc. (“CFFT”), a non-profit drug discovery and development affiliate of the Cystic Fibrosis Foundation.

JBT-101 is a synthetic, rationally-designed oral small molecule drug that selectively binds to the cannabinoid receptor type 2, or CB2, found on activated immune cells, fibroblasts and muscle cells. JBT-101 stimulates the production of Specialized Pro-Resolving Lipid Mediators (SPMs) that act to resolve inflammation, and halt fibrosis by activating endogenous pathways. These endogenous resolution pathways are normally activated in healthy individuals during the course of normal immune responses but are dysfunctional in chronic inflammatory and fibrotic diseases. Through its’ activation of the CB2 receptor, JBT-101 is designed to drive innate immune responses from the activation phase through completion of the resolution phase. The CB2 receptor plays an endogenous role in modulating and resolving inflammation by, in effect, turning heightened inflammation “off” and restoring homeostasis.

A key aspect of the body’s innate immune response is its activation phase is the recruitment of inflammatory cells to the site of tissue infection/injury whereupon these cells act to destroy the infection and/or repair tissue damage. The next phase in a normal innate immune response is its resolution phase, during which the nature of the infiltrating immune cells changes from pro-inflammatory to pro-resolving, the infectious pathogens are eliminated, residual cellular debris and immune cells are cleared from the tissue, and tissue repair processes are eventually halted when they are no longer needed. In chronic inflammatory and fibrotic diseases, the innate immune responses are “stuck” in the initial activation phase. This failure to progress through the resolution phase causes chronic tissue infiltration with inflammatory cells and chronic activation of healing processes that cause tissue scarring, or fibrosis. The key event that propels an innate immune response from its activation phase to its resolution phase is a “class switch” from production of pro-inflammatory lipid mediators such as prostaglandins and leukotrienes to a family of SPMs (Figure 1) which include lipoxins, resolvins, protectins, and marescins. If an innate immune response persists in the activation phase and does not progress through resolution, chronic inflammation and fibrosis can result, causing organ dysfunction, organ failure, severe morbidity and even death. There are hundreds of inflammatory diseases, many of which are chronic, life-long and incurable.

**Figure 1. JBT-101's Mechanism of Action**



JBT-101 is designed to restore immune system homeostasis on a daily basis, by using the body's own physiologic pathways to transition an innate immune response from the activation phase to the resolution phase. If an innate immune response is “stuck” in the activation phase, tissue damage, fibrosis and persistent infection are expected consequences. Endogenous progression of the innate immune response through its resolution phase has been shown to clear inflammation, stop fibrosis, and promote pathogen clearance. JBT-101's unique mechanism of action is different than anti-inflammatory drugs which inhibit production or functions of certain pro-inflammatory mediators that initiate or are active during the activation phase. Activation of an innate immune response is necessary to clear infections, so that drugs that interfere with the activation phase carry the risk of immunosuppression and may have other undesirable side effects. In contrast, JBT-101 is designed to transition an innate immune response from its activation phase to resolution phase. JBT-101's CB2 agonist activity initiates a class switch in bioactive lipid mediators from inflammation-activating mediators to pro-resolving mediators.

The development status of JBT-101 is summarized below:

**Figure 2: Drug developmental pipeline**



## Positive Clinical Results in Systemic Sclerosis

On November 14, 2016, we announced positive topline results from our Phase 2 study evaluating JBT-101 for the treatment of diffuse cutaneous systemic sclerosis (“systemic sclerosis”). JBT-101 out-performed placebo in the American College of Rheumatology (ACR) Combined Response Index in diffuse cutaneous Systemic Sclerosis (CRISS) score, reaching 33% at week 16, versus 1% for placebo. The higher the CRISS score the greater the improvement. The difference in CRISS scores between JBT-101 and placebo groups over the trial period was significant ( $p = 0.044$ ), 1-sided mixed model repeated measures using rank transformed data. Differences in categorical levels of CRISS responses and changes from baseline in the five individual domains of the CRISS score also supported clinical benefit of JBT-101.

The multi-center, double-blind, randomized, placebo-controlled Phase 2 study evaluated JBT-101’s clinical benefit and safety in 27 subjects who received JBT-101 and 15 who received placebo. Subjects had disease duration up to 6 years and were allowed to receive stable doses of immunosuppressive drugs during this study. Subjects were randomized (2 to 1 overall JBT-101 to placebo ratio) to receive JBT-101 for the first four weeks at 5 mg once a day ( $n = 9$ ), 20 mg once a day ( $n = 9$ ), or 20 mg twice a day ( $n = 9$ ) or placebo for the first four weeks, then all JBT-101 subjects received 20 mg twice a day for the next 8 weeks. All subjects were followed off study drug from weeks 13 through 16. The primary efficacy objective was to evaluate clinical benefit in all subjects who received JBT-101 versus subjects who received placebo using the ACR CRISS score, a measure of improvement in systemic sclerosis. The CRISS is an exponentially weighted algorithm of change from baseline that includes the modified Rodnan skin score (mRSS), a measure of skin thickening, physician global assessment (MDGA), patient global assessment (PtGA), and Health Assessment Questionnaire - Disability Index (HAQ-DI), and forced vital capacity (FVC).

### Results:

The median (25th percentile, 75th percentile) CRISS scores for the combined JBT-101 group and the placebo group at weeks 4, 8, 12, and 16 are provided in the table below. The difference in CRISS scores between JBT-101 and placebo groups over the trial period was significant ( $p = 0.044$ ), 1-sided mixed model repeated measures using rank transformed data.

Group	Median CRISS Score <sup>1</sup> , % (25 <sup>th</sup> percentile, 75 <sup>th</sup> percentile)			
	Week 4	Week 8	Week 12	Week 16
JBT-101 n = 26	3% (0.6%, 11.4%)	19% (0.3%, 69.2%)	27.5% (1.9%, 67.8%)	33% (0.8%, 82.1%)
Placebo n = 15	1% (0.3%, 8.8%)	1% (0.1%, 15.2%)	1% (0.1%, 60.1%)	1% (0.1%, 16%)

1) Modified intent to treat population, last observation carried forward

There were no serious, severe, or unexpected adverse events related to JBT-101. One of 27 subjects (3.7% of subjects) who received JBT-101 withdrew from the study for an adverse event which was moderate dizziness.

We conducted an end of Phase 2 meeting with the FDA in late February 2017 and we expect to begin a Phase 3 clinical program in systemic sclerosis by the end of the third quarter of 2017. Based on the positive Phase 2 clinical results in systemic sclerosis, we also filed an application with the FDA in March 2017 for Breakthrough Therapy designation.

## Market Opportunity in Inflammatory and Fibrotic Diseases

There are many different chronic, serious inflammatory and fibrotic diseases. Some examples of chronic, serious diseases characterized by inflammation with variable degrees of fibrosis include genetic diseases such as cystic fibrosis, nonalcoholic steatohepatitis (“NASH”), autoimmune diseases including systemic sclerosis, systemic lupus erythematosus, myositis, rheumatoid arthritis, vasculitis, primary biliary cirrhosis and lung diseases including idiopathic pulmonary fibrosis, bronchiolitis obliterans, and sarcoidosis.

According to Global Business Intelligence Research, the global market for drugs to treat chronic inflammation in 2010 was approximately \$58 billion and is expected to grow to approximately \$86 billion by 2017. While some chronic inflammatory diseases are very common, for example, about 28.5 million Americans have chronic sinusitis and about 18.7 million Americans have asthma, our initial focus is on chronic, serious inflammatory and fibrotic diseases that are rare or uncommon and have significant unmet medical need. Some of these diseases can be categorized as “orphan diseases” in the U.S., meaning they affect no more than 200,000 patients each. Examples include cystic fibrosis, systemic sclerosis and idiopathic pulmonary fibrosis. The advantage of targeting these serious uncommon diseases is that they have the potential for accelerated regulatory approval through orphan drug designation, fast track designation and breakthrough therapy designation.

## **JBT-101 Market Opportunity for Current Indications Being Developed**

### **Autoimmune Disorders**

#### ***Systemic Sclerosis***

Systemic sclerosis is a chronic, systemic autoimmune disease characterized by activation of innate and adaptive immune systems, an obliterative, proliferative vasculopathy of small blood vessels, and fibrosis of the skin and multiple internal organs. Approximately 90,000 people in the United States and Europe have systemic sclerosis. The disease affects mainly adults (80% of systemic sclerosis patients are women) with mean age of onset about 46 years of age in the United States and the majority of patients between 45-64 years of age.

A commonly used system classifies systemic sclerosis patients into those with more wide-spread skin thickening (diffuse cutaneous systemic sclerosis, about 45% of patients) and those with more restricted skin thickening (limited cutaneous systemic sclerosis, about 55% of patients). There is significant overlap in the clinical manifestations for these two groups of systemic sclerosis patients and no known significant differences in disease pathogenesis.

Systemic sclerosis can affect multiple internal organs in the body, including the lungs, heart, kidneys, joints, muscles, esophagus, stomach and intestines. Clinically apparent organ involvement that occurs in more than a third of these patients includes thickened skin, Raynaud's phenomenon, esophageal symptoms, pulmonary fibrosis, restrictive lung disease, edematous skin, joint contractures, digital ulcers, and muscle weakness. Less frequently occurring, yet life-threatening manifestations include pulmonary artery hypertension (about 1 in 5 patients), cardiac conduction blocks (about 1 in 10 patients), and renal crisis (about 1 in 50 patients). In the US, systemic sclerosis is the most deadly of the systemic autoimmune diseases. The median disease duration for an individual who dies of systemic sclerosis is 7.1 years from the onset of symptoms. About 85% of deaths caused by systemic sclerosis are the result of pulmonary fibrosis, pulmonary artery hypertension, or cardiovascular disease, such as sudden death.

In systemic sclerosis the innate immune system fails to transition from the activation phase to the resolution phase. Individuals with systemic sclerosis who have interstitial lung disease have an imbalance of bioactive lipid mediators, causing a predominance of inflammatory mediators versus resolving mediators. The preponderance of inflammatory mediators correlates positively with the degree of inflammation in the lungs and negatively with forced vital capacity, a measure of lung fibrosis. Excessive activation of the pathways which cause fibrosis including TGF $\beta$ , myofibroblast accumulation, and production of collagen and other extracellular matrix proteins are all present in systemic sclerosis.

Currently, there are no FDA-approved therapies specifically for systemic sclerosis, except for the pulmonary artery hypertension associated with this disease. Immunosuppressants with significant toxicities are also commonly used to treat systemic sclerosis, however there is a general absence of clinical data to support their use. For example, systemic corticosteroids are used frequently in systemic sclerosis patients despite concerns about toxic side effect and precipitation of renal crisis.

We believe there is general agreement in the systemic sclerosis community that an effective anti-inflammatory and anti-fibrotic drug would address a significant unmet medical need in systemic sclerosis, especially a drug that is orally administered, can be used chronically with other commonly prescribed medications for systemic sclerosis, and is not immunosuppressive. We believe such a therapy would be positively received by the market.

#### ***Dermatomyositis***

Dermatomyositis is a serious and rare autoimmune idiopathic inflammatory myopathy with characteristic cutaneous findings. About 30,000 individuals in the U.S. suffer from dermatomyositis. Dermatomyositis usually strikes adults, with most common age of adult onset between 50-60 years.

This systemic disorder most frequently affects the skin and muscles, and dermatomyositis can also include interstitial lung disease/restrictive lung disease, arthritis, gastrointestinal and cardiac involvement. Inflammatory muscle disease can cause discomfort and significant weakness of the proximal muscles of the arms and legs and of the trunk. Dermatomyositis can include damaging inflammation elsewhere in the body, for example: lung inflammation that leads to lung fibrosis and restrictive lung disease; heart inflammation that causes arrhythmia, congestive heart failure, and pericarditis, inflammation of muscles in the esophagus that causes swallowing problems or aspiration pneumonia, and arthritis. Dermatomyositis patients may have active skin disease despite successful treatment of their muscle and/or lung disease. The skin findings in dermatomyositis can be disfiguring and are inflammatory rashes characterized by redness and itching in exposed areas of the skin, around the eyes, on the hands, and in a "shawl" distribution on the scalp, hands, upper back, and photo-exposed areas. With this chronic inflammation, patients with dermatomyositis have an increased risk of malignancy, most commonly in older patients. By itself, skin involvement in dermatomyositis has a large negative impact on quality of life, comparable to that of cutaneous lupus erythematosus and vulvodynia, and much higher than those of many dermatologic diseases. The pathophysiology of dermatomyositis is also consistent with inability of patients to adequately resolve innate immune responses.

Therapy for dermatomyositis involves both general measures and specific measures to control the muscle disease and the skin disease. In addition, some patients with dermatomyositis need treatment for other systemic manifestations or complications. The muscle component is treated by administering corticosteroids, typically with an immunosuppressive agent. The skin disease is treated by avoiding sun exposure and by using sunscreens and photoprotective clothing, as well as with topical corticosteroids, and antimalarial agents. Antimalarial therapy frequently is ineffective or can cause drug reactions. Antimalarial-refractory disease is then treated with systemic therapies that may additionally cause toxicity, including systemic glucocorticoids, immunosuppressive therapies such as methotrexate, mycophenolate mofetil, or intravenous immunoglobulin.

We believe that an effective drug that controls inflammation in the skin, muscles, and other organs will address a significant unmet medical need in dermatomyositis, particularly a drug that is orally administered, can be used chronically with other commonly prescribed medications for the disease, and is not immunosuppressive.

### ***Systemic Lupus Erythematosus***

Systemic lupus erythematosus, or SLE, is a prototypical autoimmune disease with a wide array of clinical manifestations, including arthritis, rash, photosensitivity, oral ulcers, pleuritis, pericarditis, kidney problems, seizures and psychosis and blood cell abnormalities. The musculoskeletal system is the most commonly involved system in SLE. Patients with SLE have an increased frequency of related autoimmune problems, such as Sjogren's syndrome and antiphospholipid syndrome that require additional treatments. SLE may occur with other autoimmune conditions, such as thyroiditis, hemolytic anemia, and idiopathic thrombocytopenia purpura. Accelerated atherosclerosis among SLE patients is responsible for premature mortality.

The pathology of SLE involves chronic activation of the innate immune system by immune complexes, with activation of complement, increased production of type 1 interferons and other mediators of inflammation and resultant tissue inflammation and damage.

Drugs specifically approved by the FDA for SLE are limited to aspirin, corticosteroids, hydroxychloroquine and belimumab. Physicians commonly treat SLE disease manifestations with immunosuppressive or corticosteroid therapies that have significant toxicities.

We believe that an effective drug that controls inflammation in the joints and skin as well as improves overall disease activity will address a significant unmet medical need in SLE, particularly a drug that is orally administered, can be used chronically with other commonly prescribed medications for the disease, and is not immunosuppressive.

### **Cystic Fibrosis**

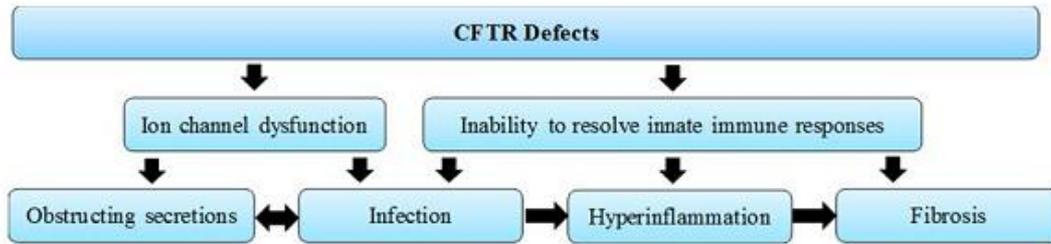
Cystic fibrosis is a life-long, progressive, debilitating, and life-threatening autosomal recessive disease. Cystic fibrosis is caused by mutations in the gene Cystic Fibrosis Transmembrane Conductance Regulator or CFTR. The CFTR serves as a central hub to modulate transport, trafficking, and signaling in cells. Given multiple roles of CFTR in cellular activation and homeostasis, mutation of the CFTR give rise to multiple disorders in respiratory, digestive and reproductive organs.

The CFTR mutations lead to defective ion transport, with reduced chloride and bicarbonate secretion and sodium hyper-absorption, followed by water hyper-absorption, by airway epithelia and other cell types. The resultant reduced height of epithelial lining fluid and decreased hydration of mucus results in abnormally thick and sticky mucus, which obstructs the lumen into which the mucus is secreted and reduces mucociliary clearance of bacteria. The dysfunction in ion transport in CF patients is reflected in abnormal sweat chloride levels.

The negative effects caused by CFTR mutations are not restricted to ion channels, but also extend to dysfunction of the innate immune system. The nature of the abnormalities in CF are consistent with inability of innate immune responses to make the transition out of the activation phase and into and through the resolution phase. Bioactive lipid mediators (SPMs) that initiate the transition to resolution phase of innate immune responses have been found to be deficient relative to pro-inflammatory lipid mediators that initiate its activation phase, and this reduction correlates with poor recovery of lung function following an acute pulmonary exacerbation in children. The preponderance of activated neutrophils and pro-inflammatory macrophages in inflamed tissue, reduced neutrophil apoptosis, high levels of neutrophil proteases that reflect persistent neutrophil activation, reduced clearance of neutrophils by macrophages, ineffective clearance of certain bacteria such as *P. aeruginosa*, and excessive activation of fibrotic pathways all show the inability of individuals with CF to resolve their innate immune responses.

An overview of the disease progression in cystic fibrosis is provided in Figure 3.

**Figure 3: Factors involved in cystic fibrosis progression**



As a result of obstructing secretions, recurrent infections, hyper-inflammation, and activated fibrotic pathways in the lungs, individuals with CF develop bronchiectasis, pulmonary fibrosis, mixed obstructive/restrictive lung disease, and, eventually, respiratory failure. They may also have chronic sinusitis and nasal polyps. The same pathophysiologic events of obstruction, infection, chronic inflammation, and tissue damage/fibrosis occur in the gastrointestinal system, which can lead to bowel obstructions, fat malabsorption, bacterial overgrowth, gut dysmotility, malnutrition, growth retardation, low weight, pancreatic insufficiency, cystic fibrosis-related diabetes, gallstones, and liver failure including cirrhosis. Adult males with cystic fibrosis have degeneration of the ductus deferens and sterility. End-stage organ involvement in cystic fibrosis is sometimes treated with transplantation, especially lung transplantation.

The median current life expectancy of cystic fibrosis patients is about 40 years. According to the Cystic Fibrosis Foundation, 30,000 Americans and a total of 75,000 people in the United States and Europe suffer from cystic fibrosis.

Current therapies for cystic fibrosis include mucolytics to breakdown mucus, antibiotics to fight bacterial infection, and drugs that act to restore some functionality to the faulty CFTR protein in specific genetic sub-populations of patients, including Kalydeco™ and Orkambi™. Kalydeco™ was approved for treatment of cystic fibrosis in January 2012 and Orkambi was approved in June 2015. With about 2,000 different known mutations in the CFTR gene, Kalydeco™ can be used by approximately 4,000 patients who suffer from a limited number of “gating mutations,” including the G551D mutation. Orkambi™ can be used by approximately 25,000 adult patients carrying two copies (homozygotes) of the delta508 CFTR mutation.

Of importance, drugs that are sufficient to correct ion channel functions of mutant CFTR protein are not necessarily able to correct the dysfunction of the innate immune system. For example, ivacaftor treatment has not been associated with reduction in sputum neutrophils or neutrophil derived proteases in CF patients. Thus correction of ion channel dysfunction does not necessarily translate into correction of dysfunction of the innate immune system.

All CF patients appear to have dysfunction in resolution of the innate immune system, no matter which CFTR mutations a given patient has. Currently, there is no drug that is used commonly to address this basic problem in CF, other than antibiotics to control infection and, indirectly, control inflammation. The use of high dose ibuprofen as an anti-inflammatory treatment, which has been shown to be beneficial, is limited to about 3-5% of CF patients since there is a need to monitor levels closely in children and due to side effect risks, primarily gastrointestinal bleeding. The Cystic Fibrosis Foundation Strategic Plan Report, 2014-2018, includes a strategic priority to identify new treatments for CF that allow all patients to better manage the symptoms of their disease and improve their health, with a specific mention of the need for new agents that can resolve inflammation.

We believe there is general agreement in the CF community that an effective drug that will reduce hyper-inflammation and help clear infections would address a significant unmet medical need in CF, especially a drug that is orally administered, can be used chronically with other prescribed medications for CF, is not immunosuppressive, and has anti-fibrotic effects.

## **Current Treatment Alternatives for Chronic, Serious Diseases Characterized by Chronic Inflammation and Fibrosis**

### ***Overview***

Drugs currently used to treat chronic, serious diseases with chronic inflammation and fibrosis are divided broadly into several groups: non-steroidal anti-inflammatory drugs (NSAIDs), anti-malarial agents, systemic corticosteroids, and immunosuppressive agents. The choice of agent or combination generally depends upon the underlying disease, and physician and patient preferences.

The potency of NSAIDs in the treatment of chronic, serious diseases with chronic inflammatory and fibrotic diseases is often too limited to control disease activity, requiring patients to receive additional treatment with anti-malarial drugs, systemic corticosteroids or immunosuppressive agents. Anti-malarial therapy is used as a baseline treatment for chronic inflammation in certain autoimmune diseases, typically SLE and dermatomyositis, especially in patients with milder manifestations of disease. Anti-malarial therapy frequently is ineffective in controlling chronic, serious inflammation, or can cause drug reactions. Antimalarial-refractory disease is then treated with systemic therapies that may additionally cause toxicity, including systemic corticosteroids and immunosuppressive agents.

Systemic corticosteroids are commonly prescribed for treatment of chronic, serious diseases characterized by chronic inflammation and fibrosis, such as cystic fibrosis, systemic sclerosis, and dermatomyositis. Chronic corticosteroid use is limited by toxicities that include growth retardation, iatrogenic Cushing's Disease, hypertension, high glucose levels/diabetes, obesity, brittle bones/osteoporosis, aseptic necrosis of bone, immunosuppression/increased infection, glaucoma, depression, and psychosis. Thus, safer yet potent alternatives to steroids have long been sought.

Multiple other immunosuppressive drugs are used to treat chronic, serious, inflammatory diseases, to achieve disease control and to reduce or avoid the need for corticosteroids. These include biological agents, such as monoclonal antibodies or fusion proteins, which target a very specific molecule in a key disease pathway. These drugs have a number of disadvantages including that the drugs must be administered by parenterally and they are associated with increased incidence of malignancy and infection. Non-biologic immunosuppressive agents that are used to treat chronic, serious inflammation include methotrexate, mycophenolate, leflunomide, cyclophosphamide, and azathioprine, among others. Intravenous immunoglobulin is used occasionally to treat refractory chronic, serious inflammatory diseases.

### **Autoimmune Disorders**

#### ***Systemic Sclerosis***

Cytotoxic and immunosuppressive medications are used to control overall disease activity in systemic sclerosis. In a study of 2,739 systemic sclerosis patients in the United States, in one year 44.3% received corticosteroids, 4.8% received mycophenolate mofetil, 2.7% received cyclophosphamide, and 0.5% received cyclosporine. In a report of 7,655 patients in the European Scleroderma Trials and Research Group database, immunosuppressant treatments used to treat systemic sclerosis and the percentage of patients receiving them were: prednisone (43.5%) with median dose of 8 mg/day; cyclophosphamide (15.9%); methotrexate (13.7%); azathioprine (6.4%); mycophenolate mofetil (4.2%), d-penicillamine (2.1%), and rituximab (1%).

#### ***Dermatomyositis***

Current medications for dermatomyositis involve both treatments to reduce overall disease activity and specific treatments to control the muscle disease and the skin disease. The muscle component is treated by administering corticosteroids, typically with an immunosuppressive agent. The skin disease is treated by avoiding sun exposure and by using sunscreens and photoprotective clothing, as well as with topical corticosteroids, antimalarial agents such as hydroxychloroquine and immunosuppressive medications such as methotrexate, azathioprine, mycophenolate mofetil, or intravenous immunoglobulin.

#### ***Systemic Lupus Erythematosus***

Similar to dermatomyositis, current medications for SLE involve treatments to reduce overall disease activity and specific treatments for a given organ involvement. Commonly used medications include NSAIDs, topical corticosteroids, antimalarial agents, prednisone, belimumab, and other immunosuppressive medications such as mycophenolate, methotrexate, azathioprine, and cyclophosphamide.

### **Cystic Fibrosis**

The importance of treating inflammation in cystic fibrosis is confirmed in the Cystic Fibrosis Foundation's Strategic Plan, 2014-2018. While treatment with systemic corticosteroids and ibuprofen are effective in improving the symptoms of cystic fibrosis, the side effects associated with chronic treatment using these drugs are significant. Specifically, long term usage of oral corticosteroids in children are associated with glucose intolerance, cataract formation, multiple bone fractures secondary to osteoporosis or osteopenia, Cushing disease effects, and anorexia nervosa as well as growth retardation. The use of high dose ibuprofen is limited by the years of treatment it takes to show benefit, a need to monitor levels closely in the patient, and the increased risk of gastrointestinal bleeding. As a result, these drugs have limited long-term use in cystic fibrosis.

Other therapies routinely used by cystic fibrosis patients include antibiotics, such as Cayston from Gilead and TOBI from Novartis, and mucolytics, such as Pulmozyme from Genentech. In addition, Vertex currently markets the only approved drugs that specifically target the defective CFTR protein, Kalydeco and Orkambi.

### **JBT-101's Mechanism of Action is Distinct from Anti-Inflammatory Drugs, Steroids and Immunosuppressive Agents**

Corticosteroids and NSAIDs exert their effect by inhibiting the activation of inflammation. In simple terms, both classes of drugs inhibit inflammation by “interfering” with the biochemical pathways in the cell that promote and sustain inflammation. For example, NSAIDs directly inhibit the activity of the COX 1 and COX 2 enzymes that are responsible for generating pro-inflammatory eicosanoids. A drawback of this approach is that it only inhibits one arm of the eicosanoid pathway (e.g. COX but not LOX) resulting in a buildup in LOX-derived inflammatory mediators which leads to gastrointestinal and cardiovascular side effects (termed “molecular shunting”).

JBT-101 on the other hand triggers an endogenous pathways that resolves inflammation and halts fibrosis without immunosuppression. JBT-101 acts to impact and activate multiple pathways including:

- Increase in production of SPMs and anti-inflammatory eicosanoids, with a concomitant decrease in production of pro-inflammatory eicosanoids.
- Increase in production of anti-inflammatory cytokines, coupled with a decrease in production of pro-inflammatory cytokines and pro-fibrotic growth factors.
- Increase in influx of non-inflammatory macrophages with a decrease in influx and accumulation of inflammatory cells and pro-fibrotic myofibroblasts.
- Increase in bacterial clearance. SPMs stimulate production of bactericidal peptides, enhance phagocytosis and killing of bacteria by neutrophils and macrophages.
- Increase in apoptosis of inflammatory cells, including neutrophil and pro-fibrotic cells, including fibroblasts.
- Increase in clearance of apoptotic cells and cellular debris by non-inflammatory macrophages.

JBT-101 potentially offers a new and unique mechanism to treat a spectrum of rare, chronic, serious inflammatory and fibrotic diseases.

### **Clinical Trials**

#### ***Overview***

We have completed Phase 2 randomized, double-blind, placebo-controlled clinical studies in systemic sclerosis and cystic fibrosis and are currently conducting a Phase 2 study in dermatomyositis that is expected to be completed in the third quarter of 2017. In addition we plan to commence a Phase 2 clinical study during the second quarter of 2017 in Systemic Lupus Erythematosus, or SLE.

We have obtained Orphan Drug Designations for both CF and systemic sclerosis in the United States and European Union and Fast Track status for both CF and systemic sclerosis in the United States. Fast Track designation is eligible for some or all of the following: (i) more frequent meetings with FDA to discuss the drug's development plan and ensure collection of appropriate data needed to support drug approval; (ii) more frequent written correspondence from FDA about things such as the design of the proposed clinical trial and the use of biomarkers; and (iii) eligibility for Accelerated Approval and Priority Review, if relevant criteria are met. Based on the positive Phase 2 clinical results in systemic sclerosis, we filed an application with the FDA in March 2017 for Break Through Therapy designation.

#### ***Systemic Sclerosis (Scleroderma)***

In August 2015, we initiated a Phase 2 double-blind placebo-controlled clinical study in patients suffering from diffuse cutaneous systemic sclerosis that was completed in October 2016. The Principal Investigator was Dr. Robert Spiera of the Hospital of Special Surgery, New York City, New York.

This multi-center, double-blind, randomized, placebo-controlled Phase 2 study evaluated JBT-101's clinical benefit and safety in 27 subjects who received JBT-101 and 15 who received placebo. Subjects had disease duration up to 6 years and were allowed to receive stable doses of immunosuppressive drugs during this study. Subjects were randomized (2 to 1 overall JBT-101 to placebo ratio) to receive JBT-101 for the first four weeks at 5 mg once a day (n = 9), 20 mg once a day (n = 9), or 20 mg twice a day (n = 9) or placebo for the first four weeks, then all JBT-101 subjects received 20 mg twice a day for the next 8 weeks. All subjects were followed off study drug from weeks 13 through 16. The primary efficacy objective was to evaluate clinical benefit in all subjects who received JBT-101 versus subjects who received placebo using the ACR CRISS score, a measure of improvement in systemic sclerosis. The CRISS is an exponentially weighted algorithm of change from baseline that includes the modified Rodnan skin score (mRSS), a measure of skin thickening, physician global assessment (MDGA), patient global assessment (PtGA), and Health Assessment Questionnaire - Disability Index (HAQ-DI), and forced vital capacity (FVC). . Secondary endpoint measurements include JBT-101 concentrations and metabolites, other patient-reported outcomes, biomarkers of inflammation and fibrosis in the blood and skin, and metabolipidomic profiles.

In November 2016, we announced positive topline results from this study. JBT-101 out-performed placebo in the American College of Rheumatology (ACR) Combined Response Index in diffuse cutaneous Systemic Sclerosis (CRISS) score, reaching 33% at week 16, versus 1% for placebo. The higher the CRISS score the greater the improvement. The difference in CRISS scores between JBT-101 and placebo groups over the trial period was significant (p = 0.044), 1-sided mixed model repeated measures using rank transformed data. Differences in categorical levels of CRISS responses and changes from baseline in the five individual domains of the CRISS score also supported clinical benefit of JBT-101.

### Top-Line Results:

The median (25th percentile, 75th percentile) CRISS scores for the combined JBT-101 group and the placebo group at weeks 4, 8, 12, and 16 are provided in the table below. The difference in CRISS scores between JBT-101 and placebo groups over the trial period was significant (p = 0.044), 1-sided mixed model repeated measures using rank transformed data.

Group	Median CRISS Score <sup>1</sup> , % (25 <sup>th</sup> percentile, 75 <sup>th</sup> percentile)			
	Week 4	Week 8	Week 12	Week 16
JBT-101 n = 26	3% (0.6%, 11.4%)	19% (0.3%, 69.2%)	27.5% (1.9%, 67.8%)	33% (0.8%, 82.1%)
Placebo n = 15	1% (0.3%, 8.8%)	1% (0.1%, 15.2%)	1% (0.1%, 60.1%)	1% (0.1%, 16%)

1) Modified intent to treat population, last observation carried forward

Results of secondary efficacy outcome measures supported the finding of clinical benefit of JBT-101, including numerical superiority of JBT-101 in each of the five domains of the CRISS score, with divergence starting early at Week 4 or Week 8.

There were no serious, severe, or unexpected adverse events related to JBT-101. One of 27 subjects (3.7% of subjects) who received JBT-101 withdrew from the study for an adverse event which was moderate dizziness.

We conducted an end of Phase 2 meeting with the FDA in late February 2017 and we expect to begin a Phase 3 clinical program in systemic sclerosis by the end of the third quarter of 2017. Based on the positive Phase 2 clinical results in systemic sclerosis, we also filed an application with the FDA in March 2017 for Breakthrough Therapy designation.

In April 2016, the FDA granted approval for a one year open-label extension to the Phase 2 clinical study in systemic sclerosis. The objective of the open-label extension study is to provide all subjects (treatment and placebo) with the option of receiving JBT-101 for a period of one year after they complete the Phase 2 study. The same safety and efficacy endpoints evaluated in the Phase 2 study are being assessed throughout the one year extension study. The Company expects to report data from this study in the second half of 2017.

### Cystic Fibrosis

In September 2015, we initiated a Phase 2 study in JBT-101 in patients suffering from CF that was completed in December 2016. The study was a multi-center U.S. and European trial. The lead Principal Investigator in the U.S. was Dr. James Chmiel of the Rainbow Babies & Children's Hospital, Cleveland, Ohio and the Co-Investigator in Europe was Dr. Stuart Elborn of Queens University Hospital, Belfast, Ireland. We expect to report top line results by the end of March 2017.

The primary objective of the study is to test safety and tolerability of JBT-101 in adults with CF who had forced expiratory volume in 1 second (FEV1) percent predicted at least 40%, without regard to their CFTR mutation, infecting pathogen, or baseline treatment. Secondary objectives are to evaluate changes in pro-inflammatory and pro-resolving lipid mediators as a marker of mechanism of action of JBT-101 and to evaluate efficacy with FEV1 and Cystic Fibrosis Questionnaire Revised – Respiratory Symptom Score. Exploratory outcomes include effects of JBT-101 on biomarkers of inflammation and the sputum microbiome. Eighty-five subjects on stable standard-of-care medications were dosed with study product at 21 CF centers in the U.S. and Europe and treated with study product daily for a period of 84 days, with a follow-up period of 28 days.

### ***Dermatomyositis***

In June 2015, we initiated a Phase 2 double-blind placebo-controlled clinical study evaluating JBT-101 in patients with skin-predominant dermatomyositis. The study is a U.S. single center trial and is being funded by a NIH grant. The Principal Investigator is Dr. Victoria Werth of the University of Pennsylvania, Philadelphia, PA. We expect to complete the study in the third quarter of 2017.

Patients in the dermatomyositis study have active skin involvement, relatively inactive muscle disease, and are permitted to remain on their baseline medications. JBT-101 is being evaluated at two dosing levels - 20 mg once a day and 20 mg twice a day - versus placebo. The trial design has a 28 day screening period, followed by 84 days treatment period and a 28 day safety follow-up. The primary goals of this trial are to evaluate safety and efficacy of JBT-101 in 22 patients with skin-predominant dermatomyositis. Patients are being monitored for safety and tolerability throughout the study. Safety is being assessed with physical examinations, adverse effects, laboratory safety testing, electrocardiograms and testing of psychoactivity. Efficacy is being assessed using the Cutaneous Dermatomyositis Disease Area and Severity Index. Secondary endpoint measurements include JBT-101 concentrations, other patient-reported outcomes, biomarkers of inflammation and disease activity in the blood and skin, and metabolipidomic profiles.

In November 2016 we commenced a one-year, open-label extension study to the ongoing Phase 2 clinical study. The application to conduct a one year open-label extension was submitted to and reviewed by the FDA. The objective of the open-label extension study is to provide all subjects (treatment and placebo) with the option of receiving JBT-101 for a period of one year after they complete the Phase 2 study. The same safety and efficacy endpoints evaluated in the Phase 2 study will continue to be assessed throughout the one year extension study.

### ***Systemic Lupus Erythematosus***

We plan to commence a Phase 2 double blind placebo-controlled study evaluating JBT-101 in the treatment of SLE in the second quarter of 2017. The study is being funded by an NIH Grant to the Feinstein Institute for Medical Research and will test the efficacy, safety, tolerability and biologic effects of JBT-101 as a novel, non-immunosuppressive oral treatment to improve signs and symptoms of SLE. The study plans to enroll about 100 adult SLE patients with active musculoskeletal disease and will be carried out at approximately 10 sites in the United States with 75 patients in the treatment group and 25 patients in the placebo group. The patients will receive either placebo or three different doses (5 mg a day, 20 mg a day or 20 mg twice a day) of JBT-101 daily for 84 days with 28 days follow-up. The primary endpoints are the safety and tolerability of JBT-101 and the evaluation of inflammatory joint pain.

### ***Prior Human Safety Data***

Two Phase 1 and one Phase 2 clinical trials have been conducted by prior licensees Atlantic Pharmaceuticals and Indevus Pharmaceuticals, Inc. who were developing JBT-101 as an analgesia therapy (pain relief) rather than an anti-inflammatory therapy. Based on their review of the preclinical and clinical data in pain relief, Indevus Pharmaceuticals elected not to continue with further clinical trials and its license rights were terminated in December 2008. Upon termination, the rights reverted back to Dr. Sumner Burstein who then assigned the rights to us in April 2009.

The first Phase 1 study evaluated the safety, tolerability and pharmacokinetics of a single oral dose of JBT-101 in healthy adult male subjects over a dose range from 1 mg to 10 mg, in 4 dose groups of 8 subjects each. JBT-101 had satisfactory oral bioavailability, was well tolerated, and exhibited linear pharmacokinetics over the dose range tested. There were no life-threatening or serious adverse events in this study. Two subjects in the 3 mg group and one subject in the 6 mg group out of a total of twenty-four subjects reported adverse events of mild to moderate intensity. None of the remaining subjects in the 3 mg and 6 mg groups and no subjects in the 1 mg, 10 mg and placebo groups experienced any adverse events. The two subjects in the 3 mg group reported blurred vision, difficulty in remembering, mild euphoria, impression of slower movements, dry mouth and difficulty in concentrating. The one subject in the 6 mg group reported orthostatic vagal fainting, feeling dizzy, and nausea immediately after the first blood draw, which occurred prior to the administration of the drug.

The second Phase 1 study evaluated the safety, tolerability and pharmacokinetics of single and multiple ascending doses of JBT-101 at higher doses. Each dose level had 8 subjects randomized at a ratio of 6 receiving JBT-101 and 2 receiving placebo. Doses ranged from 10 to 240 mg single dose, and 20, 40 and 80 mg three times a day, or tid, for 7 days multi-dose. JBT-101 showed good tolerability at single doses up to 120 mg and multiple doses up to 40 mg three times a day for 7 days. For the single dose treatment stage, the most frequently occurring treatment-emergent adverse events, or TEAEs, occurring in > 10% of all subjects treated with JBT-101, in decreasing order of frequency, were: dizziness (15 out of 48), nausea (10 out of 48), vomiting (7 out of 48), pallor (6 out of 48), dry mouth (5 out of 48), headache (5 out of 48), somnolence (5 out of 48), tremor (5 out of 48), and disorientation (5 out of 48). All TEAEs were mild to moderate and the majority of these events occurred in subjects treated at dose levels of 120 mg and above. For the multiple dose stage, there were no TEAEs at 20 mg tid while in the 40 and 80 mg tid dose groups the most frequently occurring TEAEs, occurring in > 10% of all subjects treated with JBT-101, were at the 40 and 80 mg tid dose respectively: dizziness (4 out of 6 and 3 out of 6), nausea (2 out of 6 and 1 out of 6), somnolence (2 out of 6 and 1 out of 6), dry mouth (1 out of 6 and 1 out of 6), fatigue (0 out of 6 and 2 out of 6), feeling abnormal (0 out of 6 and 2 out of 6), anorexia (0 out of 6 and 2 out of 6), inappropriate affect (0 out of 6 and 2 out of 6), and orthostatic hypotension (0 out of 6 and 2 out of 6). The majority of these events were mild and occurred in subjects treated at the highest dose level of approximately 80 mg three times a day, for 7 days (i.e., subjects treated with 80 mg tid were reduced to 60 mg tid starting with the second dose on Day 2 continuing through Day 7). In some elderly patients over 65 years of age, changes in electrocardiogram readings were noted; however no differences in readings were observed between subjects treated with JBT-101 versus and placebo thus this was not deemed to be of clinical relevance. JBT-101 exhibited linear pharmacokinetics over the dose range tested.

A Phase 2 crossover design study was conducted for JBT-101 in refractory neuropathic pain patients, or NP. In this study, 21 NP patients were treated with either JBT-101 or placebo at a dose of 20 and 40 mg twice a day (8 hours apart) for 1 week followed by a 1 week washout and a cross over. JBT-101 reduced the 3 hour pain index by up to 28% ( $p < 0.03$ ) in one cohort, and was effective at reducing pain by >30% in 50% of this same cohort ( $P < 0.03$ ) of refractory pain patients although its analgesic effect wore off between 3-8 hours post-dose. JBT-101 was well tolerated and there were no safety issues of note in this study.

While JBT-101 showed a clear analgesic signal in this phase 2 study in refractory neuropathic pain patients, we are not relying on these efficacy results to support our clinical program as this study was designed to measure pain while our future studies will have a completely different efficacy endpoint.

## Safety & Toxicology

To date, JBT-101 has undergone an extensive battery of animal safety and toxicology studies in support of Phase II clinical development. Unlike other CB2 agonists, JBT-101 exhibits limited blood brain barrier penetration (30%) and negligible CB1 activity *in vivo* (12 to 1 binding affinity for CB2 vs. CB1) resulting in limited central nervous system side effects. Results of the safety pharmacology studies in animals assessing the central nervous system, cardiovascular and respiratory systems, renal system and gastrointestinal system were all negative and support that there should be a significant safety margin at anticipated therapeutics doses of JBT-101 in patients.

Animal toxicological profiles of orally administered JBT-101 in single and multi-dose studies in mice, rats, and dogs, and a battery of *in vitro* and *in vivo* genetic toxicity studies, have been conducted and successfully completed. The results of these studies showed no major toxicological concerns and an excellent safety margin based on drug exposure levels in animals compared to human exposure. In support of Phase 3 clinical trials, Good Laboratory Practice (“GLP”) chronic toxicology studies have been completed in rats and dogs. Based on the results of these studies and prior clinical trials, the safety margin in humans is estimated to be between 8 and 32 times greater than the doses in our clinical trials.

## Pre-clinical Studies Demonstrate Mechanism of Action

In pre-clinical animal studies, with both prophylactic and therapeutic administration, JBT-101 has demonstrated clear efficacy at resolving inflammation. Inflammation was induced in animal pharmacology models by a variety of stimuli that trigger acute innate immune responses or mimic established inflammation including arachidonic acid, zymosin, platelet activating factor, IL-1 $\beta$  and TNF $\alpha$ , Freund’s complete adjuvant, and bleomycin. At the histological level, JBT-101 suppressed inflammation in all of these disease models in which it was studied. At the cellular level, JBT-101 reduced the numbers of inflammatory cells infiltrating the tissue, especially neutrophils. JBT-101 also induced non-inflammatory cell-death, or apoptosis, of activated T cells. At the molecular level, JBT-101 stimulated the production of the SPM, lipoxin A4 and the anti-inflammatory eicosanoid prostaglandin J2, while reducing production of pro-inflammatory eicosanoids leukotriene B4 and prostaglandin E2. JBT-101 reduced production of pro-inflammatory cytokines IL-6, TNF $\alpha$ , IL-1 $\beta$ , and type 1 interferons.

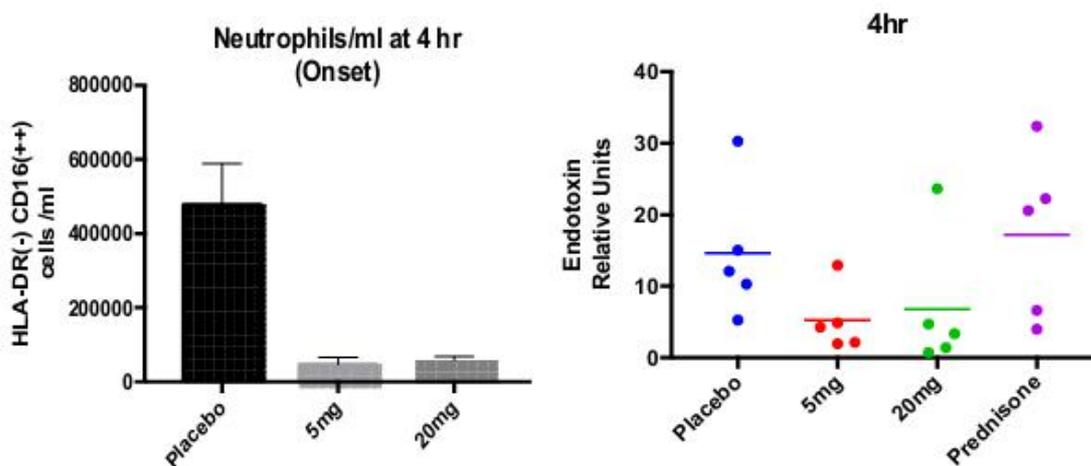
JBT-101 also demonstrated clear efficacy at stopping fibrotic processes in pre-clinical animal studies, with both prophylactic and therapeutic administration. Fibrosis was induced in joints by Freund’s complete adjuvant, in skin by bleomycin and TGF $\beta$  receptor 1 activation, and in lungs by bleomycin. At the histological level, JBT-101 inhibited the development or progression of fibrosis in each model, with reduced joint ankylosis, skin thickness, and lung fibrosis. For example, at a low dose of 0.1 mg/kg three days a week, JBT-101 significantly inhibited joint ankylosis (fibrosis) in adjuvant-induced arthritis. At a cellular level, myofibroblast accumulation was reduced (along with inflammatory cell infiltration). At the molecular level, JBT-101 reduced cellular activation through Erg-1, reduced expression of the pro-fibrotic growth factors TGF- $\beta$  and connective tissue growth factor, and reduced production of hydroxyproline and collagen.

## Effect of JBT-101 in a Human Model of Inflammatory Resolution

Dr. Gilroy, Professor of Experimental Inflammation and Pharmacology at University College of London has been evaluating the effects of JBT-101 in a clinical research model of inflammation and its resolution in healthy volunteers. In this model, inflammation was triggered in healthy individuals by the subcutaneous injection of heat-killed *E. coli*. Blood flow to the site of inflammation was measured with laser Doppler techniques. Suction blisters were generated over the site of inflammation, and cells and inflammatory mediators were measured in the blister fluid at different times after the injection of *E. coli*. Subjects received either JBT-101 or placebo prior to the procedure. The first set of data was collected on 15 subjects (5 on placebo, 5 on 5 mg JBT-101 twice a day and 5 on 20 mg JBT-101 twice a day). The top dose of JBT-101 in this study is the same as the top dose in the Phase 2 clinical trials currently underway and recently completed with JBT-101 in cystic fibrosis, systemic sclerosis and dermatomyositis, respectively.

The data demonstrated that both doses of JBT-101 exerted potent anti-inflammatory effects by inhibiting neutrophil infiltration, and increased the clearance of bacteria as measured by local endotoxin levels, both key determinants of inflammation severity. JBT-101 correspondingly decreased micro-vascular blood flow around the site of inflammation at 4 hours post stimulus. These two phenomena are related to a decrease in the inflammatory activation phase of this model. The investigators also found that JBT-101 progressively increased micro-vascular flow around the site of inflammation during the early phases of resolution (10-24 hours post stimulus), an event believed to drive an efficient acute inflammatory response and signal its timely resolution. These results are consistent with previous findings from experiments that tested JBT-101's effects in animal models of inflammation and support JBT-101's potential to deliver therapeutic benefit in chronic inflammatory diseases as a first-in-class "pro-resolution" drug.

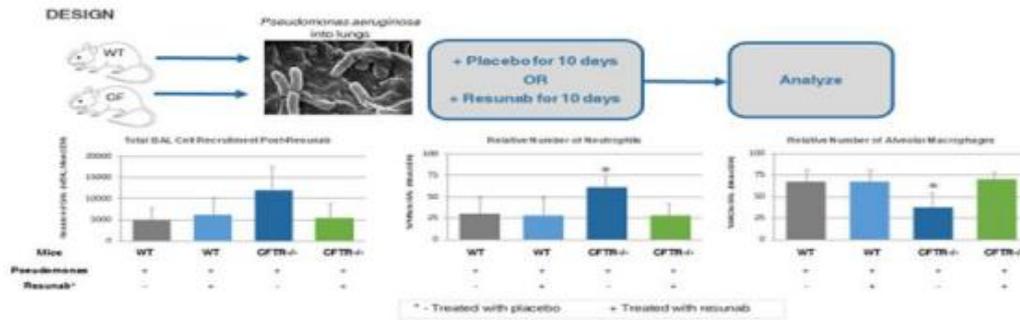
**Figure 5: Reduction of Neutrophils and Endotoxin in Human Model of Inflammatory Resolution**



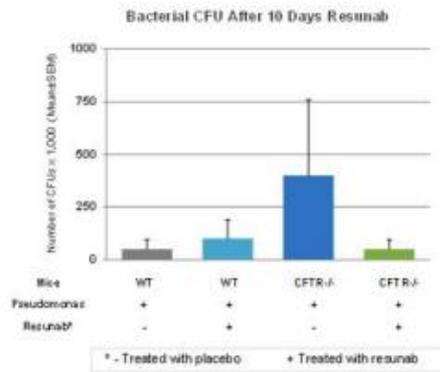
## Effect of JBT-101 in CF Mouse Model

Since patients with CF have chronic inflammation and their lungs are chronically colonized with bacteria, pre-clinical studies were conducted by Case Western Reserve University to evaluate JBT-101's overall impact on *Pseudomonas aeruginosa* colonization. *Pseudomonas aeruginosa* infection in the lungs was initiated in wildtype mice (control group) and CFTR-deficient mice in which the CFTR gene was knocked out. Each group then received treatments with JBT-101 at escalating doses 24 hours post infection over a ten day period. At day 10, animals were euthanized and evaluated for bacteria load (colony forming units or "CFUs"), total and differential bronchoalveolar lavage (BAL) white blood cell counts (WBCs). The results of the study demonstrated that in the CFTR-deficient mice group, JBT-101 improved survival, decreased weight loss, reduced the numbers of neutrophils and white blood cells in the lung and improved the ability of animals to resolve pulmonary infection as assessed by lung bacterial CFUs, compared to control treatment (see Figures 4 & 5 below).

**Figure 5: JBT-101 resolves lung inflammation in *Pseudomonas Aeruginosa* infected mouse model**



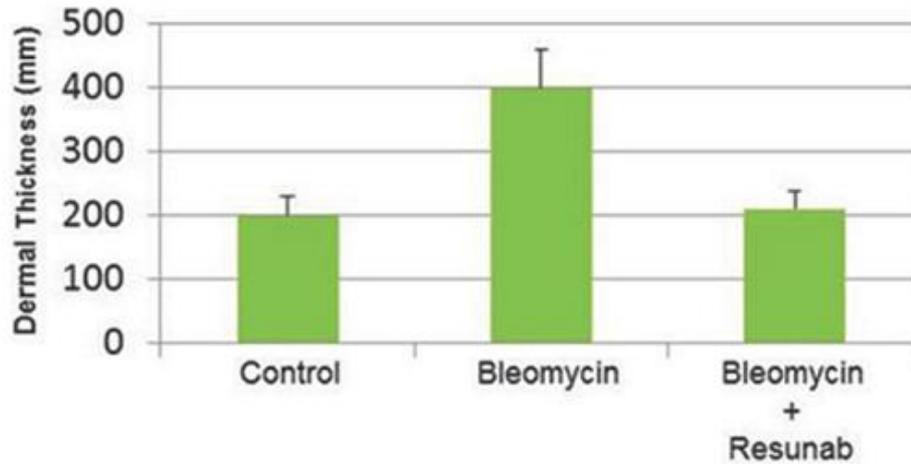
**Figure 5: JBT-101 enhances resolution of lung infection in CF mice infected with *Pseudomonas aeruginosa***



**Effect of JBT-101 in Fibrotic Disease Animal Models**

The efficacy of JBT-101 was investigated in three mouse models of scleroderma. Oral administration of JBT-101 once-a-day at 1 mg/kg/day inhibited dermal fibrosis in the three models as measured by reductions in dermal thickness, markers of collagen production, and myofibroblast abundance (cells that produce collagen). Histopathologic evaluation revealed that JBT-101 inhibited the fibrosis of the skin tissue in each of these models. In addition, oral administration of JBT-101 was effective at inhibiting lung fibrosis in a bleomycin-induced mouse model of systemic sclerosis (Figure 6). Collectively, we believe this data supports the development of JBT-101 as a potent and novel anti-fibrotic/anti-inflammatory drug with the potential to treat some of the key manifestations of human scleroderma.

**Figure 6: JBT-101 inhibits skin thickening in bleomycin-induced model of fibrosis in systemic sclerosis**



To translate these *in vivo* effects of JBT-101 on fibrosis in animal models to humans, we determined the anti-fibrotic effects of JBT-101 on dermal fibroblasts isolated from diffuse cutaneous systemic sclerosis patients. Dermal fibroblasts from systemic sclerosis patients overproduce extracellular matrix proteins like collagen and the pro-fibrotic cytokine TGF- $\beta$ . Further supporting its anti-fibrotic activity, JBT-101 inhibited new collagen synthesis, reduced TGF- $\beta$  and increased anti-inflammatory (resolving) eicosanoid levels in this ex-vivo model of human systemic sclerosis. These responses were statistically significant with a  $p < 0.001$  as determined using the Student-Newman Keuls post-hoc test for multiple comparisons. TGF- $\beta$  has been identified in published scientific literature to be an important cytokine in promoting inflammation and fibrosis in multiple diseases and conditions including systemic sclerosis and cystic fibrosis. While no pre-clinical model is entirely predictive of clinical efficacy, the results from these pre-clinical studies provide a credible rationale for further clinical development.

### Competition

For autoimmune disorders such as systemic sclerosis, dermatomyositis and SLE, physicians treat patients with a number of drugs including potent immunosuppressants and cytotoxics to try to reduce the autoimmune response characteristic of the disease. These drugs have not proven to be very effective thus there remains a high unmet need for safe and effective drugs to treat these autoimmune disorders. Several companies, including Roche, Boehringer Ingelheim, Bristol Myers, Sanofi, Promedior and Digna Biotech, are actively working to develop new drugs for treating the inflammation and/or fibrosis in systemic sclerosis. To the best of our knowledge, JBT-101 offers a unique mode of action to treat systemic sclerosis being one of the few oral drugs with the potential to resolve inflammation and halt fibrosis without immunosuppression.

There are numerous drug therapies currently used to treat CF patients, targeting different aspects of this complex disease. Inhaled and oral antibiotics address the pulmonary microbial infection. Mucolytics address the accumulation of mucus in the lungs. Bronchodilators and hydration agents are also used to help improve pulmonary function. Targeting of the inflammatory component of the disease is currently done by high dose Ibuprofen and oral corticosteroids. While these offer some clinical benefit, they are not used chronically due to their adverse side effects which include immunosuppression and metabolic changes (steroids) as well as the risk of gastrointestinal bleeding (ibuprofen). Thus, there is a clear and urgent unmet medical need for safe and effective inflammation-targeting drugs for the chronic treatment of CF that could potentially have a beneficial impact on morbidity and mortality.

An emerging area of CF therapy is the development of correctors and potentiators of CFTR. In January 2012, Vertex launched Kalydeco™, or ivacaftor, the first ever cystic fibrosis drug specifically targeting the underlying genetic defect in the CFTR ion channel. Kalydeco is a small synthetic oral molecule that helps potentiate the function of the G551D mutant CFTR protein, resulting in improved forced expiratory volume in one second (a measure of obstruction of airflow in the lungs) by approximately 10% in cystic fibrosis patients. With at least 2,000 different known mutations in the CFTR gene, Kalydeco can be used by approximately 4,000 patients (ages 2 and above) who suffer from a limited number of “gating mutations,” including the G551D mutation.

A new combination drug from Vertex, Orkambi™ (lumacaftor/ivacaftor) combination treatment targets a larger population of homozygote  $\Delta F508$  CFTR mutation patients. Orkambi was approved by the FDA on July 2, 2015. In clinical studies, the lung function of patients taking Orkambi improved by a range of 2.6 percentage points to 3 percentage points, compared with that of patients receiving placebo. Orkambi™ can be used by approximately 25,000 adult patients carrying two copies of the delta508 CFTR mutation.

Several other companies are developing drugs for CF targeting CFTR either as a protein or mRNA transcript. These are highlighted in the table below:

Selected CF Products in Development					
Company	Drug	Mechanism	Delivery	Mutation	Stage
PTC Therapeutics	Ataluren	Ribosome read thru (nonsense mutations)	Oral	Class 1, nonsense	Phase 3
UK CF Gene Therapy Consortium	pGM169/GL67A	Gene therapy	Inhaled	All	Phase 2b
Novartis	QBW251	Potentiator	Oral	Gating	Phase 2
Bayer	Riociguat	stimulates sGC enzyme	Oral	F508del homozygous	Phase 2
Nivalis Therapeutics (formerly N30)	N91115	GSNOR inhibitor	IV and Oral	F508del homozygous	Phase 2 (failed)
Flatley Discovery Lab	FDL169	Corrector	Oral	F508del	Phase 1
Galapagos / AbbVie	GLPG1837 / ABBV-974	Potentiator	Oral	Gating	Phase 1
ProQR	QR-010	RNA oligonucleotide	Inhaled	F508del homozygous	Phase 2
Celtaxsys	Acebilustat	Anti-inflammatory-inhibits production of LTB4	Oral	N/A	Phase 2
Proteostasis	PTI130	CFTR amplifier	Oral	All	Phase 2

### Research and Development

We incurred expenses of approximately \$15,437,000 and \$5,889,000 for research and development activities for the years ended December 31, 2016 and 2015, respectively. These expenses include cash and non-cash expenses relating to the development of our clinical and pre-clinical programs for JBT-101.

### Intellectual Property

We have filed patent applications directed to JBT-101, compositions and methods for treating disease using JBT-101. If granted, the resulting patents would expire on dates ranging from 2030 to 2034, subject to extension under certain circumstances. The patent application filings are directed to:

- Compositions including an improved ultrapure version of JBT-101 and uses of the compositions for the treatment of fibrotic conditions and inflammatory conditions;
- The use of JBT-101 in the treatment of fibrotic diseases; and
- JBT-101 formulations and uses of the formulations for the treatment of disease.

We do not have any issued patents for JBT-101 for the treatment of cystic fibrosis, systemic sclerosis, dermatomyositis, SLE or any other indications for which we are currently seeking commercial approval.

JBT-101 has been granted Orphan Drug Designation for both cystic fibrosis and systemic sclerosis in the U.S. and in the European Union. We will be seeking orphan drug status for JBT-101 in dermatomyositis and possibly other orphan inflammatory diseases from the U.S. Food and Drug Administration and in Europe. Orphan drug status provides seven years of market exclusivity in the U.S. and ten years in Europe beginning on the date of drug approval.

Our commercial success depends in part on our ability to obtain and maintain patent and other proprietary protection for JBT-101 and to operate without infringing the proprietary right of others and to prevent others from infringing our proprietary rights. We strive to protect our intellectual property through a combination of patents and trademarks as well as through the confidentiality provisions in our contracts. With respect to JBT-101, we endeavor to obtain and maintain patent protection in the U.S. and internationally on all patentable aspects of the drug. We cannot be sure that the patents will be granted with respect to any patent applications we may own or license in the future, nor can we be sure that any patents issued or licensed to us in the future will be useful in protecting our technology. For this and more comprehensive risks related to our intellectual property, please see “Risk Factors—Risks Relating to Our Intellectual Property Rights.”

In addition to patent protection, we rely on trade secrets and know-how to develop and maintain our competitive position. For example, aspects of our proprietary technology platform are based on unpatented trade secrets and know-how related to the manufacturing of JBT-101. Trade secrets and know-how can be difficult to protect. We seek to protect our proprietary technology and processes, in part, by confidentiality agreements and invention assignment agreements with our employees, consultants, scientific advisors, contractors and commercial partners. These agreements are designed to protect our proprietary information and, in the case of the invention assignment agreements, to grant us ownership of technologies that are developed through a relationship with a third party. We also seek to preserve the integrity and confidentiality of our data and trade secrets by maintaining physical security of our premises and physical and electronic security of our information technology systems. While we have confidence in these individuals, organizations and systems, agreements or security measures may be breached, and we may not have adequate remedies for any breach. In addition, our trade secrets may otherwise become known or be independently discovered by competitors. To the extent that our contractors use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

We also plan to seek trademark protection in the U.S. and outside of the U.S. where available and when appropriate. We intend to use these registered marks in connection with our pharmaceutical research and development as well as our product candidates.

### **Manufacturing and Supply for JBT-101**

We have developed and validated a good manufacturing practice, or GMP, process to manufacture JBT-101 active pharmaceutical ingredient (“API”) and drug product through our contract manufacturers. The existing API contract manufacturer has produced multi-Kg scale bulk batches of the under GMP for our Phase 2 clinical studies and we have engaged a second contract manufacturer to produce sufficient active ingredient for all the clinical studies required prior to submitting an NDA filing with the FDA. We do not own or operate manufacturing facilities for the production of JBT-101. We expect to depend on third-party suppliers and manufacturing organizations for all of our clinical trial quantities of raw materials and drug substance. JBT-101 is a synthetic molecule and there are readily available supplies of all raw materials needed for the manufacture of JBT-101.

### **Regulatory Matters**

#### ***Government Regulation***

Any product development activities related to JBT-101 or products or assets that we may develop or acquire in the future will be subject to extensive regulation by various government authorities, including the FDA and other federal, state and local statutes and regulations and comparable regulatory authorities in other countries, which regulate the design, research, clinical and non-clinical development, testing, manufacturing, storage, distribution, import, export, labeling, advertising and marketing of pharmaceutical products and devices. Generally, before a new drug can be sold, considerable data demonstrating its quality, safety and efficacy must be obtained, organized into a format specific to each regulatory authority, submitted for review and approved by the regulatory authority. The data are often generated in two distinct development states: pre-clinical and clinical. JBT-101 or other products that we may develop or acquire in the future must be approved by the FDA through the IND process before they may be legally marketed in the United States. For new chemical entities, the pre-clinical development stage generally involves synthesizing the active component, developing the formulation and determining the manufacturing process, as well as carrying out non-human toxicology, pharmacology and drug metabolism studies which support subsequent clinical testing.

The clinical stage of development can generally be divided into three sequential phases that may overlap, Phase 1, Phase 2 and Phase 3 clinical trials. In Phase 1, generally, small numbers of healthy volunteers are initially exposed to single escalating doses and then multiple escalating doses of the product candidate. The primary purpose of these studies is to assess the metabolism, pharmacologic action, side effect tolerability and safety of the drug. Phase 2 trials typically involve studies in disease-affected patients to determine the dose required to produce the desired benefits, while Phase 2b trials are designed to determine efficacy. At the same time, safety and further pharmacokinetic and pharmacodynamic information is collected. In some instances, formal Phase 1 and Phase 2 trials may not be deemed necessary or required by the FDA. Such is often the case when the safety and efficacy of an active ingredient is considered to be well understood by the FDA. Under established regulatory frameworks, pharmaceutical products with active ingredients equal or similar to those known by the FDA often enter more streamlined development programs than compounds entirely new to the agency.

Post-approval studies, sometimes referred to as Phase 4 clinical trials, may be conducted after initial marketing approval. Sometimes, these studies are used to gain additional experience from the treatment of patients in the intended therapeutic condition, then often referred to as Phase 4 clinical trials. In certain instances, the FDA may mandate the performance of Phase 4 studies. In other situations, post-approval studies aim to gain additional indications for a medication.

### ***Development of Drugs in the United States***

In the United States, 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 United States 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 or withdrawals from the market, 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.

Prior to the start of human clinical studies for a new drug in the United States, pre-clinical laboratory and animal tests are often performed under the FDA's Good Laboratory Practices regulations. The sponsor must submit the result of the pre-clinical tests, together with manufacturing information, analytical data and any available clinical data or literature and a proposed clinical protocol to the FDA as part of an IND application, which is a request for authorization from the FDA to administer an investigational drug or biological product to humans. Similar filings are required in other countries. The amount of data that must be supplied in the IND depends on the phase of the study. Phase 1 studies typically require less data than larger Phase 2 and 3 studies. A clinical plan must be submitted to the FDA prior to commencement of a clinical trial. If the FDA has concerns about the clinical plan or the safety of the proposed studies, they may suspend or terminate the study at any time. Studies must be conducted in accordance with good clinical practice and regulator reporting of study progress and any adverse experiences is required. Studies are also subject to review by independent institutional review boards responsible for overseeing studies at particular sites and protecting human research study subjects. An independent institutional review board may also suspend or terminate a study once initiated. Accordingly, we cannot be sure that submission of an IND will result in the FDA allowing clinical trials to begin, or that once begun, issues will not arise that could cause the trial to be suspended or terminated.

### **Review and Approval in the United States**

Following pivotal or Phase 3 trial completion, data are analyzed to determine safety and efficacy. Data are then filed with the FDA in a New Drug Application, or an NDA, along with proposed labeling for the product and information about the manufacturing and testing processes and facilities that will be used to ensure product quality. In the United States, FDA approval of an NDA must be obtained before marketing a pharmaceutical product. The NDA must contain proof of safety, purity, potency and efficacy, which entails extensive pre-clinical and clinical testing.

The FDA will likely re-analyze the clinical trial data, which could result in extensive discussions between the FDA and us during the review process. The review and evaluation of applications by the FDA is extensive and time consuming and may take several years to complete. The FDA may conduct a pre-approval inspection of the manufacturing facilities for the new product to determine whether they comply with current good manufacturing practice requirements and may also audit data from clinical and pre-clinical trials.

There is no assurance that the FDA will act favorably or quickly in making such reviews and significant difficulties or costs may be encountered in our efforts to obtain FDA approvals. The FDA may require that certain contraindications, warnings or precautions be included in the product labeling, or may condition the approval of the NDA on other changes to the proposed labeling, development of adequate controls and specifications, or a commitment to conduct post-marketing testing or clinical trials and surveillance programs to monitor the safety of approved products that have been commercialized. Further, the FDA may place conditions on approvals 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. Product approvals may be withdrawn for non-compliance with regulatory standards or if problems occur, following the initial marketing of the product.

### ***Orphan Drug Designation***

Under the Orphan Drug Act, the FDA may grant orphan drug designation to a drug intended to treat a rare disease or condition, which is generally a disease or condition that affects fewer than 200,000 individuals in the United States and for which there is no reasonable expectation that the cost of developing and making a drug available in the United States for this type of disease or condition will be recovered from sales of the product. Orphan product designation must be requested before submitting an NDA. After the FDA grants orphan drug designation, the identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. Orphan product designation does not convey any advantage in or shorten the duration of regulatory review and approval process. In addition to the potential period of exclusivity, orphan designation makes a company eligible for grant funding of up to \$400,000 per year for four years to defray costs of clinical trial expenses, tax credits for clinical research expenses and potential exemption from the FDA application user fee.

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 drug exclusivity, which means 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 (i) the drug's orphan designation is revoked; (ii) its marketing approval is withdrawn; (iii) the orphan exclusivity holder consents to the approval of another applicant's product; (iv) the orphan exclusivity holder is unable to assure the availability of a sufficient quantity of drug; or (v) a showing of clinical superiority to the product with orphan exclusivity by a competitor product. If a drug designated as an orphan product receives marketing approval for an indication broader than what is designated, it may not be entitled to orphan drug exclusivity. There can be no assurance that we will receive orphan drug designation for JBT-101 for dermatomyositis, or other orphan inflammatory diseases.

### ***Drug Development in Europe***

In the European Union, our future products may also be subject to extensive regulatory requirements. Similar to the United States, the marketing of medicinal products has been subject to the granting of marketing authorizations by regulatory agencies. Particular emphasis is also being placed on more sophisticated and faster procedures for reporting of adverse events to the competent authorities.

As in the United States, the various phases of pre-clinical and clinical research in the European Union are subject to significant regulatory controls. Although the regulatory controls on clinical research are currently undergoing a harmonization process following the adoption of the Clinical Trials Directive 2001/20/EC, there are currently significant variations in the member state regimes. All member states, however, currently require independent institutional review board approval of interventional clinical trials. Except for the United Kingdom Phase 1 studies in health volunteers, all clinical trials require either prior governmental notification or approval. Most regulators also require the submission of adverse event reports during a study and a copy of the final study report.

### ***Review and Approval in the European Union***

In the European Union, approval of new medicinal products can be obtained through one of three processes: the mutual recognition procedure, the centralized procedure and the decentralized procedure. We intend to determine which process we will follow, if any, in the future.

**Mutual Recognition Procedure:** An applicant submits an application in one European Union member state, known as the reference member state. Once the reference member state has granted the marketing authorization, the applicant may choose to submit applications in other concerned member states, requesting them to mutually recognize the marketing authorizations already granted. Under this mutual recognition process, authorities in other concerned member states have 55 days to raise objections, which must then be resolved by discussion among the concerned member states, the reference member state and the applicant within 90 days of the commencement of the mutual recognition procedure. If any disagreement remains, all considerations by authorities in the concerned member states are suspended and the disagreement is resolved through an arbitration process. The mutual recognition procedure results in separate national marketing authorizations in the reference member state.

**Centralized Procedure:** This procedure is currently mandatory for products developed by means of a biotechnological process and optional for new active substances and other “innovative medicinal products with novel characteristics.” Under this procedure, an application is submitted to the European Agency for the Evaluation of Medical Products. Two European Union member states are appointed to conduct an initial evaluation of each application. These countries each prepare an assessment report that is then used as the basis of a scientific opinion of the Committee on Proprietary Medical Products. If this opinion is favorable, it is sent to the European Commission, which drafts a decision. After consulting with the member states, the European Commission adopts a decision and grants a marketing authorization, which is valid throughout the European Union and confers the same rights and obligations in each of the member states as a marketing authorization granted by that member state.

**Decentralized Procedure:** The most recently introduced of the three processes for obtaining approval of new medicinal processes in the European Union, the decentralized procedure is similar to the mutual recognition procedure described above, but with differences in the timing that key documents are provided to concerned member states by the reference member state, the overall timing of the procedure and the possibility of, among other things, “clock stops” during the procedure.

### ***Post-Marketing Requirements***

Following approval of a new product, a pharmaceutical company and the approved product are subject to continuing regulation by the FDA and other federal and state regulatory authorities, including, among other things, monitoring and recordkeeping activities, reporting to applicable regulatory authorities of adverse experiences with the product, providing the regulatory authorities with updated safety and efficacy information, product sampling and distribution requirements, and complying with promotion and advertising requirements, which include, among others, standards for direct-to-consumer advertising, restrictions on promoting drugs for uses or in patient populations not described in the drug’s approved labeling (known as “off-label use”), limitations on industry-sponsored scientific and educational activities, and requirements for promotional activities involving the internet. Although physicians may prescribe legally available drugs for off-label uses, manufacturers may not market or promote such off-label uses. Modifications or enhancements to the products or labeling or changes of site of manufacture are often subject to the approval of the FDA and other regulators, which may or may not be received or may result in a lengthy review process.

Prescription drug advertising is subject to federal, state and foreign regulations. In the United States, the FDA regulates prescription drug promotion, including direct-to-consumer advertising. Prescription drug promotion materials must be submitted to the FDA in conjunction with their first use. Any distribution of prescription drug products and pharmaceutical samples must comply with the U.S. Prescription Drug Marketing Act, a part of the U.S. Federal Food, Drug and Cosmetic Act. Once a product is approved, its manufacture is subject to comprehensive and continuing regulations by the FDA. The FDA regulations require the products be manufactured in specific approved facilities and in accordance with current good manufacturing practices, and NDA holders must list their products and register their manufacturing establishments with the FDA. These regulations also impose certain organizational, procedural and documentation requirements with respect to manufacturing and quality assurance activities. Drug manufacturers and other entities involved in the manufacture and distribution of approved drugs are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with current good manufacturing practice and other laws. NDA holders using contract manufacturers, laboratories or packagers are responsible for the selection and monitoring of qualified firms. These firms are subject to inspections by the FDA at any time, and the discovery of violative conditions could result in enforcement actions that interrupt the operation of any such facilities or the ability to distribute products manufactured, processed or tested by them.

### ***Special Protocol Assessment***

The Federal Food, Drug and Cosmetic Act directs the FDA to meet with sponsors, pursuant to a sponsor’s written request, for the purpose of reaching agreement on the design and size of clinical trials intended to form the primary basis of an efficacy claim in an NDA. If an agreement is reached, the FDA will reduce the agreement to writing and make it part of the administrative record. This agreement is called a special protocol assessment, or SPA. While the FDA’s guidance on SPAs states that documented SPAs should be considered binding on the review division, the FDA has latitude to change its assessment if certain exceptions apply. Exceptions include public health concerns emerging that were unrecognized at the time of the protocol assessment, identification of a substantial scientific issue essential to the safety or efficacy testing that later comes to light, a sponsor’s failure to follow the protocol agreed upon, or the FDA’s reliance on data, assumptions or information that are determined to be wrong.

### ***Other Regulatory Matters***

Manufacturing, sales, promotion and other activities following product approval are also subject to regulation by numerous regulatory authorities in addition to the FDA, including, in the United States, the Centers for Medicare & Medicaid Services, or CMS, other divisions of the Department of Health and Human Services, the Drug Enforcement Administration, the Consumer Product Safety Commission, the Federal Trade Commission, the Occupational Safety & Health Administration, the Environmental Protection Agency, and state and local governments. Sales, marketing and scientific/educational programs must also comply with federal and state fraud and abuse laws. Pricing and rebate programs must comply with the Medicaid rebate requirements of the U.S. Omnibus Budget Reconciliation Act of 1990. If products are made available to authorized users of the Federal Supply Schedule of the General Services Administration, additional laws and requirements apply. The handling of any controlled substances must comply with the U.S. Controlled Substances Act and Controlled Substances Import and Export Act. Products must meet applicable child-resistant packaging requirements under the U.S. Poison Prevention Packaging Act. Manufacturing, sales, promotion and other activities are also potentially subject to federal and state consumer protection and unfair completion laws.

In the United States, our product candidate, JBT-101, is currently classified as Schedule I controlled substance as defined in the Controlled Substance Act (“CSA”). This designation is based on JBT-101’s chemical structure and pharmacology (namely, it being a synthetic endocannabinoid mimetic that binds to the CB2 receptor). Even though JBT-101’s mechanism of action is to modulate the immune system and results to date from clinical studies have demonstrated the drug has no psychotropic effects (which we believe is unlike other members of its chemical class), the DEA classifies JBT-101 as a Schedule I substance.

Schedule I controlled substances are pharmaceutical products subject to specific regulations under the CSA, that establishes, among other things, certain registration, manufacturing quotas, security, recordkeeping, reporting, import, export and other requirements administered by the DEA. All parties responsible for the manufacturing, distribution and testing the drug in clinical studies must apply for and obtain a license from the DEA before they are permitted to perform these activities with JBT-101. Furthermore, these parties must have the security, control, recordkeeping, reporting and inventory mechanisms required by the DEA to prevent drug loss and diversion. All licensed facilities are required to renew their registrations annually if they intend to continue to work with our drug. The DEA conducts periodic inspections of certain registered establishments that handle controlled substances. We have been working with our manufacturers, distributors, exporters and clinical sites to obtain the necessary licenses to work with JBT-101. The parties responsible for the manufacturing, distribution and export of JBT-101 have already applied for and have been granted DEA licenses and a number of institutions responsible for conducting our Phase 2 clinical studies have also been granted DEA licenses

Individual states have also established controlled substance laws and regulations. Though state-controlled substances laws often mirror federal law, because the states are separate jurisdictions, they may separately schedule drugs, as well. While some states automatically schedule a drug based on federal action, other states schedule drugs through rulemaking or a legislative action. The requirement for state registrations could also result in delay of the manufacturing, distribution of JBT-101 or in the completion of the Phase 2 clinical studies. We and our manufacturing vendors and clinical sites must also obtain separate state registrations, permits or licenses in order to be able to obtain, handle, and distribute controlled substances for clinical trials or commercial sale, and failure to meet applicable regulatory requirements could lead to enforcement and sanctions by the states in addition to those from the DEA or otherwise arising under federal law.

The distribution of pharmaceutical products is subject to additional requirements and regulations, including extensive record-keeping, licensing, storage and security requirements intended to prevent the unauthorized sale of pharmaceutical products.

### ***Third-Party Payer Coverage and Reimbursement***

Significant uncertainty exists as to the coverage and reimbursement status of any of our drug candidates that ultimately may obtain regulatory approval. In both the United States and foreign markets, our ability to commercialize our product candidates successfully, and to attract commercialization partners for our product candidates, depends in significant part on the availability of adequate financial coverage and reimbursement from third-party payers, including, in the United States, governmental payers such as the Medicare and Medicaid programs, managed care organizations, and private health insurers. Medicare is a federally funded program managed by the CMS, through local fiscal intermediaries and carriers that administer coverage and reimbursement for certain healthcare items and services furnished to the elderly and disabled. Medicaid is an insurance program for certain categories of patients whose income and assets fall below state defined levels and who are otherwise uninsured that is both federally and state funded and managed by each state. The federal government sets general guidelines for Medicaid and each state creates specific regulations that govern its individual program. Each payer has its own process and standards for determining whether it will cover and reimburse a procedure or particular product. Private payers often rely on the lead of the governmental payers in rendering coverage and reimbursement determinations. Therefore, achieving favorable CMS coverage and reimbursement is usually a significant gating issue for successful introduction of a new product. The competitive position of some of our products will depend, in part, upon the extent of coverage and adequate reimbursement for such products and for the procedures in which such products are used. Prices at which we or our customers seek reimbursement for our product candidates can be subject to challenge, reduction or denial by the government and other payers.

The United States Congress and state legislatures may, from time to time, propose and adopt initiatives aimed at cost containment, which could impact our ability to sell our product candidates profitably. For example, in March 2010, President Obama signed into law the Patient Protection and Affordable Care Act and the associated reconciliation bill, which we refer to collectively as the Health Care Reform Law, a sweeping law intended to broaden access to health insurance, reduce or constrain the growth of healthcare spending, enhance remedies against fraud and abuse, add new transparency requirements for healthcare and health insurance industries, impose new taxes and fees on the health industry and impose additional health policy reforms. Effective October 1, 2010, the Health Care Reform Law revised the definition of “average manufacturer price” for reporting purposes, which could increase the amount of Medicaid drug rebates to states once the provision is effective. Further, the law imposes a significant annual fee on companies that manufacture or import branded prescription drug products. Substantial new provisions affecting compliance have also been enacted, which may require us to modify our business practices with healthcare practitioners. We will not know the full effects of the Health Care Reform Law until applicable federal and state agencies issue regulations or guidance under the new law. Although it is too early to determine the effect of the Health Care Reform Law, the new law appears likely to continue the pressure on pharmaceutical pricing, especially under the Medicare program, and may also increase our regulatory burdens and operating costs. Moreover, in the coming years, additional changes could be made to governmental healthcare programs that could significantly impact the success of our product candidates.

The cost of pharmaceuticals continues to generate substantial governmental and third-party payer interest. We expect that the pharmaceutical industry will experience pricing pressures due to the trend toward managed healthcare, the increasing influence of managed care organizations and additional legislative proposals. Our results of operations could be adversely affected by current and future healthcare reforms.

Some third-party payers also require pre-approval of coverage for new or innovative devices or drug therapies before they will reimburse healthcare providers that use such therapies. While we cannot predict whether any proposed cost-containment measures will be adopted or otherwise implemented in the future, the announcement or adoption of these proposals could have a material adverse effect on our ability to obtain adequate prices for our product candidates and operate profitably.

In addition, in some foreign countries, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing vary widely from country to country. For example, the European Union provides options for its member states to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. A member state may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our products. Historically, products launched in the European Union do not follow price structures of the United States and generally tend to be significantly lower.

#### **Other Healthcare Laws and Compliance Requirements**

In the United States, our activities are potentially subject to regulation by various federal, state and local authorities in addition to the FDA, including the CMS, other divisions of the United States Department of Health and Human Services (e.g., the Office of Inspector General), the United States Department of Justice and individual United States Attorney offices within the Department of Justice, and state and local governments. These regulations include:

- the federal healthcare program anti-kickback law which prohibits, among other things, persons from soliciting, receiving or providing remuneration, directly or indirectly, to induce either the referral of an individual, for an item or service or the purchasing or ordering of a good or service, for which payment may be made under federal healthcare programs such as the Medicare and Medicaid programs;
- federal false claims laws which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other government reimbursement programs that are false or fraudulent. The government may assert that a claim including items or services resulting from a violation of the federal healthcare program anti-kickback law or related to off-label promotion constitutes a false or fraudulent claim for purposes of the federal false claims laws;
- the federal Health Insurance Portability and Accountability Act of 1996 which prohibits executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters and which also imposes certain requirements relating to the privacy, security and transmission of individually identifiable health information;
- the federal transparency requirements under the Health Care Reform Law requires manufacturers of drugs, devices, biologics, and medical supplies to report to the Department of Health and Human Services information related to physician payments and other transfers of value and physician ownership and investment interests;

- the Federal Physician Payments Sunshine Act within the ACA, and its implementing regulations, require that certain manufacturers of drugs, devices, biological and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program (with certain exceptions) to report information related to certain payments or other transfers of value made or distributed to physicians and teaching hospitals, or to entities or individuals at the request of, or designated on behalf of, the physicians and teaching hospitals and to report annually certain ownership and investment interests held by physicians and their immediate family members; and
- state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws, which may apply to items or services reimbursed by any third party payer, including commercial insurers, and state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by federal laws, thus complicating compliance efforts.

In addition, we may be subject to data privacy and security regulation by both the federal government and the states in which we conduct our business. The Health Insurance Portability and Accountability Act, or HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, or HITECH, and its implementing regulations, imposes certain requirements relating to the privacy, security and transmission of individually identifiable health information. Among other things, HITECH makes HIPAA’s privacy and security standards directly applicable to “business associates”—independent contractors or agents of covered entities that receive or obtain protected health information in connection with providing a service on behalf of a covered entity. HITECH also created four new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates and possibly other persons, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorneys’ fees and costs associated with pursuing federal civil actions. In addition, state laws govern the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts.

### ***Post-Marketing Regulations***

Following approval of a new product, a pharmaceutical company and the approved product are subject to continuing regulation by the FDA and other federal and state regulatory authorities, including, among other things, monitoring and recordkeeping activities, reporting to applicable regulatory authorities of adverse experiences with the product, providing the regulatory authorities with updated safety and efficacy information, product sampling and distribution requirements, and complying with promotion and advertising requirements, which include, among others, standards for direct-to-consumer advertising, restrictions on promoting drugs for uses or in patient populations not described in the drug’s approved labeling (known as “off-label use”), limitations on industry-sponsored scientific and educational activities, and requirements for promotional activities involving the internet. Although physicians may prescribe legally available drugs for off-label uses, manufacturers may not market or promote such off-label uses. Modifications or enhancements to the products or labeling or changes of site of manufacture are often subject to the approval of the FDA and other regulators, which may or may not be received or may result in a lengthy review process.

### **Employees**

We had 25 full time employees at December 31, 2016. All of our employees are engaged in administration, finance, clinical, manufacturing, regulatory and business development functions. We believe our relations with our employees are good. We anticipate that the number of employees will grow as we continue to develop our product candidates. In addition, we utilize and will continue to utilize consultants, clinical research organizations and third parties to perform our pre-clinical studies, clinical studies, manufacturing and regulatory functions.

### **Emerging Growth Company**

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. We will remain an emerging growth company until the earlier of (1) January 1, 2020, (2) the last day of the first fiscal year in which our annual gross revenues exceed \$1 billion, (3) the date on which we become a “large accelerated filer” as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, which would occur if the market value of our common stock that is held by non-affiliates exceeds \$700 million as of the last business day of our most recently completed second fiscal quarter or (4) the date on which we have issued more than \$1 billion in non-convertible debt during the preceding three-year period.

For as long as we remain an “emerging growth company,” we may take advantage of certain exemptions from various reporting requirements that are applicable to public companies that are not “emerging growth companies” including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation and financial statements in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote to approve executive compensation and shareholder approval of any golden parachute payments not previously approved. We are choosing to “opt out” of the extended transition periods available under the JOBS Act for complying with new or revised accounting standards, and intend to take advantage of the other reporting exemptions until we are no longer an “emerging growth company.”

## Corporate Information

Corbus Pharmaceuticals, Inc. (formerly known as JB Therapeutics Inc.), was incorporated on April 24, 2009 under the laws of the State of Delaware. On April 11, 2014, JB Therapeutics, Inc. completed a merger with Corbus Pharmaceuticals Holdings, Inc. and changed its name to Corbus Pharmaceuticals, Inc. Upon the consummation of the merger, Corbus Pharmaceuticals, Inc. became a wholly owned subsidiary of Corbus Pharmaceuticals Holdings, Inc. which continues to operate the business of Corbus Pharmaceuticals, Inc. Our principal executive offices are located at 100 River Ridge Drive, Norwood, Massachusetts 02062, and our telephone number is (619) 963-0100. Our website address is [www.corbuspharma.com](http://www.corbuspharma.com).

We make available free of charge on or through the Investor Relations link on our website, [www.corbuspharma.com](http://www.corbuspharma.com), access to press releases and investor presentations, as well as all materials that we file electronically with the SEC, including our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports, filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after electronically filing such materials with, or furnishing them to, the SEC. During the period covered by this Form 10-K, we made all such materials available through our website as soon as reasonably practicable after filing such materials with the SEC. You may also read and copy any materials filed by us with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549, and you may obtain information on the operation of the Public Reference Room by calling the SEC in the United States at 1-800-SEC-0330. In addition, the SEC maintains an Internet website, [www.sec.gov](http://www.sec.gov), that contains reports, proxy and information statements and other information that we file electronically with the SEC.

## Item 1A. RISK FACTORS

*An investment in our common stock is speculative and illiquid and involves a high degree of risk including the risk of a loss of your entire investment. You should carefully consider the risks and uncertainties described below and the other information contained in this report and our other reports filed with the Securities and Exchange Commission. The risks set forth below are not the only ones facing us. Additional risks and uncertainties may exist that could also adversely affect our business, operations and financial condition. If any of the following risks actually materialize, our business, financial condition and/or operations could suffer. In such event, the value of our common stock could decline, and you could lose all or a substantial portion of the money that you pay for our common stock.*

### **Risk Related to our Company and our Business**

#### **Risks Related to Our Financial Position and Need for Capital**

*We are a clinical stage pharmaceutical company with a limited operating history.*

We are a clinical stage pharmaceutical company with a limited operating history. We must obtain FDA clearance of our Investigational New Drug applications, or INDs, before clinical trials can commence, and must receive regulatory approval of our New Drug Applications, or NDAs, before commercial sales of a product can commence. The likelihood of success of our business plan must be considered in light of the problems, substantial expenses, difficulties, complications and delays frequently encountered in connection with developing and expanding early-stage businesses and the regulatory and competitive environment in which we operate. Pharmaceutical product development is a highly speculative undertaking, involves a substantial degree of risk and is a capital-intensive business.

Accordingly, you should consider our prospects in light of the costs, uncertainties, delays and difficulties frequently encountered by companies in the early stages of development, especially clinical pharmaceutical companies such as ours. Potential investors should carefully consider the risks and uncertainties that a company with a limited operating history will face. In particular, potential investors should consider that we cannot assure you that we will be able to:

- receive FDA approval of INDs for commencing our clinical trials;
- successfully implement or execute our current business plan, or that our business plan is sound;
- Successfully manufacture our clinical product and establish commercial drug supply;
- obtain DEA licenses necessary for the manufacturing of JBT-101 and for evaluating JBT-101 in our clinical trials;
- successfully complete clinical trials and obtain regulatory approval for the marketing of JBT-101;
- secure market exclusivity and/or adequate intellectual property protection for JBT-101;
- attract and retain an experienced management and advisory team;
- secure acceptance of JBT-101 in the medical community and with third party payors and consumers;
- launch commercial sales of JBT-101, whether alone or in collaboration with others; and
- raise sufficient funds in the capital markets to effectuate our business plan including clinical development, regulatory approval and commercialization for JBT-101.

If we cannot successfully execute any one of the foregoing, our business may not succeed and your investment will be adversely affected.

*We have incurred operating losses in each year since our inception and expect to continue to incur substantial losses for the foreseeable future. We may never become profitable or, if achieved, be able to sustain profitability.*

We expect to incur substantial expenses without corresponding revenues unless and until we are able to obtain regulatory approval and successfully commercialize JBT-101. We have been engaged in developing JBT-101 since 2009. To date, we have not generated any revenue from JBT-101 and we expect to incur significant expense to complete our clinical program for JBT-101 in the United States and elsewhere. We may never be able to obtain regulatory approval for the marketing of JBT-101 in any indication in the United States or internationally. Even if we are able to commercialize JBT-101 or any other product candidate, there can be no assurance that we will generate significant revenues or ever achieve profitability. Our net losses for the years ended December 31, 2016 and December 31, 2015 were approximately \$19,999,000 and \$8,851,000, respectively. As of December 31, 2016, we had an accumulated deficit of approximately \$33,276,000.

If we were to obtain FDA approval for JBT-101, we would expect that our research and development expenses will continue to increase as we advance to clinical trials for indications for the treatment of cystic fibrosis, systemic sclerosis and dermatomyositis. We may elect to pursue FDA approval for JBT-101 in other indications, which will result in significant additional research and development expenses. As a result, we expect to continue to incur substantial losses for the foreseeable future, and these losses will increase. We are uncertain when or if we will be able to achieve or sustain profitability. If we achieve profitability in the future, we may not be able to sustain profitability in subsequent periods. Failure to become and remain profitable would impair our ability to sustain operations and adversely affect the price of our common stock and our ability to raise capital.

***Our cash or cash equivalents will only fund our operations for a limited time and we will need to raise additional capital to support our development and commercialization efforts.***

We are currently operating at a loss and expect our operating costs will increase significantly as we incur costs related to the clinical trials for JBT-101. As of December 31, 2016, our consolidated cash balance was approximately \$15.0 million. On February 28, 2017, we entered into a securities purchase agreement providing for the issuance and sale of 3,887,815 shares of our common stock in a registered direct offering to institutional and accredited investors at a purchase price of \$7.00 per share with gross proceeds to us totaling \$27.2 million less estimated issuance costs of approximately \$0.1 million ("February 2017 Registered Direct Offering"). We expect our cash on hand of approximately \$15.0 million at December 31, 2016 together with the proceeds from the February 2017 Registered Direct Offering and the remaining milestone payment of \$500,000 from the CFPT, which we expect to receive in the second quarter of 2017, to be sufficient to meet our operating and capital requirements into the fourth quarter of 2018 based on current planned expenditures.

We do not currently have any arrangements or credit facilities in place as a source of funds, and there can be no assurance that we will be able to raise sufficient additional capital on acceptable terms, or at all, and if we are not successful in raising additional capital, we may not be able to continue as a going concern. We may seek additional capital through a combination of private and public equity offerings, debt financings and strategic collaborations. Debt financing, if obtained, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, and could increase our expenses and require that our assets secure such debt.

Equity financing, if obtained, could result in dilution to our then existing stockholders and/or require such stockholders to waive certain rights and preferences. If such financing is not available on satisfactory terms, or is not available at all, we may be required to delay, scale back or eliminate the development of business opportunities and our operations and financial condition may be materially adversely affected. We can provide no assurances that any additional sources of financing will be available to us on favorable terms, if at all. In addition, if we are unable to secure sufficient capital to fund our operations, we might have to enter into strategic collaborations that could require us to share commercial rights to JBT-101 with third parties in ways that we currently do not intend or on terms that may not be favorable to us. If we choose to pursue additional indications and/or geographies for JBT-101 or otherwise expand more rapidly than we presently anticipate we may also need to raise additional capital sooner than expected.

#### **Risks Related to Product Development, Regulatory Approval, Manufacturing and Commercialization**

***We depend entirely on the success of JBT-101. If we are unable to generate revenues from JBT-101, our ability to create stockholder value will be limited.***

Our only product candidate currently is JBT-101, which has successfully completed Phase 1 safety studies and is being evaluated in clinical studies. We do not generate revenues from any FDA approved drug products and have no other product candidates in development. There is no guarantee that our clinical trials will be successful or that we will continue with clinical studies to support an approval from the FDA for any indication. We note that most drug candidates never reach the clinical development stage and even those that do reach clinical development have only a small chance of successfully completing clinical development and gaining regulatory approval. Therefore, our business currently depends entirely on the successful development, regulatory approval and commercialization of JBT-101, which may never occur.

***If we are not able to obtain any required regulatory approvals for JBT-101, we will not be able to commercialize our only product candidate and our ability to generate revenue will be limited.***

We must successfully complete clinical trials for JBT-101 before we can apply for marketing approval. Even if we complete our clinical trials, it does not assure FDA approval. Our clinical trials may be unsuccessful, which would materially harm our business. Even if these clinical trials are successful, we are required to conduct additional clinical trials to establish JBT-101's safety and efficacy, before a New Drug Application, or NDA, can be filed with the FDA for marketing approval of JBT-101.

Clinical testing is expensive, is difficult to design and implement, can take many years to complete and is uncertain as to outcome. Success in early phases of pre-clinical and clinical trials does not ensure that later clinical trials will be successful, and interim results of a clinical trial do not necessarily predict final results. A failure of one or more of our clinical trials can occur at any stage of testing. We may experience numerous unforeseen events during, or as a result of, the clinical trial process that could delay or prevent our ability to receive regulatory approval or commercialize JBT-101. The research, testing, manufacturing, labeling, packaging, storage, approval, sale, marketing, advertising and promotion, pricing, export, import and distribution of drug products are subject to extensive regulation by the FDA and other regulatory authorities in the United States and other countries, which regulations differ from country to country. We are not permitted to market JBT-101 as a prescription pharmaceutical product in the United States until we receive approval of an NDA from the FDA, or in any foreign countries until we receive the requisite approval from such countries. In the United States, the FDA generally requires the completion of clinical trials of each drug to establish its safety and efficacy and extensive pharmaceutical development to ensure its quality before an NDA is approved. Regulatory authorities in other jurisdictions impose similar requirements. Of the large number of drugs in development, only a small percentage result in the submission of an NDA to the FDA and even fewer are eventually approved for commercialization. We have never submitted an NDA to the FDA or comparable applications to other regulatory authorities. If our development efforts for JBT-101, including regulatory approval, are not successful for its planned indications, or if adequate demand for JBT-101 is not generated, our business will be harmed.

Our success depends on the receipt of regulatory approval and the issuance of such regulatory approvals is uncertain and subject to a number of risks, including the following:

- the FDA or comparable foreign regulatory authorities or institutional review boards, or IRBs, may disagree with the design or implementation of our clinical trials;
- we may not be able to provide acceptable evidence of JBT-101's safety and efficacy;
- the results of our clinical trials may not be satisfactory or may not meet the level of statistical or clinical significance required by the FDA, European Medicines Agency, or EMA, or other comparable foreign regulatory authorities for marketing approval;
- the dosing of JBT-101 in a particular clinical trial may not be at an optimal level;
- patients in our clinical trials may suffer adverse effects for reasons that may or may not be related to JBT-101;
- the data collected from clinical trials may not be sufficient to support the submission of an NDA or other submission or to obtain regulatory approval in the United States or elsewhere;
- the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

Failure to obtain regulatory approval for JBT-101 for the foregoing or any other reasons will prevent us from commercializing this product candidate as a prescription product, and our ability to generate revenue will be materially impaired. We cannot guarantee that regulators will agree with our assessment of the results of the clinical trials we intend to conduct in the future or that such trials will be successful. The FDA, EMA and other regulators have substantial discretion in the approval process and may refuse to accept any application or may decide that our data is insufficient for approval and require additional clinical trials, or pre-clinical or other studies. In addition, varying interpretations of the data obtained from pre-clinical and clinical testing could delay, limit or prevent regulatory approval of a product candidate.

We are a clinical stage company and we have not submitted an NDA or received regulatory approval to market JBT-101 in any jurisdiction. We have only limited experience in filing the applications necessary to gain regulatory approvals and expect to rely on consultants and third party contract research organizations, or CROs, with expertise in this area to assist us in this process. Securing FDA approval requires the submission of pre-clinical, clinical, and/or pharmacokinetic data, information about product manufacturing processes and inspection of facilities and supporting information to the FDA for each therapeutic indication to establish a product candidate's safety and efficacy for each indication. JBT-101 may prove to have undesirable or unintended side effects, toxicities or other characteristics that may preclude our obtaining regulatory approval or prevent or limit commercial use with respect to one or all intended indications.

The process of obtaining regulatory approvals is expensive, often takes many years, if approval is obtained at all, and can vary substantially based upon, among other things, the type, complexity and novelty of the product candidates involved, the jurisdiction in which regulatory approval is sought and the substantial discretion of the regulatory authorities. Changes in the regulatory approval policy during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for a submitted product application may cause delays in the approval or rejection of an application. Regulatory approval obtained in one jurisdiction does not necessarily mean that a product candidate will receive regulatory approval in all jurisdictions in which we may seek approval, but the failure to obtain approval in one jurisdiction may negatively impact our ability to seek approval in a different jurisdiction. Failure to obtain regulatory marketing approval for JBT-101 in any indication will prevent us from commercializing the product candidate, and our ability to generate revenue will be materially impaired.

***JBT-101 is our only product candidate in development. If we fail to successfully commercialize JBT-101, we may need to acquire additional product candidates and our business will be adversely affected.***

We have never commercialized any product candidates and do not have any other compounds in pre-clinical testing, lead optimization or lead identification stages beyond JBT-101. We cannot be certain that JBT-101 will prove to be sufficiently effective and safe to meet applicable regulatory standards for any indication. If we fail to successfully commercialize JBT-101 as a treatment for cystic fibrosis, systemic sclerosis, dermatomyositis or any other indication, whether as a stand-alone therapy or in combination with other treatments, our business would be adversely affected.

***Even if we receive regulatory approval for JBT-101, we still may not be able to successfully commercialize this product, and the revenue that we generate from its sales, if any, may be limited.***

If approved for marketing, the commercial success of JBT-101 will depend upon its acceptance by the medical community, including physicians, patients and health care payors. The degree of market acceptance of JBT-101 will depend on a number of factors, including:

- demonstration of clinical safety and efficacy;
- relative convenience, pill burden and ease of administration;
- the prevalence and severity of any adverse effects;
- the willingness of physicians to prescribe JBT-101 and of the target patient population to try new therapies;
- efficacy of JBT-101 compared to competing products;
- the introduction of any new products that may in the future become available to treat indications for which JBT-101 may be approved;
- new procedures or methods of treatment that may reduce the incidences of any of the indications in which JBT-101 may show utility;
- pricing and cost-effectiveness;
- the inclusion or omission of JBT-101 in applicable treatment guidelines;
- the effectiveness of our or any future collaborators' sales and marketing strategies;
- limitations or warnings contained in FDA-approved labeling;
- our ability to obtain and maintain sufficient third-party coverage or reimbursement from government health care programs, including Medicare and Medicaid, private health insurers and other third-party payors; and
- the willingness of patients to pay out-of-pocket in the absence of third-party coverage or reimbursement.

If JBT-101 is approved, but does not achieve an adequate level of acceptance by physicians, health care payors and patients, we may not generate sufficient revenue and we may not be able to achieve or sustain profitability. Our efforts to educate the medical community and third-party payors on the benefits of JBT-101 may require significant resources and may never be successful.

In addition, even if we obtain regulatory approvals, the timing or scope of any approvals may prohibit or reduce our ability to commercialize JBT-101 successfully. For example, if the approval process takes too long, we may miss market opportunities and give other companies the ability to develop competing products or establish market dominance. Any regulatory approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render JBT-101 not commercially viable. For example, regulatory authorities may approve JBT-101 for fewer or more limited indications than we request, may not approve the price we intend to charge for JBT-101, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve JBT-101 with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that indication. Further, the FDA or comparable foreign regulatory authorities may place conditions on approvals, such as risk management plans and 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. The FDA may also require a REMS for an approved product when new safety information emerges. Any of these limitations on approval or marketing could restrict the commercial promotion, distribution, prescription or dispensing of JBT-101. Moreover, product approvals may be withdrawn for non-compliance with regulatory standards or if problems occur following the initial marketing of the product. Any of the foregoing scenarios could materially harm the commercial success of JBT-101.

***Even if we obtain marketing approval for JBT-101, we will be subject to ongoing obligations and continued regulatory review, which may result in significant additional expense. Additionally, JBT-101 could be subject to labeling and other restrictions and 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 JBT-101.***

Even if we obtain United States regulatory approval of JBT-101 for an indication, the FDA may still impose significant restrictions on its indicated uses or marketing or the conditions of approval, or impose ongoing requirements for potentially costly and time-consuming post-approval studies, including Phase 4 clinical trials, and post-market surveillance to monitor safety and efficacy. JBT-101 will also be subject to ongoing regulatory requirements governing the manufacturing, labeling, packaging, storage, distribution, safety surveillance, advertising, promotion, recordkeeping and reporting of adverse events and other post-market information. These requirements include registration with the FDA, as well as continued compliance with current Good Clinical Practices regulations, or cGCPs, for any clinical trials that we conduct post-approval. In addition, manufacturers of drug products and their facilities are subject to continual review and periodic inspections by the FDA and other regulatory authorities for compliance with current Good Manufacturing Practices, or cGMP, requirements relating to quality control, quality assurance and corresponding maintenance of records and documents.

The FDA has the authority to require a risk evaluation and mitigation strategy, or REMS, as part of an NDA or after approval, which may impose further requirements or restrictions on the distribution or use of an approved drug, such as limiting prescribing to certain physicians or medical centers that have undergone specialized training, limiting treatment to patients who meet certain safe-use criteria or requiring patient testing, monitoring and/or enrollment in a registry.

With respect to sales and marketing activities by us or any future partner, advertising and promotional materials must comply with FDA rules in addition to other applicable federal, state and local laws in the United States and similar legal requirements in other countries. In the United States, the distribution of product samples to physicians must comply with the requirements of the U.S. Prescription Drug Marketing Act. Application holders must obtain FDA approval for product and manufacturing changes, depending on the nature of the change. We may also be subject, directly or indirectly through our customers and partners, to various fraud and abuse laws, including, without limitation, the U.S. Anti-Kickback Statute, U.S. False Claims Act, and similar state laws, which impact, among other things, our proposed sales, marketing, and scientific/educational grant programs. If we participate in the U.S. Medicaid Drug Rebate Program, the Federal Supply Schedule of the U.S. Department of Veterans Affairs, or other government drug programs, we will be subject to complex laws and regulations regarding reporting and payment obligations. All of these activities are also potentially subject to U.S. federal and state consumer protection and unfair competition laws. Similar requirements exist in many of these areas in other countries.

In addition, if JBT-101 is approved for an indication, our product labeling, advertising and promotion would be subject to regulatory requirements and continuing regulatory review. The FDA strictly regulates the promotional claims that may be made about prescription 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 JBT-101, physicians may nevertheless legally prescribe our products 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 and government fines. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses by a company, and any 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 of permanent injunctions under which specified promotional conduct is changed or curtailed.

If we or a regulatory agency discover previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, problems with the facility where the product is manufactured, or if we or our manufacturers fail to comply with applicable regulatory requirements, we may be subject to the following administrative or judicial sanctions:

- restrictions on the marketing or manufacturing of the product, withdrawal of the product from the market, or voluntary or mandatory product recalls;
- issuance of warning letters or untitled letters;

- clinical holds;
- injunctions or the imposition of civil or criminal penalties or monetary fines;
- suspension of any ongoing clinical trials;
- refusal to approve pending applications or supplements to approved applications filed by us, or suspension or revocation of product license approvals;
- suspension or imposition of restrictions on operations, including costly new manufacturing requirements; or
- product seizure or detention or refusal to permit the import or export of product.

The occurrence of any event or penalty described above may inhibit our ability to commercialize JBT-101 and generate revenue. Adverse regulatory action, whether pre- or post-approval, can also potentially lead to product liability claims and increase our product liability exposure.

***We currently have no sales and marketing organization. If we are unable to secure a sales and marketing partner or establish satisfactory sales and marketing capabilities, we may not successfully commercialize JBT-101.***

At present, we have no sales or marketing personnel. In order to commercialize products that are approved for commercial sales, we must either collaborate with third parties that have such commercial infrastructure or develop our own sales and marketing infrastructure. If we are not successful entering into appropriate collaboration arrangements, or recruiting sales and marketing personnel or in building a sales and marketing infrastructure, we will have difficulty successfully commercializing JBT-101, which would adversely affect our business, operating results and financial condition.

We may not be able to enter into collaboration agreements on terms acceptable to us or at all. In addition, even if we enter into such relationships, we may have limited or no control over the sales, marketing and distribution activities of these third parties. Our future revenues may depend heavily on the success of the efforts of these third parties. If we elect to establish a sales and marketing infrastructure we may not realize a positive return on this investment. In addition, we will have to compete with established and well-funded pharmaceutical and biotechnology companies to recruit, hire, train and retain sales and marketing personnel. Factors that may inhibit our efforts to commercialize JBT-101 without strategic partners or licensees include:

- our inability to recruit and retain adequate numbers of effective sales and marketing personnel;
- the inability of sales personnel to obtain access to or persuade adequate numbers of physicians to prescribe JBT-101;
- the lack of complementary products to be offered by sales personnel, which may put us at a competitive disadvantage relative to companies with more extensive product lines; and
- unforeseen costs and expenses associated with creating an independent sales and marketing organization.

***We face competition from other biotechnology and pharmaceutical companies and our operating results will suffer if we fail to compete effectively.***

The biotechnology and pharmaceutical industries are intensely competitive and subject to rapid and significant technological change. We have competitors in a number of jurisdictions, many of which have substantially greater name recognition, commercial infrastructures and financial, technical and personnel resources than we have. Established competitors may invest heavily to quickly discover and develop novel compounds that could make JBT-101 obsolete or uneconomical. Any new product that competes with an approved product may need to demonstrate compelling advantages in efficacy, cost, convenience, tolerability and safety to be commercially successful. Other competitive factors, including generic competition, could force us to lower prices or could result in reduced sales. In addition, new products developed by others could emerge as competitors to JBT-101. If we are not able to compete effectively against our current and future competitors, our business will not grow and our financial condition and operations will suffer.

***Recently enacted and future legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize JBT-101 and affect the prices we may obtain.***

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval for JBT-101, restrict or regulate post-approval activities and affect our ability to profitably sell JBT-101. Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for pharmaceutical products. We do not know whether additional legislative changes will be enacted, or whether the FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the marketing approvals of JBT-101, if any, may be. In addition, increased scrutiny by the U.S. Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us to more stringent product labeling and post-marketing testing and other requirements.

In the United States, the Medicare Modernization Act, or MMA, changed the way Medicare covers and pays for pharmaceutical products. The legislation expanded Medicare coverage for drug purchases by the elderly and introduced a new reimbursement methodology based on average sales prices for drugs. In addition, this legislation authorized Medicare Part D prescription drug plans to use formularies where they can limit the number of drugs that will be covered in any therapeutic class. As a result of this legislation and the expansion of federal coverage of drug products, we expect that there will be additional pressure to contain and reduce costs. These cost reduction initiatives and other provisions of this legislation could decrease the coverage and price that we receive for JBT-101 and could seriously harm our business. While the MMA applies only to drug benefits for Medicare beneficiaries, private payors often follow Medicare coverage policy and payment limitations in setting their own reimbursement rates, and any reduction in reimbursement that results from the MMA may result in a similar reduction in payments from private payors.

In March 2010, President Obama signed into law the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act of 2010 or, collectively, the Health Care Reform Law, a sweeping law intended to broaden access to health insurance, reduce or constrain the growth of healthcare spending, enhance remedies against fraud and abuse, add new transparency requirements for healthcare and health insurance industries, impose new taxes and fees on the health industry and impose additional health policy reforms. Effective October 1, 2010, the Health Care Reform Law revised the definition of “average manufacturer price” for reporting purposes, which could increase the amount of Medicaid drug rebates to states. Further, the new law imposed a significant annual fee on companies that manufacture or import branded prescription drug products. Substantial new provisions affecting compliance have also been enacted, which may require us to modify our business practices with healthcare practitioners, and incur substantial costs to ensure compliance. As a result of the 2016 presidential election, U.S. lawmakers have made statements about potentially repealing or replacing the Affordable Care Act, although no such specific legislation has yet been introduced. While we are unable to predict what legislation, if any, may potentially be enacted, to the extent that future changes affect how our product candidates could be paid for and/or reimbursed by the government and private payers, our business could be adversely affected.

Despite initiatives to invalidate the Health Care Reform Law, at this time it appears the implementation of the Health Care Reform Law will continue. We will not know the full effects of the Health Care Reform Law until applicable federal and state agencies issue regulations or guidance under the new law. Although it is too early to determine the effect of the Health Care Reform Law, the new law appears likely to continue the pressure on pharmaceutical pricing, especially under the Medicare program, and may also increase our regulatory burdens and operating costs.

In addition, other legislative changes have been proposed and adopted in the United States since the Health Care Reform Law was enacted. On August 2, 2011, the Budget Control Act of 2011 among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least \$1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation’s automatic reduction to several government programs. This includes aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, starting in 2013. On January 2, 2013, President Obama signed into law the American Taxpayer Relief Act of 2012, or the ATRA, which delayed for another two months the budget cuts mandated by these sequestration provisions of the Budget Control Act of 2011. The ATRA, among other things, also reduced Medicare payments to several providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. We expect that additional federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, and in turn could significantly reduce the projected value of certain development projects and reduce our profitability.

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

Our future profitability will depend, in part, on our ability to commercialize JBT-101 in foreign markets for which we intend to rely on collaborations with third parties. If we commercialize JBT-101 in foreign markets, we would be subject to additional risks and uncertainties, including:

- our customers’ ability to obtain reimbursement for JBT-101 in foreign markets;
- our inability to directly control commercial activities because we are relying on third parties;
- the burden of complying with complex and changing foreign regulatory, tax, accounting and legal requirements;
- different medical practices and customs in foreign countries affecting acceptance in the marketplace;
- import or export licensing requirements;

- longer accounts receivable collection times;
- longer lead times for shipping;
- language barriers for technical training;
- reduced protection of intellectual property rights in some foreign countries;
- foreign currency exchange rate fluctuations; and
- the interpretation of contractual provisions governed by foreign laws in the event of a contract dispute.

Foreign sales of JBT-101 could also be adversely affected by the imposition of governmental controls, political and economic instability, trade restrictions and changes in tariffs, any of which may adversely affect our results of operations.

***If we market JBT-101 in a manner that violates healthcare fraud and abuse laws, or if we violate government price reporting laws, we may be subject to civil or criminal penalties.***

The FDA enforces laws and regulations which require that the promotion of pharmaceutical products be consistent with the approved prescribing information. While physicians may prescribe an approved product for a so-called “off label” use, it is unlawful for a pharmaceutical company to promote its products in a manner that is inconsistent with its approved label and any company which engages in such conduct may be subject to significant liability. Similarly, industry codes in the European Union and other foreign jurisdictions prohibit companies from engaging in off-label promotion and regulatory agencies in various countries enforce violations of the code with civil penalties. While we intend to ensure that our promotional materials are consistent with our label, regulatory agencies may disagree with our assessment and may issue untitled letters, warning letters or may institute other civil or criminal enforcement proceedings. In addition to FDA restrictions on marketing of pharmaceutical products, several other types of state and federal healthcare fraud and abuse laws have been applied in recent years to restrict certain marketing practices in the pharmaceutical industry. These laws include the U.S. Anti-Kickback Statute, U.S. False Claims Act and similar state laws. Because of the breadth of these laws and the narrowness of the safe harbors, it is possible that some of our business activities could be subject to challenge under one or more of these laws.

The U.S. Anti-Kickback Statute prohibits, among other things, knowingly and willfully offering, paying, soliciting or receiving remuneration to induce, or in return for, purchasing, leasing, ordering or arranging for the purchase, lease or order of any healthcare item or service reimbursable under Medicare, Medicaid or other federally financed healthcare programs. This statute has been interpreted broadly to apply to arrangements between pharmaceutical manufacturers on the one hand and prescribers, purchasers and formulary managers on the other. Although there are several statutory exemptions and regulatory safe harbors protecting certain common activities from prosecution, the exemptions and safe harbors are drawn narrowly, and practices that involve remuneration intended to induce prescribing, purchasing or recommending may be subject to scrutiny if they do not qualify for an exemption or safe harbor. Our practices may not, in all cases, meet all of the criteria for safe harbor protection from anti-kickback liability. Moreover, recent health care reform legislation has strengthened these laws. For example, the Health Care Reform Law, among other things, amends the intent requirement of the U.S. Anti-Kickback Statute and criminal health care fraud statutes; a person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it. In addition, the Health Care Reform Law provides that the government may assert that a claim including items or services resulting from a violation of the U.S. Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the U.S. False Claims Act. Federal false claims laws prohibit any person from knowingly presenting, or causing to be presented, a false claim for payment to the federal government or knowingly making, or causing to be made, a false statement to get a false claim paid.

Over the past few years, pharmaceutical and other healthcare companies have been prosecuted under these laws for a variety of alleged promotional and marketing activities, such as: allegedly providing free trips, free goods, sham consulting fees and grants and other monetary benefits to prescribers; reporting to pricing services inflated average wholesale prices that were then used by federal programs to set reimbursement rates; engaging in off-label promotion that caused claims to be submitted to Medicare or Medicaid for non-covered, off-label uses; and submitting inflated best price information to the Medicaid Rebate Program to reduce liability for Medicaid rebates. Most states also have statutes or regulations similar to the U.S. Anti-Kickback Statute and the U.S. False Claims Act, which apply to items and services reimbursed under Medicaid and other state programs, or, in several states, apply regardless of the payor. Sanctions under these federal and state laws may include substantial civil monetary penalties, exclusion of a manufacturer’s products from reimbursement under government programs, substantial criminal fines and imprisonment.

***We are, and will be, completely dependent on third parties to manufacture JBT-101, and our commercialization of JBT-101 could be halted, delayed or made less profitable if those third parties fail to obtain manufacturing approval from the FDA or comparable foreign regulatory authorities, fail to provide us with sufficient quantities of JBT-101 or fail to do so at acceptable quality levels or prices.***

We do not currently have, nor do we plan to acquire, the capability or infrastructure to manufacture the active pharmaceutical ingredient, or the finished JBT-101 drug product in tablet form, for use in our clinical trials or for commercial product, if any. As a result, we will be obligated to rely on contract manufacturers, if and when JBT-101 is approved for commercialization.

The facilities used by our contract manufacturers to manufacture JBT-101 must be approved by the FDA pursuant to inspections that will be conducted after we submit our NDA to the FDA. We do not control the manufacturing process of, and are completely dependent on, our contract manufacturing partners for compliance with cGMPs for manufacture of both active drug substances and finished drug products. These cGMP regulations cover all aspects of the manufacturing, testing, quality control and record keeping relating to JBT-101. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or others, they will not be able to secure and/or maintain regulatory approval for their manufacturing facilities. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of JBT-101 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 JBT-101, if approved.

Our contract manufacturers will be subject to ongoing periodic unannounced inspections by the FDA and corresponding state and foreign agencies for compliance with cGMPs and similar regulatory requirements. We will not have control over our contract manufacturers' compliance with these regulations and standards. Failure by any of our contract manufacturers to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, failure to grant approval to market JBT-101, delays, suspensions or withdrawals of approvals, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect our business. In addition, we will not have control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. Failure by our contract manufacturers to comply with or maintain any of these standards could adversely affect our ability to develop, obtain regulatory approval for or market JBT-101.

If for any reason, these third parties are unable or unwilling to perform, we may not be able to terminate our agreements with them, and we may not be able to locate alternative manufacturers or formulators or enter into favorable agreements with them and we cannot be certain that any such third parties will have the manufacturing capacity to meet future requirements. If these manufacturers or any alternate manufacturer of finished drug product experiences any significant difficulties in its respective manufacturing processes for our API or finished JBT-101 product or should cease doing business with us, we could experience significant interruptions in the supply of JBT-101 or may not be able to create a supply of JBT-101 at all. Were we to encounter manufacturing issues, our ability to produce a sufficient supply of JBT-101 might be negatively affected. Our inability to coordinate the efforts of our third party manufacturing partners, or the lack of capacity available at our third party manufacturing partners, could impair our ability to supply JBT-101 at required levels. Because of the significant regulatory requirements that we would need to satisfy in order to qualify a new bulk or finished product manufacturer, if we face these or other difficulties with our current manufacturing partners, we could experience significant interruptions in the supply of JBT-101 if we decided to transfer the manufacture of JBT-101 to one or more alternative manufacturers in an effort to deal with the difficulties.

Any manufacturing problem or the loss of a contract manufacturer could be disruptive to our operations and result in lost sales. Additionally, we rely on third parties to supply the raw materials needed to manufacture our potential products. Any reliance on suppliers may involve several risks, including a potential inability to obtain critical materials and reduced control over production costs, delivery schedules, reliability and quality. Any unanticipated disruption to a future contract manufacturer caused by problems at suppliers could delay shipment of JBT-101, increase our cost of goods sold and result in lost sales.

We cannot guarantee that our manufacturing and supply partners will be able to reduce the costs of commercial scale manufacturing of JBT-101 over time. If the commercial-scale manufacturing costs of JBT-101 are higher than expected, these costs may significantly impact our operating results. In order to reduce costs, we may need to develop and implement process improvements. However, in order to do so, we will need, from time to time, to notify or make submissions with regulatory authorities, and the improvements may be subject to approval by such regulatory authorities. We cannot be sure that we will receive these necessary approvals or that these approvals will be granted in a timely fashion. We also cannot guarantee that we will be able to enhance and optimize output in our commercial manufacturing process. If we cannot enhance and optimize output, we may not be able to reduce our costs over time.

***Our product candidate JBT-101, is currently classified as a Schedule I controlled substance subject to U.S. controlled substance laws and regulations, including regulations of the Drug Enforcement Agency and the U.S. Food and Drug Administration. Failure to obtain the necessary licenses and registrations and failure to comply with these laws could result in the delay in the manufacturing and distribution of JBT-101 and could delay the completion of clinical studies. Such delays and the cost of compliance with these laws and regulations, could adversely affect our business operations and our financial condition.***

In the United States, our product candidate, JBT-101, is currently classified as Schedule I controlled substance as defined in the Controlled Substance Act (“CSA”). This designation is based on JBT-101’s chemical structure and pharmacology (namely, it being a synthetic endocannabinoid mimetic that binds to the CB2 receptor). Even though JBT-101’s mechanism of action is to modulate the immune system and results to date from clinical studies have demonstrated the drug has no psychotropic effects (which we believe is unlike other members of its chemical class), the DEA classifies JBT-101 as a Schedule I substance.

Schedule I controlled substances are pharmaceutical products subject to specific regulations under the CSA, that establishes, among other things, certain registration, manufacturing quotas, security, recordkeeping, reporting, import, export and other requirements administered by the DEA. All parties responsible for the manufacturing, distribution and testing the drug in clinical studies must apply for and obtain a license from the DEA before they are permitted to perform these activities with JBT-101. Furthermore, these parties must have the security, control, recordkeeping, reporting and inventory mechanisms required by the DEA to prevent drug loss and diversion. All licensed facilities are required to renew their registrations annually if they intend to continue to work with our drug. The DEA conducts periodic inspections of certain registered establishments that handle controlled substances. We have been working with our manufacturers, distributors, exporters and clinical sites to obtain the necessary licenses to work with JBT-101. The parties responsible for the manufacturing, distribution and export of JBT-101 have already applied for and have been granted DEA licenses and a number of institutions responsible for conducting our Phase 2 clinical studies have also been granted DEA licenses. However the failure to maintain the necessary registrations and the delay or failure of additional clinical sites to obtain DEA registrations, could delay the manufacturing, distribution and export of JBT-101 and could delay the completion of the Phase 2 clinical studies. Furthermore, failure to maintain compliance with the CSA, particularly non-compliance resulting in loss or diversion, could result in regulatory action that could have a material adverse effect on our business, financial condition and results of operations. The DEA may seek civil penalties, refuse to renew necessary registrations, or initiate proceedings to restrict, suspend or revoke those registrations. In certain circumstances, violations could lead to criminal proceedings. In addition, if the FDA, DEA, or any foreign regulatory authority determines that JBT-101 may have potential for abuse, it may require us to generate more clinical or other data than we currently anticipate to establish whether or to what extent the substance has an abuse potential, which could increase the cost and/or delay the launch of JBT-101.

Individual states have also established controlled substance laws and regulations. Though state-controlled substances laws often mirror federal law, because the states are separate jurisdictions, they may separately schedule drugs, as well. While some states automatically schedule a drug based on federal action, other states schedule drugs through rulemaking or a legislative action. The requirement for state registrations could also result in delay of the manufacturing, distribution of JBT-101 or in the completion of the Phase 2 clinical studies. We and our manufacturing vendors and clinical sites must also obtain separate state registrations, permits or licenses in order to be able to obtain, handle, and distribute controlled substances for clinical trials or commercial sale, and failure to meet applicable regulatory requirements could lead to enforcement and sanctions by the states in addition to those from the DEA or otherwise arising under federal law.

The manufacturing and distribution of JBT-101 is subject to the DEA’s annual manufacturing and procurement quota requirements. The annual quota allocated to us or our contract manufacturers for the controlled substances in JBT-101 may not be sufficient to complete clinical trials. Consequently, any delay or refusal by the DEA in establishing our, or our contract manufacturers, procurement and/or production quota for controlled substances could delay or stop our clinical trials or product launches, which could have a material adverse effect on our business, financial position and operations.

***Delays in shipping JBT-101 could have a material adverse effect on our business, results of operations and financial condition.***

The import and export of JBT-101 requires import and export licenses. However, because JBT-101 is currently a Schedule I controlled substance in the United States, in addition to the FDA and U.S. Customs and Border Protection, its import and export is also regulated by the DEA. We may not be granted, or if granted, maintain, such licenses for import or export from the authorities these regulatory agencies. Even if we obtain the relevant licenses, shipments of JBT-101 may be held up in transit by any of these authorities, which could cause significant delays and may lead to product batches which no longer meet specifications for use in clinical trials or commercial distribution. Such events could result in delayed development timelines, increased expenses and partial or total loss of revenue from JBT-101.

***We expect that we will rely on third parties to assist the Company in conducting clinical trials for JBT-101. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may not be able to obtain regulatory approval for or commercialize JBT-101 and our business would be substantially harmed.***

We expect to enter into agreements with third-party CROs to assist us in conducting and managing our clinical programs including contracting with clinical sites to perform our clinical studies. We plan to rely on these parties for execution of clinical studies for JBT-101 and we will control only certain aspects of conducting the clinical studies. Nevertheless, we will be responsible for ensuring that each of our studies is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards, and our reliance on CROs and clinical sites will not relieve us of our regulatory responsibilities. We and our CROs will be required to comply with cGCPs, which are regulations and guidelines enforced by the FDA, the Competent Authorities of the Member States of the European Economic Area and comparable foreign regulatory authorities for any products in clinical development. The FDA enforces these cGCP regulations through periodic inspections of trial sponsors, principal investigators and trial sites. If we or our CROs fail to comply with applicable cGCPs, 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. We cannot assure you that, upon inspection, the FDA will determine that any of our clinical trials comply with cGCPs. In addition, our clinical trials must be conducted with products produced under cGMP regulations and will require a large number of test subjects. Our failure or the failure of our CROs or clinical sites to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process and could also subject us to enforcement action up to and including civil and criminal penalties.

Although we intend to design the clinical trials for JBT-101 in consultation with CROs, we expect that the CROs will manage all of the clinical trials conducted at contracted clinical sites. As a result, many important aspects of our drug development programs would be outside of our direct control. In addition, the CROs and clinical sites may not perform all of their obligations under arrangements with us or in compliance with regulatory requirements. If the CROs or clinical sites do not perform clinical trials in a satisfactory manner, breach their obligations to us or fail to comply with regulatory requirements, the development and commercialization of JBT-101 for the subject indication may be delayed or our development program materially and irreversibly harmed. We cannot control the amount and timing of resources these CROs and clinical sites will devote to our program or JBT-101. If we are unable to rely on clinical data collected by our CROs, we could be required to repeat, extend the duration of, or increase the size of our clinical trials, which could significantly delay commercialization and require significantly greater expenditures.

If any of our relationships with these third-party CROs or clinical sites terminate, we may not be able to enter into arrangements with alternative CROs or clinical sites. If CROs do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols, regulatory requirements or for other reasons, any such clinical trials may be extended, delayed or terminated, and we may not be able to obtain regulatory approval for or successfully commercialize JBT-101. As a result, our financial results and the commercial prospects for JBT-101 would be harmed, our costs could increase and our ability to generate revenue could be delayed.

***Any termination or suspension of or delays in the commencement or completion of any necessary studies of JBT-101 for any indications could result in increased costs to us, delay or limit our ability to generate revenue and adversely affect our commercial prospects.***

The commencement and completion of clinical studies can be delayed for a number of reasons, including delays related to:

- the FDA failing to grant permission to proceed and placing the clinical study on hold;
- subjects failing to enroll or remain in our trials at the rate we expect;
- a facility manufacturing JBT-101 being ordered by the FDA or other government or regulatory authorities to temporarily or permanently shut down due to violations of cGMP requirements or other applicable requirements, or cross-contaminations of product in the manufacturing process;
- any changes to our manufacturing process that may be necessary or desired;
- subjects choosing an alternative treatment for the indications for which we are developing JBT-101, or participating in competing clinical studies;
- subjects experiencing severe or unexpected drug-related adverse effects;
- reports of similar technologies and products raising safety and/or efficacy concerns;

- third-party clinical investigators losing their license or permits necessary to perform our clinical trials, not performing our clinical trials on our anticipated schedule or employing methods consistent with the clinical trial protocol, cGCP requirements, or other third parties not performing data collection and analysis in a timely or accurate manner;
- inspections of clinical study sites by the FDA or IRBs finding regulatory violations that require us to undertake corrective action, result in suspension or termination of one or more sites or the imposition of a clinical hold on the entire study, or that prohibit us from using some or all of the data in support of our marketing applications;
- 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 any of the data produced by such contractors in support of our marketing applications;
- one or more IRBs refusing to approve, suspending or terminating the study at an investigational site precluding enrollment of additional subjects, or withdrawing its approval of the trial; reaching agreement on acceptable terms with prospective 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;
- deviations of the clinical sites from trial protocols or dropping out of a trial;
- adding new clinical trial sites;
- the inability of the CRO to execute any clinical trials for any reason; and
- government or regulatory delays or “clinical holds” requiring suspension or termination of a trial.

Product development costs for JBT-101 will increase if we have delays in testing or approval or if we need to perform more or larger clinical studies than planned. Additionally, changes in regulatory requirements and policies may occur and we may need to amend study protocols to reflect these changes. Amendments may require us to resubmit our study protocols to the FDA and IRBs for reexamination, which may impact the costs, timing or successful completion of that study. If we experience delays in completion of, or if we, the FDA or other regulatory authorities, the IRB, or other reviewing entities, or any of our clinical study sites suspend or terminate any of our clinical studies of JBT-101, its commercial prospects may be materially harmed and our ability to generate product revenues will be delayed. Any delays in completing our clinical trials will increase our costs, slow down our development and approval process and jeopardize our ability to commence product sales and generate revenues. Any of these occurrences may harm our business, financial condition and prospects significantly. 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 studies may also ultimately lead to the denial of regulatory approval of JBT-101. In addition, if one or more clinical studies are delayed, our competitors may be able to bring products to market before we do, and the commercial viability of JBT-101 could be significantly reduced.

***Clinical drug development involves a lengthy and expensive process with an uncertain outcome, and results of earlier studies and trials may not be predictive of future trial results.***

Clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical trial process. The results of pre-clinical studies and early clinical trials may not be predictive of the results of later-stage clinical trials. We cannot assure you that the FDA will view the results as we do or that any future trials of JBT-101 will achieve positive results. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy traits despite having progressed through pre-clinical studies and initial clinical trials. A number of companies in the pharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or adverse safety profiles, notwithstanding promising results in earlier trials. Any future clinical trial results for JBT-101 may not be successful.

In addition, a number of factors could contribute to a lack of favorable safety and efficacy results for JBT-101. For example, such trials could result in increased variability due to varying site characteristics, such as local standards of care, differences in evaluation period and surgical technique, and due to varying patient characteristics including demographic factors and health status.

***We may not be able to obtain or maintain orphan drug designation or exclusivity for our product candidates.***

We have been granted orphan drug designation in the United States and in the European Union for JBT-101 for the treatment of cystic fibrosis and systemic sclerosis. We also intend to seek orphan drug status for JBT-101 for the treatment of dermatomyositis. Upon receipt of regulatory approval, orphan drug status will provide us with seven years of market exclusivity in the United States under the Orphan Drug Act. However, there is no guarantee that the FDA will grant orphan drug designation for JBT-101 for dermatomyositis or any other indication, which would make us ineligible for the additional exclusivity and other benefits of orphan drug designation. Moreover, there can be no assurance that another company also holding orphan drug designation for the same indication or which may receive orphan drug designation in the future will not receive approval prior to us, in which our competitor would have the benefit of the seven year market exclusivity, and we would be unable to commercialize our product for the same indication until the expiration of the seven-year period. Even if we are the first to obtain approval for the orphan drug indication, there are circumstances under which a competing product may be approved for the same indication during our seven-year period of exclusivity.

Under the Orphan Drug Act, the FDA may grant orphan drug designation to a drug intended to treat a rare disease or condition, which is generally a disease or condition that affects fewer than 200,000 individuals in the United States and for which there is no reasonable expectation that the cost of developing and making a drug available in the United States for this type of disease or condition will be recovered from sales of the product. Orphan drug designation must be requested before submitting an NDA. After the FDA grants orphan drug designation, the identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. Orphan product designation does not convey any advantage in or shorten the duration of regulatory review and approval process. In addition to the potential period of exclusivity, orphan designation makes a company eligible for grant funding of up to \$400,000 per year for four years to defray costs of clinical trial expenses, tax credits for clinical research expenses and potential exemption from the FDA application user fee.

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 drug exclusivity, which means 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 (i) the drug's orphan designation is revoked; (ii) its marketing approval is withdrawn; (iii) the orphan exclusivity holder consents to the approval of another applicant's product; (iv) the orphan exclusivity holder is unable to assure the availability of a sufficient quantity of drug; or (v) a showing of clinical superiority to the product with orphan exclusivity by a competitor product. If a drug designated as an orphan product receives marketing approval for an indication broader than what is designated, it may not be entitled to orphan drug exclusivity. There can be no assurance that we will receive orphan drug designation for JBT-101 for the treatment of dermatomyositis, or other inflammatory disease indications, if we elect to seek such applications.

***Any fast track designation or grant of priority review status by the FDA may not actually lead to a faster development or regulatory review or approval process, nor will it assure FDA approval of our product candidates. Additionally, our product candidates may treat indications that do not qualify for priority review vouchers.***

We have received fast track designation for JBT-101 for the treatment of cystic fibrosis and systemic sclerosis in the United States and European Union and may seek fast track designation or priority review of applications for approval of our product candidate for certain indications. If a drug is intended for the treatment of a serious or life-threatening condition and the drug demonstrates the potential to address unmet medical needs for this condition, the drug sponsor may apply for FDA fast track designation. If a product candidate offers major advances in treatment, the FDA may designate it eligible for priority review. The FDA has broad discretion whether or not to grant these designations, so even if we believe a particular product candidate is eligible for these designations, we cannot assure you that the FDA would decide to grant them. Even if we do receive fast track designation or priority review, we may not experience a faster development process, review or approval compared to conventional FDA procedures. The FDA may withdraw fast track designation if it believes that the designation is no longer supported by data from our clinical development program.

***Any breakthrough therapy designation granted by the FDA for our product candidate may not lead to a faster development or regulatory review or approval process, and it does not increase the likelihood that our product candidate will receive marketing approval.***

We may seek a breakthrough therapy designation for our product candidate. A breakthrough therapy is defined as a drug that is intended, alone or in combination with one or more other drugs, to treat a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. For drugs and biologics that have been designated as breakthrough therapies, interaction and communication between the FDA and the sponsor of the trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. Drugs designated as breakthrough therapies by the FDA may also be eligible for accelerated approval if the relevant criteria are met.

Designation as a breakthrough therapy is within the discretion of the FDA. Accordingly, even if we believe our product candidate meets the criteria for designation as a breakthrough therapy, the FDA may disagree and instead determine not to make such designation. In any event, the receipt of a breakthrough therapy designation for a product candidate may not result in a faster development process, review or approval compared to drugs considered for approval under conventional FDA procedures and does not assure ultimate approval by the FDA. In addition, even if one or more of our product candidates qualify as breakthrough therapies, the FDA may later decide that the products no longer meet the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

***Third-party coverage and reimbursement and health care cost containment initiatives and treatment guidelines may constrain our future revenues.***

Our ability to successfully market JBT-101 will depend in part on the level of reimbursement that government health administration authorities, private health coverage insurers and other organizations provide for the cost of our products and related treatments. Countries in which JBT-101 is expected to be sold through reimbursement schemes under national health insurance programs frequently require that manufacturers and sellers of pharmaceutical products obtain governmental approval of initial prices and any subsequent price increases. In certain countries, including the United States, government-funded and private medical care plans can exert significant indirect pressure on prices. We may not be able to sell JBT-101 profitably if adequate prices are not approved or coverage and reimbursement is unavailable or limited in scope. Increasingly, third-party payors attempt to contain health care costs in ways that are likely to impact our development of products including:

- failing to approve or challenging the prices charged for health care products;
- introducing reimportation schemes from lower priced jurisdictions;
- limiting both coverage and the amount of reimbursement for new therapeutic products;
- denying or limiting coverage for products that are approved by the regulatory agencies but are considered to be experimental or investigational by third-party payors; and
- refusing to provide coverage when an approved product is used in a way that has not received regulatory marketing approval.

#### **Risks Relating to Our Intellectual Property Rights**

***It is difficult and costly to protect our intellectual property rights, and we cannot ensure the protection of these rights.***

Our commercial success will depend, in part, on obtaining and maintaining patent protection for our technologies, products and processes, successfully defending these patents against third-party challenges and successfully enforcing these patents against third party competitors. The patent positions of pharmaceutical companies can be highly uncertain and involve complex legal, scientific and factual questions for which important legal principles remain unresolved. Changes in either the patent laws or in interpretations of patent laws may diminish the value of our intellectual property. Accordingly, we cannot predict the breadth of claims that may be allowable in our pending applications or, if we obtain patents from our applications, enforceable. Our pending patent applications for JBT-101 and its uses may never be approved by United States or foreign patent offices and the existing patent applications relating to JBT-101 and related technologies may be challenged, invalidated or circumvented by third parties and might not protect us against competitors with similar products or technologies. We do not have any issued patents for JBT-101 for the treatment of cystic fibrosis, systemic sclerosis, dermatomyositis, SLE or any other indications for which we are currently seeking commercial approval.

The degree of future protection for our proprietary rights is uncertain, because legal means afford only limited protection and may not adequately protect our rights, permit us to gain or keep our competitive advantage, or provide us with any competitive advantage at all. For example, others have filed, and in the future are likely to file, patent applications covering products and technologies that are similar, identical or competitive to JBT-101, or important to our business. We cannot be certain that any patent application owned by a third party will not have priority over patent applications filed by us, or that we will not be involved in interference, opposition or invalidity proceedings before United States or foreign patent offices.

We also rely on trade secrets to protect technology, especially in cases when we believe patent protection is not appropriate or obtainable. However, trade secrets are difficult to protect. While we require employees, academic collaborators, consultants and other contractors to enter into confidentiality agreements, we may not be able to adequately protect our trade secrets or other proprietary or licensed information. Typically, research collaborators and scientific advisors have rights to publish data and information in which we may have rights. If we cannot maintain the confidentiality of our proprietary technology and other confidential information, our ability to receive patent protection and our ability to protect valuable information owned by us may be imperiled. Enforcing a claim that a third-party entity illegally obtained and is using any of our trade secrets is expensive and time consuming, and the outcome is unpredictable. In addition, courts are sometimes less willing to protect trade secrets than patents. Moreover, our competitors may independently develop equivalent knowledge, methods and know-how.

If we fail to obtain or maintain patent protection or trade secret protection for JBT-101 or our technologies, third parties could use our proprietary information, which could impair our ability to compete in the market and adversely affect our ability to generate revenues and attain profitability.

We may also rely on the trademarks we may develop to distinguish our products from the products of our competitors. We cannot guarantee that any trademark applications filed by us or our business partners will be approved. Third parties may also oppose such trademark applications, or otherwise challenge our use of the trademarks. In the event that the trademarks we use are successfully challenged, we could be forced to rebrand our products, which could result in loss of brand recognition, and could require us to devote resources to advertising and marketing new brands. Further, we cannot provide assurance that competitors will not infringe the trademarks we use, or that we will have adequate resources to enforce these trademarks.

***JBT-101 may infringe the intellectual property rights of others, which could increase our costs and delay or prevent our development and commercialization efforts.***

Our success depends in part on avoiding infringement of the proprietary technologies of others. The pharmaceutical industry has been characterized by frequent litigation regarding patent and other intellectual property rights. Identification of third party patent rights that may be relevant to our proprietary 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. Additionally, because patent applications are maintained in secrecy until the application is published, we may be unaware of third-party patents that may be infringed by commercialization of JBT-101 or any future product candidate. There may be certain issued patents and patent applications claiming subject matter that we may be required to license in order to research, develop or commercialize JBT-101, and we do not know if such patents and patent applications would be available to license on commercially reasonable terms, or at all. Any claims of patent infringement asserted by third parties would be time-consuming and may:

- result in costly litigation;
- divert the time and attention of our technical personnel and management;
- prevent us from commercializing a product until the asserted patent expires or is held finally invalid or not infringed in a court of law;
- require us to cease or modify our use of the technology and/or develop non-infringing technology; or
- require us to enter into royalty or licensing agreements.

Although no third party has asserted a claim of infringement against us, others may hold proprietary rights that could prevent JBT-101 from being marketed. Any patent-related legal action against us claiming damages and seeking to enjoin commercial activities relating to JBT-101 or our processes could subject us to potential liability for damages and require us to obtain a license to continue to manufacture or market JBT-101 or any future product candidates. 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. In addition, we cannot be sure that we could redesign JBT-101 or any future 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 JBT-101 or a future product candidate, which could harm our business, financial condition and operating results.

A number of companies, including several major pharmaceutical companies, have conducted research on anti-inflammatory and anti-fibrosis therapies which resulted in the filing of many patent applications related to this research. If we were to challenge the validity of these or any issued United States patent in court, we would need to overcome a statutory presumption of validity that attaches to every issued United States patent. This means that, in order to prevail, we would have to present clear and convincing evidence as to the invalidity of the patent's claims.

If we were to challenge the validity of these or any issued United States patent in an administrative trial before the Patent Trial and Appeal Board in the United States Patent and Trademark Office, we would have to prove that the claims are unpatentable by a preponderance of the evidence. There is no assurance that a jury and/or court would find in our favor on questions of infringement, validity or enforceability.

***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 commonplace in our industry, we employ individuals who were previously employed at other pharmaceutical companies, including our competitors or potential competitors. Although no claims against us are currently pending, we may be subject in the future to claims that our employees or prospective employees are subject to a continuing obligation to their former employers (such as non-competition or non-solicitation obligations) or claims that our employees or we have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management.

#### **General Company-Related Risks**

***We will need to grow the size of our organization, and we may experience difficulties in managing this growth.***

As of December 31, 2016, we had 25 full-time employees. As our development and commercialization plans and strategies develop, we will need to expand the size of our employee base for managerial, operational, sales, marketing, financial and other resources. Future growth would impose significant added responsibilities on members of management, including the need to identify, recruit, maintain, motivate and integrate additional employees. In addition, our management may have to divert a disproportionate amount of its attention away from our day-to-day activities and devote a substantial amount of time to managing these growth activities. Our future financial performance and our ability to commercialize JBT-101 and any other future product candidates and our ability to compete effectively will depend, in part, on our ability to effectively manage our future growth.

***Future capital raises may dilute our existing stockholders' ownership and/or have other adverse effects on our operations.***

If we raise additional capital by issuing equity securities, our existing stockholders' percentage ownership will be reduced and these stockholders may experience substantial dilution. We may also issue equity securities that provide for rights, preferences and privileges senior to those of our common stock. If we raise additional funds by issuing debt securities, these debt securities would have rights senior to those of our common stock and the terms of the debt securities issued could impose significant restrictions on our operations, including liens on our assets. If we raise additional funds through collaborations and licensing arrangements, we may be required to relinquish some rights to our technologies or candidate products, or to grant licenses on terms that are not favorable to us.

***If we are not successful in attracting and retaining highly qualified personnel, we may not be able to successfully implement our business strategy. In addition, the loss of the services of certain key employees, including Yuval Cohen, our CEO, Mark Tepper, our President and Chief Scientific Officer, Barbara White, our Chief Medical Officer and Sean Moran, our Chief Financial Officer would adversely impact our business prospects.***

Our ability to compete in the highly competitive pharmaceuticals industry depends in large part upon our ability to attract highly qualified managerial, scientific and medical personnel. In order to induce valuable employees to remain with us, we intend to provide employees with stock options that vest over time. The value to employees of stock options that vest over time will be significantly affected by movements in our stock price that we will not be able to control and may at any time be insufficient to counteract more lucrative offers from other companies.

Our management team has expertise in many different aspects of drug development and commercialization. However, we will need to hire additional personnel as we further develop JBT-101. Competition for skilled personnel in our market is intense and competition for experienced scientists may limit our ability to hire and retain highly qualified personnel on acceptable terms. Despite our efforts to retain valuable employees, members of our management, scientific and medical teams may terminate their employment with us on short notice. In connection with the Merger, we entered into employment agreements with certain of our executive officers. However, these employment arrangements provide for at-will employment, which means that any of our employees could leave our employment at any time, with or without notice. The loss of the services of any of our executive officers or other key employees could potentially harm our business, operating results or financial condition. In particular, we believe that the loss of the services of Yuval Cohen Ph.D., our Chief Executive Officer, Mark Tepper Ph.D., our President and Chief Scientific Officer, Barbara White, M.D., our Chief Medical Officer and Sean Moran, C.P.A., M.B.A., our Chief Financial Officer, would have a material adverse effect on our business. Our success also depends on our ability to continue to attract, retain and motivate highly skilled junior, mid-level, and senior managers as well as junior, mid-level, and senior scientific and medical personnel.

Other pharmaceutical companies with which we compete for qualified personnel have greater financial and other resources, different risk profiles, and a longer history in the industry than we do. They also may provide more diverse opportunities and better chances for career advancement. Some of these characteristics may be more appealing to high-quality candidates than what we have to offer. If we are unable to continue to attract and retain high-quality personnel, the rate and success at which we can develop and commercialize product candidates would be limited.

***If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of JBT-101.***

We face a potential risk of product liability as a result of the clinical testing of JBT-101 and will face an even greater risk if we commercialize JBT-101 or any other future product. For example, we may be sued if any product we develop, including JBT-101, or any materials that we use in our products allegedly causes injury or is 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, negligence, strict liability and a breach of warranties. 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 commercialization of JBT-101. Even successful defense would require significant financial and management resources. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for JBT-101 or any future products that we may develop;
- injury to our reputation;
- 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;
- the inability to commercialize JBT-101; and
- a decline in the value of our stock.

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 products we develop. We intend to obtain product liability insurance covering our clinical trials. Although we will 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 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 may acquire businesses, assets or products, or form strategic alliances, in the future, and we may not realize the benefits of such acquisitions.***

We may acquire additional businesses, assets or products, form strategic alliances or create joint ventures with third parties that we believe will complement or augment our existing business. If we acquire businesses with promising markets or technologies, we may not be able to realize the benefit of acquiring such businesses if we are unable to successfully integrate them with our existing operations and company culture. We may encounter numerous difficulties in developing, manufacturing and marketing any new drug or prevent us from realizing their expected benefits or enhancing our business. We cannot assure you that, following any such acquisition, we will achieve the expected synergies to justify the transaction.

## Risks Related to our Common Stock

### ***Our affiliates may control our company for the foreseeable future, including the outcome of matters requiring stockholder approval.***

Our officers, directors, and five percent stockholders collectively owned approximately 20.1% of our outstanding shares of common stock as of December 31, 2016. This concentration of voting power and control could have a significant effect in delaying, deferring or preventing an action that might otherwise be beneficial to our other stockholders and be disadvantageous to our stockholders with interests different from those entities and individuals. Certain of these individuals also have significant control over our business, policies and affairs as officers or directors of our company. Therefore, you should not invest in reliance on your ability to have any control over our company.

### ***An active, liquid trading market for our common stock may not be sustained.***

Presently, our common stock is traded on the Nasdaq Global Market and as we are in our early stages, an investment in our company may require a long-term commitment, with no certainty of return. . If we are unable to maintain an active, liquid active trading market:

- investors may have difficulty buying and selling or obtaining market quotations;
- market visibility for shares of our common stock may be limited; and
- a lack of visibility for shares of our common stock may have a depressive effect on the market price for shares of our common stock.

The lack of an active market could impair your ability to sell your shares at the time you wish to sell them or at a price that you consider reasonable. The lack of an active market may also reduce the fair market value of your shares. An inactive market may also impair our ability to raise capital to continue to fund operations by selling shares and may impair our ability to acquire additional intellectual property assets by using our shares as consideration.

### ***We are currently listed on the Nasdaq Global Market. If we are unable to maintain listing of our securities on the Nasdaq Global Market or any stock exchange, our stock price could be adversely affected and the liquidity of our stock and our ability to obtain financing could be impaired and it may be more difficult for our stockholders to sell their securities.***

Although our common stock is currently listed on the Nasdaq Global Market, we may not be able to continue to meet the exchange's minimum listing requirements or those of any other national exchange. If we are unable to maintain listing on the Nasdaq Global Market or if a liquid market for our common stock does not develop or is sustained, our common stock may remain thinly traded.

The Listing Rules of the Nasdaq Global Market require listing issuers to comply with certain standards in order to remain listed on its exchange. If, for any reason, we should fail to maintain compliance with these listing standards and Nasdaq should delist our securities from trading on its exchange and we are unable to obtain listing on another national securities exchange, a reduction in some or all of the following may occur, each of which could have a material adverse effect on our stockholders:

- the liquidity of our common stock;
- the market price of our common stock;
- our ability to obtain financing for the continuation of our operations;
- the number of institutional and general investors that will consider investing in our common stock;
- the number of investors in general that will consider investing in our common stock;
- the number of market makers in our common stock;
- the availability of information concerning the trading prices and volume of our common stock; and
- the number of broker-dealers willing to execute trades in shares of our common stock.

### ***The market price of our common stock may be significantly volatile.***

Even if an active market for our common stock develops, of which no assurances can be given, the market price for our common stock may be volatile and subject to wide fluctuations in response to factors including the following:

- actual or anticipated fluctuations in our quarterly or annual operating results;
- changes in financial or operational estimates or projections;
- conditions in markets generally;

- changes in the economic performance or market valuations of companies similar to ours; and
- general economic or political conditions in the United States or elsewhere.

In particular, the market prices of biotechnology companies like ours have been highly volatile due to factors, including, but not limited to:

- any delay or failure to conduct a clinical trial for our product or receive approval from the FDA and other regulatory agencies;
- developments or disputes concerning our product's intellectual property rights;
- our or our competitors' technological innovations;
- changes in market valuations of similar companies;
- announcements by us or our competitors of significant contracts, acquisitions, strategic partnerships, joint ventures, capital commitments, new technologies, or patents; and
- failure to complete significant transactions or collaborate with vendors in manufacturing our product.

The securities market has from time to time experienced significant price and volume fluctuations that are not related to the operating performance of particular companies. These market fluctuations may also materially and adversely affect the market price of shares of our common stock.

***Future sales of shares by existing stockholders could cause our stock price to decline.***

As of December 31, 2016, we had outstanding options to purchase an aggregate of 6,610,179 shares of our common stock at a weighted average exercise price of \$2.54 per share and warrants to purchase an aggregate of 1,288,500 shares of our common stock at a weighted average exercise price of \$1.00 per share. The exercise of such outstanding options and warrants will result in further dilution of your investment. If our existing stockholders sell substantial amounts of our common stock in the public market, or if the public perceives that such sales could occur, this could have an adverse impact on the market price of our common stock, even if there is no relationship between such sales and the performance of our business.

***We are an “emerging growth company,” and will be able take advantage of reduced disclosure requirements applicable to “emerging growth companies,” which could make our common stock less attractive to investors.***

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012, or JOBS Act, and, for as long as we continue to be an “emerging growth company,” we intend to take advantage of certain exemptions from various reporting requirements applicable to other public companies but not to “emerging growth companies,” including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We will remain an emerging growth company until the earlier of (1) January 1, 2020, (2) the last day of the first fiscal year in which our annual gross revenues exceed \$1 billion, (3) the date on which we become a “large accelerated filer” as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, which would occur if the market value of our common stock that is held by non-affiliates exceeds \$700 million as of the last business day of our most recently completed second fiscal quarter or (4) the date on which we have issued more than \$1 billion in non-convertible debt during the preceding three-year period.

We intend to take advantage of these reporting exemptions described above until we are no longer an “emerging growth company.” Under the JOBS Act, “emerging growth companies” can also delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards 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 cannot predict if investors will find our common stock less attractive if we choose to rely on these exemptions. If some investors find our common stock less attractive as a result of any choices to reduce future disclosure, there may be a less active trading market for our common stock and our stock price may be more volatile.

***We will incur significantly increased costs and devote substantial management time as a result of operating as a public company particularly after we are no longer an “emerging growth company.”***

As a public company, we incur significant legal, accounting and other expenses that we did not incur as a private company. For example, we are required to comply with certain of the requirements of the Sarbanes-Oxley Act and the Dodd-Frank Wall Street Reform and Consumer Protection Act, as well as rules and regulations subsequently implemented by the SEC, including the establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. We expect that compliance with these requirements will increase our legal and financial compliance costs and will make some activities more time consuming and costly. In addition, we expect that our management and other personnel will need to divert attention from operational and other business matters to devote substantial time to these public company requirements. In particular, we expect to incur significant expenses and devote substantial management effort toward ensuring compliance with the requirements of Section 404 of the Sarbanes-Oxley Act. In addition, after we are no longer qualify as an “emerging growth company,” we expect to incur additional management time and cost to comply with the more stringent reporting requirements applicable to companies that are deemed accelerated filers or large accelerated filers, including complying with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act. We currently do not have an internal audit function, and we will need to hire or contract for additional accounting and financial staff with appropriate public company experience and technical accounting knowledge.

We cannot predict or estimate the amount of additional costs we may incur as a result of becoming a public company or the timing of such costs.

***There may be limitations on the effectiveness of our internal controls, and a failure of our control systems to prevent error or fraud may materially harm our company.***

Proper systems of internal controls over financial accounting and disclosure are critical to the operation of a public company. As of December 31, 2016, we had 25 full-time employees which results in a lack of segregation of duties and we may be unable to effectively establish such systems, especially in light of the fact that we expect to operate as a publicly reporting company. This would leave us without the ability to reliably assimilate and compile financial information about our company and significantly impair our ability to prevent error and detect fraud, all of which would have a negative impact on our company from many perspectives.

Moreover, we do not expect that disclosure controls or internal control over financial reporting, will prevent all error and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system’s objectives will be met. Further, the design of a control system must reflect the fact that there are resource constraints and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. Failure of our control systems to prevent error or fraud could materially adversely impact us.

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

We have never declared or paid cash dividends on our common stock and do not anticipate paying any cash dividends to holders of our common stock in the foreseeable future. Consequently, investors must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize any future gains on their investments. There is no guarantee that shares of our common stock will appreciate in value or even maintain the price at which our investors have purchased their shares.

***We may be unable to complete our analysis of our internal controls over financial reporting in a timely manner, or these internal controls may not be determined to be effective, which may adversely affect investor confidence in our company and, as a result, the value of our common stock.***

We are required, pursuant to Section 404 of the Sarbanes-Oxley Act, to furnish a report by our management on, among other things, the effectiveness of our internal control over financial reporting. This assessment will need to include disclosure of any material weaknesses identified by our management in our internal control over financial reporting.

We may not be able to complete our evaluation, testing and any required remediation in a timely fashion. During the evaluation and testing process, if we identify one or more material weaknesses in our internal control over financial reporting, we will be unable to assert that our internal controls are effective.

If we are unable to assert that our internal control over financial reporting is effective, or, if applicable, our independent registered public accounting firm is unable to express an opinion on the effectiveness of our internal controls, we could lose investor confidence in the accuracy and completeness of our financial reports, which would cause the price of our common stock to decline, and we may be subject to investigation or sanctions by the SEC. We will also be required to disclose changes made in our internal control and procedures on a quarterly basis.

Our remediation efforts may not enable us to avoid a material weakness in our internal control over financial reporting in the future. Any of the foregoing occurrences, should they come to pass, could negatively impact the public perception of our company, which could have a negative impact on our stock price.

***Upon dissolution of our company, you may not recoup all or any portion of your investment.***

In the event of a liquidation, dissolution or winding-up of our company, whether voluntary or involuntary, the proceeds and/or assets of our company remaining after giving effect to such transaction, and the payment of all of our debts and liabilities and distributions required to be made to holders of any outstanding preferred stock will then be distributed to the stockholders of common stock on a pro rata basis. There can be no assurance that we will have available assets to pay to the holders of common stock, or any amounts, upon such a liquidation, dissolution or winding-up of our Company. In this event, you could lose some or all of your investment.

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

As a result of our merger in April 2014 with Corbus Pharmaceuticals, Inc., our wholly-owned subsidiary, our ability to utilize our federal net operating loss, carryforwards and federal tax credit prior to that date may be limited under Sections 382 of the Internal Revenue Code. The limitations apply if an “ownership change,” as defined by Section 382, occurs. Generally, an ownership change occurs if the percentage of the value of the stock that is owned by one or more direct or indirect “five percent shareholders” increases by more than 50 percentage points over their lowest ownership percentage at any time during the applicable testing period (typically three years). In addition, future changes in our stock ownership, which may be outside of our control, may trigger an “ownership change” and, consequently, Section 382 limitations. As a result, if we earn net taxable income, our ability to use our pre-change net operating loss carryforwards and other tax attributes to offset United States federal taxable income may be subject to limitations, which could potentially result in increased future tax liability to us.

***Our certificate of incorporation, as amended, allows for our board to create new series of preferred stock without further approval by our stockholders, which could adversely affect the rights of the holders of our common stock.***

Our board of directors has the authority to fix and determine the relative rights and preferences of preferred stock. We anticipate that our board of directors will have the authority to issue up to 10,000,000 shares of our preferred stock without further stockholder approval. As a result, our board of directors could authorize the issuance of a series of preferred stock that would grant to holders the preferred right to our assets upon liquidation and the right to receive dividend payments before dividends are distributed to the holders of common stock. In addition, our board of directors could authorize the issuance of a series of preferred stock that has greater voting power than our common stock or that is convertible into our common stock, which could decrease the relative voting power of our common stock or result in dilution to our existing stockholders.

**Item 1B. UNRESOLVED STAFF COMMENTS**

Not applicable.

**Item 2. PROPERTIES**

Our principal offices are located at 100 River Ridge Drive, Norwood, MA 02062. In September 2016, our lease for this office space was amended for our expansion into an additional 4,088 square feet of office space within the existing building for an aggregate total of 10,414 square feet of leased office space. The lease for this office space terminates in January 2021. As of December 31, 2016, our operating lease commitment through the end of the lease was approximately \$1,030,000. We believe our facilities are adequate for our foreseeable needs.

**Item 3. LEGAL PROCEEDINGS**

We are not currently subject to any material legal proceedings. However, we may from time to time become a party to various legal proceedings arising in the ordinary course of our business.

**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 is currently listed on the Nasdaq Global Market under the symbol "CRBP." Our shares of common stock began trading on the Nasdaq Capital Market under the symbol "CRBP" effective April 16, 2015. Prior to April 16, 2015, our common stock was quoted on the Over-the Counter Markets (the "OTC.QB") under the symbol "CRBP." Our shares of common stock began being quoted on the OTC.QB effective October 24, 2014.

The following table contains information about the range of high and low sale prices for our common stock for each quarter during the last two years. The source of these high and low sales prices was the Nasdaq Global Market, the Nasdaq Capital Market and the OTC.QB.

<b>Fiscal Year Ended December 31, 2016</b>	<b>High Sales Price</b>	<b>Low Sales Price</b>
First Quarter,	\$ 1.95	\$ 1.01
Second Quarter	\$ 3.85	\$ 1.78
Third Quarter	\$ 7.88	\$ 2.68
Fourth Quarter	\$ 10.78	\$ 4.65
<b>Fiscal Year Ended December 31, 2015</b>	<b>High Sales Price</b>	<b>Low Sales Price</b>
First Quarter	\$ 3.25	\$ 2.00
Second Quarter	\$ 4.31	\$ 2.63
Third Quarter	\$ 4.22	\$ 1.45
Fourth Quarter	\$ 2.55	\$ 1.50

#### Dividends

We have never declared or paid cash dividends on our common stock. We do not intend to declare or pay cash dividends on our common stock for the foreseeable future, but currently intend to retain any future earnings to fund the development and growth of our business. The payment of cash dividends if any, on the common stock will rest solely within the discretion of our board of directors and will depend, among other things, upon our earnings, capital requirements, financial condition, and other relevant factors.

#### Record Holders

As of March 6, 2017, there are approximately 114 record holders of shares of common stock.

### Item 6. SELECTED FINANCIAL DATA

Not applicable.

## **Item 7. MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS**

*The following discussion and analysis of our financial condition and results of operations should be read together with our financial statements and the related notes and the other financial information included elsewhere in this Annual Report. This discussion contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of various factors, including those discussed below and elsewhere in this Annual Report, particularly those under “Risk Factors.”*

### **Overview**

We are a clinical stage pharmaceutical company, focused on the development and commercialization of novel therapeutics to treat rare, chronic and serious inflammatory and fibrotic diseases with clear unmet medical needs. Our product JBT-101 is a novel synthetic oral endocannabinoid-mimetic drug that is intended to resolve chronic inflammation and halt fibrotic processes without causing immunosuppression. JBT-101 is currently being developed to treat four life-threatening diseases: systemic sclerosis, cystic fibrosis, diffuse cutaneous, skin-predominant dermatomyositis and systemic lupus erythematosus (“SLE”).

In November 2016, we reported positive clinical data in a Phase 2 JBT-101 study for the treatment of systemic sclerosis. We conducted an end of Phase 2 meeting with the FDA in late February 2017 and we expect to begin a Phase 3 clinical program in systemic sclerosis by the end of the third quarter of 2017. Based on the positive Phase 2 clinical results in systemic sclerosis, we also filed an application with the FDA in March 2017 for Breakthrough Therapy designation.

In December 2016, we completed a second Phase 2 study in cystic fibrosis study and expect to report top-line data from this study by the end of March 2017. A third Phase 2 study in dermatomyositis is expected to be completed in the third quarter of 2017 and a fourth Phase 2 in systemic lupus erythematosus is planned to start during the second quarter of 2017. The United States Food and Drug Administration (“FDA”) has granted JBT-101 Orphan Designation as well as Fast Track Status for both cystic fibrosis and systemic sclerosis.

### **Financial Operations Overview**

We are a clinical stage pharmaceutical company and have not generated any revenues from the sale of products. We have never been profitable and, from inception through December 2016, our losses from operations have been approximately \$33.3 million. Our net losses for the years ended December 31, 2016 and 2015 were approximately \$19,999,000 and \$8,851,000, respectively. We expect to continue to incur significant expenses and increasing operating losses for the foreseeable future. We expect our expenses to increase significantly in connection with our ongoing activities to develop, seek regulatory approval and commercialization of JBT-101. Furthermore, we expect to incur additional costs associated with operating as a public company. Accordingly, we will need additional financing to support our continuing operations. We will seek to fund our operations through public or private equity or debt financings or other sources, which may include government grants and collaborations with third parties. Adequate additional financing may not be available to us on acceptable terms, or at all. Our failure to raise capital as and when needed would have a negative impact on our financial condition and our ability to pursue our business strategy. We will need to generate significant revenues to achieve profitability, and we may never do so.

We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. We expect our expenses will increase substantially in 2016 and in the future in connection with our ongoing activities, as we:

- conduct clinical trials for JBT-101 in scleroderma, cystic fibrosis, systemic lupus erythematosus and other indications;
- continue our research and development efforts;
- manufacture clinical study materials and develop commercial scale manufacturing capabilities;
- seek regulatory approval for our product candidates;
- add personnel to support development of our product candidates; and
- operate as a public company.

## **Critical Accounting Policies and Estimates**

Our consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period.

On an ongoing basis, we evaluate our estimates and judgments for all assets and liabilities, including those related to stock-based compensation expense and the fair value determined for stock purchase warrants classified as derivative liabilities. We base our estimates and judgments on historical experience, current economic and industry conditions and on various other factors that are believed to be reasonable under the circumstances. This forms the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We believe that full consideration has been given to all relevant circumstances that we may be subject to, and the consolidated financial statements accurately reflect our best estimate of the results of operations, financial position and cash flows for the periods presented.

## **Revenue**

To date, we have not generated any revenues from the sales of products. We do not expect to generate revenue from product sales unless and until we successfully complete development and obtain regulatory approval for the marketing of JBT-101, which we expect will take a number of years and is subject to significant uncertainty.

We have recorded \$1,911,424 and \$648,382 of collaboration revenue in the year ended December 31, 2016 and December 31, 2015, respectively, related to an award agreement we entered into in fiscal 2015 with the CFFT, pursuant to which we received a development award (the "Award") for up to \$5 million in funding. The funding from the Award is supporting the Phase 2 clinical trial of JBT-101 in adults with cystic fibrosis. We have billed and received a total of \$4.5 million in payments since the inception of the Award as outlined below. The payments received under the Award have been recorded as deferred revenue and are being amortized on a straight-line basis over the expected duration of the performance period under the Award, which is expected to conclude in the second quarter of 2017.

Upon the execution of the Award agreement, we received a payment of \$1,250,000 in May 2015. In November 2015, we received a second payment of \$1,250,000 upon the achievement of a milestone for dosing the first patient. In August 2016, we received a third payment from the CFFT in the amount of \$1,000,000 for achieving a milestone in July 2016 related to dosing the median clinical trial patient. In January 2017, we received a fourth payment from the CFFT in the amount of \$1,000,000 for achieving a milestone in December 2016 related to completing the final visit for the final patient. We expect that the last milestone payment of \$500,000 under the Award will be recognized in the second quarter of 2017 upon the achievement of the final milestone related to the Phase 2 CF clinical trial, as set forth in the Award agreement.

## **Research and Development**

Research and development expenses are incurred for the development of JBT-101 and consist primarily of payroll, and payments to contract research and development companies. To date, these costs are related to generating pre-clinical data and the cost of manufacturing JBT-101 for clinical trials and conducting clinical trials. These costs are expected to increase significantly in the future as JBT-101 is continued to be evaluated in additional later stage clinical trials.

## **General and Administrative Expenses**

General and administrative expenses consist primarily of payroll, rent and professional services. Other general and administrative expenses include accounting and legal services. We anticipate that our general and administrative expenses will increase significantly during 2017 and in the future as we increase our headcount to support our continued research and development and the potential commercialization of our product candidates. We also anticipate increased expenses related to audit, legal, and tax-related services associated with maintaining compliance with NASDAQ exchange listing and SEC requirements, director and officer insurance, and investor relations costs associated with being a public company.

## **Total Other Income (Expense)**

Total other income (expense) consists primarily of interest income we earn on interest-bearing accounts, interest expense incurred on our outstanding debt, and gains or losses related to foreign currency exchange rate fluctuations.

## **Accrued Research and Development Expenses**

As part of the process of preparing financial statements, we are required to estimate and accrue expenses, the largest of which are research and development expenses. This process involves: communicating with our applicable 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 actual cost; estimating and accruing expenses in our financial statements as of each balance sheet date based on facts and circumstances known to us at the time; and periodically confirming the accuracy of our estimates with selected service providers and making adjustments, if necessary.

Examples of estimated research and development expenses that we accrue include:

- fees paid to CROs in connection with nonclinical studies;
- fees paid to contract manufacturers in connection with the production of JBT-101 for clinical trials ;
- fees paid to CRO and research institutions in connection with conducting of clinical studies; and
- professional service fees for consulting and related services.

We base our expense accruals related to clinical studies on our estimates of the services performed pursuant to contracts with multiple research institutions and clinical research organizations that conduct and manage clinical studies on our behalf. The financial terms of these agreements vary from contract to contract and may result in uneven payment flows. Payments under some of these contracts depend on factors, such as the successful enrollment of patients and the completion of clinical study milestones. Our service providers invoice us monthly in arrears for services performed. 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 we do not identify costs that we have begun to incur or if we underestimate or overestimate the level of services performed or the costs of these services, our actual expenses could differ from our estimates.

To date, we have not experienced significant changes in our estimates of accrued research and development expenses following each applicable reporting period. However, due to the nature of estimates, we cannot assure you that we will not make changes to our estimates in the future as we become aware of additional information regarding the status or conduct of our clinical studies and other research activities.

## **Stock-Based Compensation**

Stock options are granted with an exercise price at no less than fair market value at the date of the grant. The stock options normally expire ten years from the date of grant. Stock option awards vest upon terms determined by our board of directors.

We recognize compensation costs resulting from the issuance of stock-based awards to employees, members of our Board of directors and consultants. The fair value of each option grant was estimated as of the date of grant using the Black-Scholes option-pricing model. The fair value is amortized as compensation cost on a straight-line basis over the requisite service period of the awards, which is generally the vesting period. Due to our limited operating history and limited volume of sales of our common stock, we estimated our volatility in consideration of a number of factors, including the volatility of comparable public companies and, commencing in 2015, we also included the volatility of our own common stock. We use historical data, as well as subsequent events occurring prior to the issuance of the consolidated financial statements, to estimate option exercise and employee forfeitures within the valuation model. The expected term of options granted to employees under our stock plans is based on the average of the contractual term (generally 10 years) and the vesting period (generally 48 months). The expected term of options granted under the 2014 Plan, all of which qualify as “plain vanilla” per SEC Staff Accounting Bulletin 107, is based on the average of the 6.25 years. For non-employee options, the expected term is the contractual term and stock options granted to non-employee consultants are revalued at the end of each reporting period until vested and changes in their fair value are recorded as adjustments to expense over the related vesting period. The risk-free rate is based on the yield of a U.S. Treasury security with a term consistent with the option. The risk-free rate is based on the yield of a U.S. Treasury security with a term consistent with the expected term of the option. We estimate the forfeiture rate at the time of grant and revise it, if necessary, in subsequent periods if actual forfeitures differ from those estimates. Forfeitures were estimated based on management’s expectation through industry knowledge and historical data. We have never paid dividends on our common stock and do not anticipate paying dividends on our common stock in the foreseeable future. Accordingly, we have assumed no dividend yield for purposes of estimating the fair value of our share-based compensation.

The following assumptions were used to estimate the fair value of stock options granted using the Black-Scholes option pricing model for the years ended December 31, 2016 and 2015 is as follows:

	2016	2015
Risk free interest rate	1.70%	1.85%
Expected dividend yield	0%	0%
Expected term in years	6.66	6.73
Expected volatility	90.39%	90.68%
Estimated forfeiture rate	5.00%	4.83%

### ***Emerging Growth Company Status***

Under Section 107(b) of the Jumpstart Our Business Startups Act of 2012, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

### **Results of Operations**

#### ***Comparison of Year Ended 2016 to 2015***

**Collaboration Revenue.** We have recorded \$1,911,424 and \$648,382 of collaboration revenue in the year ended December 31, 2016 and December 31, 2015, respectively, related to an award agreement we entered into in fiscal 2015 with the CFFT, pursuant to which we received a development award (the "Award") for up to \$5 million in funding. The funding from the Award is supporting the Phase 2 clinical trial of JBT-101 in adults with cystic fibrosis. We have billed and received a total of \$4.5 million in payments since the inception of the Award as outlined below. The payments received under the award have been recorded as deferred revenue and are being amortized on a straight-line basis over the expected duration of the performance period under the Award, which is expected to conclude in the second quarter of 2017.

Upon the execution of the Award agreement, we received a payment of \$1,250,000 in May 2015. In November 2015, we received a second payment of \$1,250,000 upon the achievement of a milestone for dosing the first patient. In August 2016, we received a third payment from the CFFT in the amount of \$1,000,000 for achieving a milestone in July 2016 related to dosing the median clinical trial patient. In January 2017, we received a fourth payment from the CFFT in the amount of \$1,000,000 for achieving a milestone in December 2016 related to completing the final visit for the final patient. We expect that the last milestone payment of \$500,000 under the Award will be recorded in the second quarter of 2017 upon the achievement of the final milestone related to the Phase 2 CF clinical trial, as set forth in the Award agreement.

**Research and Development.** Research and Development expenses for the year ended December 31, 2016 totaled approximately \$15,437,000, an increase of \$9,548,000 over the \$5,889,000 recorded for the year ended December 31, 2015. The increase in fiscal 2016 as compared to fiscal 2015 was primarily attributable to increases of \$7,132,000 in clinical trial costs, \$1,447,000 in compensation costs, and \$969,000 in stock-based compensation expense.

**General and Administrative.** General and Administrative expense for the year ended December 31, 2016 totaled approximately \$6,460,000, an increase of \$2,847,000 over the \$3,613,000 recorded for year ended December 31, 2015. The increase in fiscal 2016 as compared to fiscal 2015 was primarily attributable to increases of approximately \$1,251,000 in stock-based compensation expense, \$997,000 in compensation costs, \$375,000 in investor relations costs, and \$213,000 in legal costs.

**Other Income (Loss), Net.** Other loss, net for fiscal 2016 was approximately \$14,000 as compared to other income, net of approximately \$3,000 recorded for fiscal 2015 and was primarily attributable to an increase in foreign currency exchange transaction losses recorded during fiscal 2016.

### **Liquidity and Capital Resources**

Since inception, we have experienced negative cash flows from operations. We have financed our operations primarily through sales of equity-related securities. In addition, the majority of the costs of the dermatomyositis and systemic lupus erythematosus clinical trials are being funded by NIH grants and our cystic fibrosis clinical trial has been partially funded by a \$5 million award from the CFFT. At December 31, 2016, our accumulated deficit since inception was approximately \$33,276,000.

At December 31, 2016, we had total current assets of approximately \$17,403,000 and current liabilities of approximately \$8,899,000 resulting in working capital of \$8,504,000. Net cash used in operating activities for the year ended December 31, 2016 was approximately \$13,571,000, which includes a net loss of approximately \$19,999,000, non-cash expenses of approximately \$3,341,000 principally related to the increase in stock-based compensation expense, and approximately \$3,086,000 of cash provided from a change in net working capital items principally related to the increase in accounts payable and accrued expenses.

Cash used in investing activities for the year ended December 31, 2016 totaled approximately \$353,000 for the purchase of property and equipment.

Cash provided by financing activities for the year ended December 31, 2016 totaled approximately \$16,742,000. In June 2016 we sold 5,960,000 shares of our common stock in a registered direct offering to investors in June 2016 at a purchase price of \$2.50 per share which resulted in net proceeds to us totaling approximately \$14,875,000. In December 2016, we entered into a sales agreement with Cantor Fitzgerald under which we may direct Cantor Fitzgerald as our placement agent to sell common stock under an "At the Market Offering" ("Sales Agreement). Sales of common stock under the Sales Agreement are made pursuant to an effective registration statement for an aggregate offering of up to \$35 million. In 2016, we sold 188,695 shares of our common stock under the Sales Agreement at an average selling price of \$8.54 per share (net of 3% commission paid to Cantor Fitzgerald) which resulted in gross proceeds of approximately \$1,621,000 of which \$330,413 was classified in stock subscriptions receivable as of December 31, 2016 because the Company did not receive these proceeds until January 2017.

During the year ended December 31, 2016, we also received proceeds of approximately \$468,000 from the issuance of 927,916 shares of our common stock upon the exercise of stock options and warrants. Cash provided by financing activities for the year ended December 31, 2016 included proceeds from issuances of notes payable of \$349,000, partially offset by principal payments on notes payable of approximately \$239,000 in connection with our loan agreement with a financing company. The terms of the loan that we entered into in October 2016 stipulate equal monthly payments of principal and interest payments of \$39,114 over a nine-month period. Interest accrues on this loan at an annual rate of 2.25%.

At December 31, 2016, we had cash and cash equivalents of approximately \$14,992,000. On February 28, 2017, we entered into a securities purchase agreement providing for the issuance and sale of 3,887,815 shares of our common stock in a registered direct offering to institutional and accredited investors at a purchase price of \$7.00 per share with gross proceeds to us totaling \$27,214,705 less estimated issuance costs of approximately \$100,000 ("February 2017 Registered Direct Offering"). We expect our cash on hand of \$14,992,257 at December 31, 2016 together with the proceeds from the February 2017 Registered Direct Offering and the remaining milestone payment of \$500,000 from the CFFT, which we expect to receive in the second quarter of 2017, to be sufficient to meet our operating and capital requirements into the fourth quarter of 2018 based on current planned expenditures.

We will need to raise significant additional capital to continue to fund operations and the clinical trials for JBT-101. We may seek to sell common or preferred equity or convertible debt securities, enter into a credit facility or another form of third-party funding, or seek other debt financing. In addition, we may seek to raise cash through collaborative agreements or from government grants. The sale of equity and convertible debt securities may result in dilution to our stockholders and those securities may have rights senior to those of our common shares. If we raise additional funds through the issuance of preferred stock, convertible debt securities or other debt financing, these securities or other debt could contain covenants that would restrict our operations. Any other third-party funding arrangement could require us to relinquish valuable rights.

The source, timing and availability of any future financing will depend principally upon market conditions, and, more specifically, on the progress of our clinical development programs. Funding may not be available when needed, at all, or on terms acceptable to us. Lack of necessary funds may require us, among other things, to delay, scale back or eliminate expenses including some or all of our planned clinical trials.

## Contractual Obligations and Commitments

The following table presents information about our known contractual obligations as of December 31, 2016. It does not reflect contractual obligations that may have arisen or may arise after that date. Except for historical facts, the information in this section is forward-looking information.

Contractual Obligations	Payments due by period				
	Total	2017	Fiscal 2018-2019	Fiscal 2020-2021	After Fiscal 2021
Operating lease obligations (1)	\$ 1,030,118	\$ 244,295	\$ 504,211	\$ 281,612	\$ —
Capital lease obligations (2)	9,465	4,543	4,922	—	—
Obligation with related party(3)	50,000	50,000	—	—	—
Total	\$ 1,089,583	\$ 298,838	\$ 509,133	\$ 281,612	\$ —

- (1) In September 2016, our lease for this office space was amended for our expansion into an additional 4,088 square feet of office space within the existing building for an aggregate total of 10,414 square feet of leased office space. The lease for this office space terminates in January 2021.
- (2) On December 30, 2015, we entered into a lease agreement for a copier machine. The machine was placed in service in January 2016. The lease is for a three-year term and includes a bargain purchase option at the end of the term.
- (3) On September 21, 2016, we entered into a consulting agreement with Orchestra Medical Ventures, LLC (“Orchestra”), of which David Hochman, a member of our Board of Directors, is Managing Partner. The agreement provides that Orchestra would render a variety of consulting and advisory services relating principally to identifying and evaluating strategic relationships, licensing opportunities, and business strategies. Pursuant to the terms of this agreement, we will pay to Orchestra cash compensation in an aggregate amount of \$100,000, payable in equal monthly installments, of which \$50,000 was paid during fiscal 2016 and the remaining \$50,000 will be paid in the first quarter of 2017.

We may enter into contracts in the normal course of business with clinical research organizations for clinical trials and clinical supply manufacturing and with vendors for pre-clinical research studies, research supplies and other services and products for operating purposes. These contracts generally provide for termination on notice, and therefore, we believe that our non-cancelable obligations under these agreements are not material. As of December 31, 2016, other than our leases in the table above, we had no material Contractual Obligations or Commitments that will affect our future liquidity.

## Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements that have or are reasonably likely to have a current or future effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that is material to investors.

### Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Not applicable.

### Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

See pages F-1 through F-20 following the Exhibit Index of this Annual Report on Form 10-K.

### Item 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

### Item 9A. CONTROLS AND PROCEDURES

#### *Evaluation of Our Disclosure Controls*

We maintain disclosure controls and procedures that are designed to provide reasonable assurance that material information required to be disclosed in our periodic reports filed under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC’s rules and forms and to provide reasonable assurance that such information is accumulated and communicated to our management, our chief executive officer and our chief financial officer, to allow timely decisions regarding required disclosure. We carried out an evaluation, under the supervision and with the participation of our management, including our principal executive and principal financial officer, of the effectiveness of the design and operation of our disclosure controls and procedures, as defined in Rule 13(a)-15(e) under the Exchange Act. Based on this evaluation, our principal executive officer and principal financial officer concluded that, as of December 31, 2016, our disclosure controls and procedures were effective.

### *Management's Report on Internal Control Over Financial Reporting*

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on criteria established in the framework in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2016.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risks that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

This Annual Report does not include an attestation report of our independent registered public accounting firm because we are an “emerging growth company,” and may take advantage of certain exemptions from various reporting requirements that are applicable to public companies that are not “emerging growth companies” including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act.

### *Changes in Internal Controls over Financial Reporting*

During the year ended December 31, 2016, there have been no changes in our internal control over financial reporting that have materially affected or are reasonably likely to materially affect our internal controls over financial reporting. From time to time, we make changes to our internal control over financial reporting that are intended to enhance its effectiveness and which do not have a material effect on our overall internal control over financial reporting.

### **Item 9B. OTHER INFORMATION**

**None**

### **PART III**

**Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE**

Information required by this item is incorporated by reference to our Proxy Statement for the 2017 Annual Meeting of Stockholders.

**Item 11. EXECUTIVE COMPENSATION**

Information required by this item is incorporated herein by reference to our Proxy Statement for the 2017 Annual Meeting of Stockholders.

**Item 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS**

Information required by this item is incorporated by reference to our Proxy Statement for the 2017 Annual Meeting of Stockholders.

**Item 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE**

Information required by this item is incorporated by reference to our Proxy Statement for the 2017 Annual Meeting of Stockholders.

**Item 14. PRINCIPAL ACCOUNTING FEES AND SERVICES**

Information required by this item is incorporated by reference to our Proxy Statement for the 2017 Annual Meeting of Stockholders.

## PART IV

### Item 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

#### (a) List of Documents filed as part of this Report

##### (1) Consolidated Financial Statements

The financial statements and related notes, together with the report of EisnerAmper LLP appear at pages F-1 through F-19 following the Exhibit List as required by Part II, Item 8 “Financial Statements and Supplementary Data” of this Form 10-K.

##### (2) Financial Statement Schedules.

Schedules are omitted because they are either not required, not applicable, or the information is otherwise included.

##### (3) Exhibits

The Company has filed with this report or incorporated by reference herein certain exhibits as specified below pursuant to Rule 12b-32 under the Exchange Act. See Exhibit Index following the signature page to this report for a complete list of documents filed with this report.

<u>Exhibit No.</u>	<u>Description</u>
3.1	Certificate of Incorporation (incorporated by reference to Exhibit 3.1 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
3.2	Certificate of Amendment (incorporated by reference to Exhibit 3.2 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
3.3	Bylaws (incorporated by reference to Exhibit 3.3 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
4.1	Form of Merger Warrant (incorporated by reference to Exhibit 4.1 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
4.2	Form of Replacement Warrant (incorporated by reference to Exhibit 4.2 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
4.3	Form of Investor Warrant (incorporated by reference to Exhibit 4.3 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
4.4	Form of Additional Replacement Warrant (incorporated by reference to Exhibit 4.4 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
4.5	Form of Placement Agent Warrant (incorporated by reference to Exhibit 4.5 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
4.6	Registration Rights Agreement (incorporated by reference to Exhibit 4.6 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
4.7	Specimen Common Stock Certificate, \$0.0001 par value (incorporated herein by reference to Exhibit 4.1 of the Company’s Registration Statement on Form S-3 filed with the SEC on November 10, 2015).
10.1	Placement Agency Agreement, dated March 27, 2014, between the Company and Aegis Capital Corporation (incorporated by reference to Exhibit 10.1 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.2	Consulting Agreement, dated March 21, 2014, between the Company and Orchestra Medical Ventures (incorporated by reference to Exhibit 10.2 of the Company’s Registration Statement on Form S-1 filed with the SEC on September 3, 2014).

Exhibit No	Description
10.3	Form of Subscription Agreement for the Company's 2014 Private Placement (incorporated by reference to Exhibit 10.3 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.4	Form of Voting Agreement, dated April 11, 2014, by and among the Company and the stockholders named therein (incorporated by reference to Exhibit 10.4 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.5	2014 Equity Compensation Plan (incorporated by reference to Exhibit 10.5 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.6	Form of Incentive Stock Option Agreement (incorporated by reference to Exhibit 10.6 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.7	Form of Non-Qualified Stock Option Agreement (incorporated by reference to Exhibit 10.7 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.8	Form of Restricted Stock Agreement (incorporated by reference to Exhibit 10.8 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.9	Employment Agreement, dated April 11, 2014, between the Company and Yuval Cohen (incorporated by reference to Exhibit 10.9 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.10	Employment Agreement, dated April 11, 2014, between the Company and Mark Tepper (incorporated by reference to Exhibit 10.10 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.11	Amended and Restated Employment Agreement, dated June 19, 2014, between the Company and Sean Moran (incorporated by reference to Exhibit 10.11 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.12	Agreement and Plan of Merger, dated March 27, 2014, by and among the Company, Corbus Pharmaceuticals Acquisition, Inc. and JB Therapeutics, Inc. (incorporated by reference to Exhibit 10.12 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.13	Subscription Agreement, dated April 2009, between Sumner Burstein and JB Therapeutics, Inc. (which is now known as Corbus Pharmaceuticals, Inc.) (incorporated by reference to Exhibit 10.13 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.14	Letter Agreement, dated April 29, 2009, between JB Therapeutics, Inc. (which is now known as Corbus Pharmaceuticals, Inc.) and Sumner Burstein (incorporated by reference to Exhibit 10.14 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
10.15	Form of Indemnification Agreement (incorporated by reference to Exhibit 10.15 of the Company's Registration Statement on Amendment No. 1 to Form S-1 filed with the SEC on September 30, 2014).
10.16	Letter Agreement, dated August 18, 2014, between the Company and Barbara White (incorporated herein by reference to Exhibit 10.15 of the Company's Post-Effective Amendment No. 1 to Form S-1 filed with the SEC on March 31, 2015).
10.17	Award Agreement, dated April 9, 2015, between Cystic Fibrosis Foundation Therapeutics, Inc. and the Company (incorporated herein by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q filed with the SEC on May 13, 2015).#
10.18	Amendment No.1 to Employment Agreement, dated April 11, 2016, between the Company and Yuval Cohen (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed with the SEC on April 15, 2016).
10.19	Amendment No.1 to Employment Agreement, dated April 11, 2016, between the Company and Mark Tepper (incorporated by reference to Exhibit 10.2 of the Company's Current Report on Form 8-K filed with the SEC on April 15, 2016).
10.20	Amendment No.1 to Amended and Restated Employment Agreement, dated April 11, 2016, between the Company and Sean Moran (incorporated by reference to Exhibit 10.3 of the Company's Current Report on Form 8-K filed with the SEC on April 15, 2016).
10.21	Employment Agreement, dated April 11, 2016, between the Company and Barbara White (incorporated by reference to Exhibit 10.4 of the Company's Current Report on Form 8-K filed with the SEC on April 15, 2016).
10.22	Securities Purchase Agreement, dated June 10, 2016, between Company and each purchaser identified on the signature pages thereto (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed with the SEC on June 10, 2016).



Exhibit No	Description
10.23	Consulting Agreement, dated September 20, 2016, between Company and Orchestra Medical Ventures, LLC (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed with the SEC on September 21, 2016).
10.24	Lease, dated May 30, 2014, between Corbus Pharmaceuticals, Inc. and River Ridge Limited Partnership (incorporated by reference to Exhibit 10.2 of the Company's Current Report on Form 8-K filed with the SEC on November 10, 2016).
10.25	First Amendment to Lease, dated August 27, 2015, between Corbus Pharmaceuticals, Inc. and River Ridge Limited Partnership (incorporated by reference to Exhibit 10.3 of the Company's Current Report on Form 8-K filed with the SEC on November 10, 2016).
10.26	Second Amendment to Lease, dated March 30, 2016, between Corbus Pharmaceuticals, Inc. and River Ridge Limited Partnership (incorporated by reference to Exhibit 10.4 of the Company's Current Report on Form 8-K filed with the SEC on November 10, 2016).
10.27	Third Amendment to Lease, dated September 13, 2016, between Corbus Pharmaceuticals, Inc. and River Ridge Limited Partnership (incorporated by reference to Exhibit 10.5 of the Company's Current Report on Form 8-K filed with the SEC on November 10, 2016).
10.28	Controlled Equity Offering <sup>S M</sup> Sales Agreement, dated November 23, 2016, by and between Corbus Pharmaceuticals Holdings, Inc. and Cantor Fitzgerald & Co. (incorporated by reference to Exhibit 1.1 of the Company's Current Report on Form 8-K filed with the SEC on November 23, 2016.)
10.29	Securities Purchase Agreement, dated February 28, 2017, between Company and each purchaser identified on the signature pages thereto (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed with the SEC on February 28, 2017).
21.1	List of Subsidiaries of the Company (incorporated by reference to Exhibit 21.1 of the Company's Registration Statement on Form S-1 filed with the SEC on September 3, 2014).
23.1	Consent of EisnerAmper LLP.*
31.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a).*
31.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a).*
32.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(b) or Rule 15d-14(b).*
32.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(b) or Rule 15d-14(b).*
101.INS	XBRL Instance Document.*
101.SCH	XBRL Taxonomy Extension Schema Document.*
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document.*
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.*
101.LAB	XBRL Taxonomy Extension Label Linkbase Document.*
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document.*

\* Filed herewith.

# Confidential treatment has been granted with respect to certain portions of this exhibit. Omitted portions have been submitted separately to the SEC.

**Item 16. Form 10-K Summary.**

None.

## 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.

### CORBUS PHARMACEUTICALS HOLDINGS, INC.

Date: March 8, 2017

By: /s/ YUVAL COHEN

Name: Yuval Cohen

Title: Chief Executive Officer

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.

<b>Signature</b>	<b>Title</b>	<b>Date</b>
<u>/s/ YUVAL COHEN</u> Yuval Cohen	Chief Executive Officer and Director (Principal Executive Officer)	March 8, 2017
<u>/s/ SEAN MORAN</u> Sean Moran	Chief Financial Officer (Principal Financial and Accounting Officer)	March 8, 2017
<u>/s/ ALAN HOLMER</u> Alan Holmer	Director	March 8, 2017
<u>/s/ DAVID HOCHMAN</u> David Hochman	Director	March 8, 2017
<u>/s/ RENU GUPTA</u> Renu Gupta	Director	March 8, 2017
<u>/s/ AVERY CATLIN</u> Avery Catlin	Director	March 8, 2017

## INDEX TO FINANCIAL STATEMENTS

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<b>Corbus Pharmaceuticals Holdings, Inc. Financial Statements- December 31, 2016:</b>	
<a href="#"><u>Consolidated Balance Sheets as of December 31, 2016 and December 31, 2015</u></a>	F-3
<a href="#"><u>Consolidated Statements of Operations for the Years Ended December 31, 2016 and 2015</u></a>	F-4
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<a href="#"><u>Notes to Consolidated Financial Statements</u></a>	F-7

## REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Stockholders  
Corbus Pharmaceuticals Holdings, Inc.

We have audited the accompanying consolidated balance sheets of Corbus Pharmaceuticals Holdings, Inc. and Subsidiary (the “Company”) as of December 31, 2016 and 2015, and the related consolidated statements of operations, stockholders’ equity, and cash flows for each of the years then ended. The financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, 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. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Corbus Pharmaceuticals Holdings, Inc. and Subsidiary as of December 31, 2016 and 2015, and the consolidated results of their operations and their cash flows for each of the years then ended, in conformity with accounting principles generally accepted in the United States of America.

*/s/ EisnerAmper LLP*

Iselin, New Jersey  
March 8, 2017

**Corbus Pharmaceuticals Holdings, Inc.**  
**Consolidated Balance Sheets**

	<b>December 31,</b>	
	<b>2016</b>	<b>2015</b>
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 14,992,257	\$ 12,338,275
Restricted cash	150,000	—
Grants receivable	1,000,000	—
Stock subscriptions receivable	330,413	—
Prepaid expenses	930,261	376,515
Total current assets	<u>17,402,931</u>	<u>12,714,790</u>
Restricted cash	50,000	36,375
Property and equipment, net	435,251	124,138
Total assets	<u>\$ 17,888,182</u>	<u>\$ 12,875,303</u>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities:		
Notes payable	\$ 271,757	\$ 162,019
Accounts payable	3,419,921	1,314,377
Accrued expenses	3,256,455	562,279
Deferred revenue, current	1,940,195	1,591,358
Deferred rent, current	10,263	—
Total current liabilities	<u>8,898,591</u>	<u>3,630,033</u>
Deferred revenue, noncurrent	—	260,260
Deferred rent, noncurrent	65,724	—
Other liabilities	4,632	—
Total liabilities	<u>8,968,947</u>	<u>3,890,293</u>
Commitments and Contingencies		
Stockholders' equity		
Preferred Stock \$0.0001 par value:10,000,000 shares authorized, no shares issued and outstanding at December 31, 2016 and 2015	—	—
Common stock, \$0.0001 par value; 150,000,000 shares authorized, 44,681,745 and 37,605,134 shares issued and outstanding at December 31, 2016 and 2015	4,468	3,761
Additional paid-in capital	42,191,256	22,259,063
Accumulated deficit	<u>(33,276,489)</u>	<u>(13,277,814)</u>
Total stockholders' equity	<u>8,919,235</u>	<u>8,985,010</u>
Total liabilities and stockholders' equity	<u>\$ 17,888,182</u>	<u>\$ 12,875,303</u>

*The accompanying notes are an integral part of these Consolidated Financial Statements.*

**Corbus Pharmaceuticals Holdings, Inc.**  
**Consolidated Statements of Operations**

	<b>For the Years Ended December 31,</b>	
	<b>2016</b>	<b>2015</b>
Collaboration revenue	\$ 1,911,424	\$ 648,382
Operating expenses:		
Research and development	15,436,735	5,888,659
General and administrative	6,459,747	3,613,416
Total operating expenses	<u>21,896,482</u>	<u>9,502,075</u>
Operating loss	<u>(19,985,058)</u>	<u>(8,853,693)</u>
Other income (expense):		
Interest income, net	477	977
Foreign currency exchange gain (loss)	(14,094)	1,977
Other income (loss), net	<u>(13,617)</u>	<u>2,954</u>
Net loss	<u>\$ (19,998,675)</u>	<u>\$ (8,850,739)</u>
Net loss per share, basic and diluted	<u>\$ (0.49)</u>	<u>\$ (0.28)</u>
Weighted average number of common shares outstanding, basic and diluted	<u>41,137,518</u>	<u>31,350,145</u>

*The accompanying notes are an integral part of these Consolidated Financial Statements.*

**Corbus Pharmaceuticals Holdings, Inc.**  
**Statements of Stockholders' Equity**

	<u>Common Stock</u>		<u>Additional Paid-in Capital</u>	<u>Accumulated Deficit</u>	<u>Total Stockholders' Equity</u>
	<u>Shares</u>	<u>Amount</u>			
Balance at December 31, 2014	25,938,332	\$ 2,594	\$ 10,287,214	\$ (4,427,075)	\$ 5,862,733
Stock compensation expense			1,153,302		1,153,302
Issuance of common stock upon exercise of warrants, net of issuance costs of \$509,215	11,615,674	1,162	10,812,963		10,814,125
Issuance of common stock upon exercise of stock options	51,128	5	5,584		5,589
Net Loss				(8,850,739)	(8,850,739)
Balance at December 31, 2015	37,605,134	\$ 3,761	\$ 22,259,063	\$ (13,277,814)	\$ 8,985,010
Stock compensation expense			3,163,534		3,163,534
Issuance of common stock, net of issuance costs of \$260,179	6,148,695	615	16,300,309		16,300,924
Issuance of common stock upon exercise of warrants	601,030	60	1,190		1,250
Issuance of common stock upon exercise of stock options	326,886	32	467,160		467,192
Net Loss				(19,998,675)	(19,998,675)
Balance at December 31, 2016	<u>44,681,745</u>	<u>\$ 4,468</u>	<u>\$ 42,191,256</u>	<u>\$ (33,276,489)</u>	<u>\$ 8,919,235</u>

*The accompanying notes are an integral part of these Consolidated Financial Statements.*

**Corbus Pharmaceuticals Holdings, Inc.**  
**Consolidated Statements of Cash Flows**

	<b>Year Ended December 31,</b>	
	<b>2016</b>	<b>2015</b>
<b>Cash flows from operating activities:</b>		
Net loss	\$ (19,998,675)	\$ (8,850,739)
<b>Adjustments to reconcile net loss to net cash used in operating activities:</b>		
Share-based compensation expense	3,163,534	1,153,302
Depreciation and amortization	87,664	43,943
Loss (gain) on foreign exchange	14,094	(1,977)
Deferred rent	75,987	—
<b>Changes in operating assets and liabilities:</b>		
Increase in grants receivable	(1,000,000)	—
Increase in prepaid expenses	(553,745)	(105,959)
Increase in accounts payable	1,890,876	972,194
Increase in accrued expenses	2,660,461	312,788
Increase in deferred revenue	88,577	1,851,618
Net cash used in operating activities	<u>(13,571,227)</u>	<u>(4,624,830)</u>
<b>Cash flows from investing activities:</b>		
Purchases of property and equipment	(353,032)	(114,037)
Net cash used in investing activities	<u>(353,032)</u>	<u>(114,037)</u>
<b>Cash flows from financing activities:</b>		
Proceeds from issuance of notes payable	348,750	207,750
Principal payments on notes payable	(239,012)	(190,120)
Proceeds from issuance on common stock	16,699,133	11,328,929
Issuance costs paid for common stock financings	(63,830)	(509,215)
Principal payments under capital lease obligations	(3,175)	—
Net cash provided by financing activities	<u>16,741,866</u>	<u>10,837,344</u>
Net increase in cash, cash equivalents, and restricted cash	2,817,607	6,098,477
Cash, cash equivalents, and restricted cash at beginning of the year	12,374,650	6,276,173
Cash, cash equivalents, and restricted cash at end of the year	<u>\$ 15,192,257</u>	<u>\$ 12,374,650</u>
<b>Supplemental disclosure of cash flow information and non cash transactions:</b>		
Cash paid during the period for interest	<u>\$ 5,586</u>	<u>\$ —</u>
Assets acquired under capital lease obligation	<u>\$ 11,638</u>	<u>\$ —</u>
Purchases of property and equipment included in accounts payable or accrued expenses	<u>\$ 34,107</u>	<u>\$ —</u>
Unpaid stock issuance costs	<u>196,349</u>	<u>\$ —</u>

*The accompanying notes are an integral part of these Consolidated Financial Statements.*

**Corbus Pharmaceuticals Holdings, Inc.**  
**Notes to Consolidated Financial Statements**

**1. NATURE OF OPERATIONS**

*Business*

Corbus Pharmaceuticals Holdings, Inc. (“CPHI” or “the Company”) is a clinical stage pharmaceutical company, focused on the development and commercialization of novel therapeutics to treat rare, chronic, and serious inflammatory and fibrotic diseases. Since its inception, the Company has devoted substantially all of its efforts to business planning, research and development, recruiting management and technical staff, acquiring operating assets and raising capital. . Our research and development activities have included conducting pre-clinical studies, developing manufacturing methods and manufacturing of our lead drug JBT-101 for clinical trials and conducting clinical studies in patients. The Company’s business is subject to significant risks and uncertainties and the Company will be dependent on raising substantial additional capital before it becomes profitable and it may never achieve profitability.

**2. LIQUIDITY**

The Company anticipates operating losses to continue for the foreseeable future due to, among other things, costs related to research funding, development of its product candidates and its preclinical and clinical programs, strategic alliances and the development of its administrative organization. The Company has incurred recurring losses since inception and as of December 31, 2016, had an accumulated deficit of \$33,276,489. In June 2016, the Company completed a sale of shares of its common stock pursuant to the terms of a securities purchase agreement under which the Company sold an aggregate of 5,960,000 shares of its common stock in a registered direct offering to investors at a purchase price of \$2.50 per share with net proceeds to the Company totaling approximately \$14,875,000. On February 28, 2017, the Company entered in a securities purchase agreement providing for the issuance and sale by the Company of 3,887,815 shares of its common stock in a registered direct offering to institutional and accredited investors at a purchase price of \$7.00 per share with gross proceeds to the Company totaling \$27,214,705 less estimated issuance costs of approximately \$100,000 (“February 2017 Registered Direct Offering”) (See Note 15). The Company expects the cash on hand of \$14,992,257 at December 31, 2016 together with the proceeds from the February 2017 Registered Direct Offering and the remaining milestone payment of \$500,000 from the Cystic Fibrosis Foundation Therapeutics, Inc. (“CFFT”), which the Company expects to receive in the second quarter of 2017 (See Note 14), to be sufficient to meet our operating and capital requirements into the fourth quarter of 2018 based on current planned expenditures.

Should the Company be unable to raise sufficient additional capital, the Company may be required to undertake cost-cutting measures including delaying or discontinuing certain clinical activities. The Company will need to raise significant additional capital to continue to fund the clinical trials for JBT-101. The Company may seek to sell common or preferred equity or convertible debt securities, enter into a credit facility or another form of third-party funding, or seek other debt financing. The sale of equity and convertible debt securities may result in dilution to the Company’s stockholders and certain of those securities may have rights senior to those of the Company’s common shares. If the Company raises additional funds through the issuance of preferred stock, convertible debt securities or other debt financing, these securities or other debt could contain covenants that would restrict the Company’s operations. Any other third-party funding arrangement could require the Company to relinquish valuable rights.

The source, timing and availability of any future financing will depend principally upon market conditions, and, more specifically, on the progress of the Company’s clinical development programs. Funding may not be available when needed, at all, or on terms acceptable to the Company. Lack of necessary funds may require the Company, among other things, to delay, scale back or eliminate some or all of the Company’s planned clinical trials.

**3. SIGNIFICANT ACCOUNTING POLICIES**

A summary of the significant accounting policies followed by the Company in the preparation of the financial statements is as follows:

*Use of Estimates*

The process of preparing financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of assets and liabilities at the date of financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates and changes in estimates may occur. The most significant estimates are related to stock based compensation, the value of derivative instruments and the accrual of research and clinical obligations.

Prior to the registration of its common stock and the subsequent public listing of the common stock, the Company had granted stock options at exercise prices not less than the fair value of its common stock as determined by the board of directors, with input from management. The Company's board of directors determined the estimated fair value of the common stock based on a number of objective and subjective factors, including external market conditions affecting the biotechnology industry sector and the historic prices at which the Company sold shares of preferred stock.

### ***Cash, Cash Equivalents, and Restricted Cash***

The Company considers only those investments which are highly liquid, readily convertible to cash, and that mature within three months from date of purchase to be cash equivalents. Marketable investments are those with original maturities in excess of three months. At December 31, 2016 and 2015, cash equivalents were comprised of money market funds. The Company had no marketable investments at December 31, 2016 and 2015.

Restricted cash as of December 31, 2016 included a \$150,000 collateral account for the Company's corporate credit cards and is classified in current assets. Additionally, as of December 31, 2016 and 2015 restricted cash included a stand-by letter of credit issued in favor of a landlord for \$50,000 and \$36,375, respectively (See Note 5) and is classified in noncurrent assets.

Cash, cash equivalents, and restricted cash consists of the following:

	December 31,	
	2016	2015
Cash	\$ 1,127,530	\$ 255,943
Money market fund	13,864,727	12,082,332
Cash and cash equivalents	<u>14,992,257</u>	<u>12,338,275</u>
Restricted cash, current	150,000	—
Restricted cash, noncurrent	50,000	36,375
Restricted cash	<u>200,000</u>	<u>36,375</u>
Total cash, cash equivalents, and restricted cash shown in the statement of cash flows	<u>\$ 15,192,257</u>	<u>\$ 12,374,650</u>

### ***Financial Instruments***

The carrying amounts reported in the consolidated balance sheet for cash and cash equivalents and accounts payable approximate fair value based on the short-term nature of these instruments. The carrying value of loans payable approximate their fair value due to their market terms.

### ***Property and Equipment***

The estimated life for the Company's property and equipment is as follows: three years for computer hardware and software and three to five years for office furniture and equipment. The Company's leasehold improvements and assets under capital lease are amortized over the shorter of their useful lives or the terms of the respective leases. See Note 4 for details of property and equipment and Note 5 for operating and capital lease commitments.

### ***Research and Development Expenses and Collaborative Research Agreements***

Costs incurred for research and development are expensed as incurred.

For amounts received under the development award received from the CFFT during 2015 and 2016 (See Note 14), the Company is amortizing these amounts on a straight-line basis over the expected duration of the performance period of the development program under the award, which is expected to conclude in the second quarter of 2017.

### ***Accruals for Research and Development Expenses and Clinical Trials***

As part of the process of preparing its financial statements, the Company is required to estimate its expenses resulting from its obligations under contracts with vendors, clinical research organizations and consultants and under clinical site agreements in connection with conducting clinical trials. The financial terms of these contracts are subject to negotiations, which vary from contract to contract and may result in payment terms that do not match the periods over which materials or services are provided under such contracts. The Company's objective is to reflect the appropriate expenses in its financial statements by matching those expenses with the period in which services are performed and efforts are expended. The Company accounts for these expenses according to the timing of various aspects of the expenses. The Company determines accrual estimates through financial models taking into account discussion with applicable personnel and outside service providers as to the progress of clinical trials, or the services completed. During the course of a clinical trial, the Company adjusts its clinical expense recognition if actual results differ from its estimates. The Company makes estimates of its accrued expenses as of each balance sheet date based on the facts and circumstances known to it at that time. The Company's clinical trial accruals are dependent upon the timely and accurate reporting of contract research organizations and other third-party vendors. Although the Company does not expect its estimates to be materially different from amounts actually incurred, its understanding of the status and timing of services performed relative to the actual status and timing of services performed may vary and may result in it reporting amounts that are too high or too low for any particular period. For the years ended December 31, 2016 and 2015, there were no material adjustments to the Company's prior period estimates of accrued expenses for clinical trials.



### ***Concentrations of Credit Risk***

The Company has no significant off-balance-sheet concentration of credit risk such as foreign exchange contracts, option contracts or other hedging arrangements. The Company may from time to time have cash in banks in excess of Federal Deposit Insurance Corporation insurance limits.

### ***Segment Information***

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, or decision making group, in making decisions regarding resource allocation and assessing performance. To date, the Company has viewed its operations and manages its business as principally one operating segment, which is developing and commercializing therapeutics to treat rare life-threatening inflammatory fibrotic diseases. As of December 31, 2016 and 2015, all of the Company's assets were located in the United States.

### ***Income Taxes***

For federal and state income taxes, deferred tax assets and liabilities are recognized based upon temporary differences between the financial statement and the tax basis of assets and liabilities. Deferred income taxes are based upon prescribed rates and enacted laws applicable to periods in which differences are expected to reverse. A valuation allowance is recorded to reduce a net deferred tax benefit when it is more likely than not that the tax benefit from the deferred tax assets will not be realized. Accordingly, given the cumulative losses since inception, the Company has provided a valuation allowance equal to 100% of the tax benefit in order to eliminate the deferred tax assets amounts. Tax positions taken or expected to be taken in the course of preparing the Company's tax returns are required to be evaluated to determine whether the tax positions are "more-likely-than-not" of being sustained by the applicable tax authority.

Tax positions not deemed to meet a more-likely-than-not threshold, as well as accrued interest and penalties, if any, would be recorded as a tax expense in the current year. There were no uncertain tax positions that require accrual or disclosure to the financial statements as of December 31, 2016 or 2015.

### ***Impairment of Long-lived Assets***

The Company continually monitors events and changes in circumstances that could indicate that carrying amounts of long-lived assets may not be recoverable. An impairment loss is recognized when expected cash flows are less than an asset's carrying value. Accordingly, when indicators of impairment are present, the Company evaluates the carrying value of such assets in relation to the operating performance and future undiscounted cash flows of the underlying assets. The Company's policy is to record an impairment loss when it is determined that the carrying value of the asset may not be recoverable. No impairment charges were recorded for the years ended December 31, 2016 and 2015.

### ***Share-based Payments***

The Company recognizes compensation costs resulting from the issuance of stock-based awards to employees, non-employees and directors as an expense in the statement of operations over the service period based on a measurement of fair value for each stock-based award. The fair value of each option grant is estimated as of the date of grant using the Black-Scholes option-pricing model. The fair value is amortized as compensation cost on a straight-line basis over the requisite service period of the awards, which is generally the vesting period. Stock options granted to non-employee consultants are revalued at the end of each reporting period until vested and the changes in their fair value are recorded as adjustments to expense over the related vesting period.

### Net Loss Per Common Share

Basic net loss per share of the Company's common stock has been computed by dividing net loss by the weighted average number of shares outstanding during the period. Diluted net income per share of the Company's common stock has been computed by dividing net income by the weighted average number of shares outstanding plus the dilutive effect, if any, of outstanding stock options, warrants and convertible securities. Diluted net loss per share of the Company's common stock has been computed by dividing the net loss for the period by the weighted average number of shares of the Company's common stock outstanding during such period. For years in which there is a net loss, options, warrants and convertible securities are anti-dilutive and therefore excluded from diluted loss per share calculations. The following table sets forth the computation of basic and diluted earnings per share for the years ended December 31, 2016 and 2015:

	Years Ended December 31,	
	2016	2015
Basic and diluted net loss per share of common stock:		
Net loss	\$ (19,998,675)	\$ (8,850,739)
Weighted average shares of common stock outstanding	41,137,518	31,350,145
Net loss per share of common stock-basic and diluted	\$ (0.49)	\$ (0.28)

The following potentially dilutive securities outstanding at December 31, 2016 and 2015 have been excluded from the computation of dilutive weighted average shares outstanding as the inclusion would be antidilutive.

	December 31,	
	2016	2015
Warrants	1,288,500	1,969,250
Stock options	6,610,179	3,982,065
	7,898,679	5,951,315

### Recent Accounting Pronouncements

#### Revenue Recognition

In May 2014, the Financial Accounting Standards Board (the "FASB") issued guidance codified in *Accounting Standards Codification (ASC) 606, Revenue Recognition — Revenue from Contracts with Customers* ("ASC 606") which amends the guidance in former *ASC 605, Revenue Recognition*, and is effective for public companies for annual and interim periods beginning after December 15, 2017. The Company plans to adopt the standard in the first quarter of 2018 and believes that its adoption may have an impact on the Company's consolidated financial statements. Specifically, the new standard differs from the current accounting standard in many respects, such as in the accounting for variable consideration received, including milestone payments or contingent payments. Under the Company's current accounting policy, milestone payments are recognized as revenue in the period that the payment-triggering event occurred or was achieved (See Note 8). ASC 606, however, may require the Company to recognize these payments before the payment-triggering event is completely achieved, subject to management's assessment of whether it is probable that the triggering event will be achieved and that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved.

#### Accounting for Share-Based Payments

In June 2014, the FASB issued Accounting Standards Update ("ASU") No. 2014-12, *Accounting for Share-Based Payments When the Terms of an Award Provide That a Performance Target Could Be Achieved after the Requisite Service Period (a consensus of the FASB Emerging Issues Task Force)* ("ASU 2014-12"). ASU 2014-12 clarifies that entities should treat performance targets that can be met after the requisite service period of a share-based payment award as performance conditions that affect vesting. Therefore, an entity would not record compensation expense (measured as of the grant date without taking into account the effect of the performance target) related to an award for which transfer to the employee is contingent on the entity's satisfaction of a performance target until it becomes probable that the performance target will be met. There are no new disclosures required under ASU 2014-12. ASU 2014-12 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2015. The Company's adoption of ASU 2014-12 in the first quarter of 2016 had no impact on its financial position, results of operations, cash flows, or disclosures.

### Reporting of Going-Concern Uncertainties

In August 2014, the FASB issued ASU No. 2014-15, *Presentation of Financial Statements—Going Concern* (“ASU 2014-15”), which states management should evaluate whether there are conditions or events, considered in the aggregate, that raise a substantial doubt about the entity’s ability to continue as a going concern within one year after the date that the financial statements are issued. Management’s evaluation should be based on relevant conditions and events that are known and likely to occur at the date that the financial statements are issued. ASU 2014-15 was effective for the annual period ending after December 15, 2016 and its adoption did not have any impact on the Company’s financial position, results of operations, cash flows, or disclosures.

### Accounting for Leases

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)* (“ASU 2016-02”). Under ASU 2016-02, a lessee will be required to recognize assets and liabilities for leases with lease terms of more than 12 months. Consistent with current GAAP, the recognition, measurement, and presentation of expenses and cash flows arising from a lease by a lessee primarily will depend on its classification as a finance or operating lease. However, unlike current GAAP, which requires only capital leases to be recognized on the balance sheet, ASU 2016-02 will require both types of leases to be recognized on the balance sheet. ASU 2016-02 will take effect for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018, with early application permitted. Management has not yet determined if it will adopt ASU 2016-02 earlier than the required adoption date. The adoption of ASU 2016-02 will have an impact on the Company’s financial position, results of operations, cash flows, and disclosures as the Company has an operating lease commitment for office space as of December 31, 2016 in the amount of \$1,030,118 (see Note 5) for which ASU 2016-02 would apply.

### Employee Share-Based Payment Accounting

On March 30, 2016, the FASB issued ASU No. 2016-09, *Compensation—Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting* (“ASU 2016-09”). ASU 2016-09 simplifies several aspects of the accounting for employee share-based payment transactions including the accounting for income taxes, forfeitures, and statutory tax withholding requirements, as well as classification in the statement of cash flows. ASU 2016-09 will take effect for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2017, with early application permitted. Management does not expect the adoption of ASU 2016-09 to have a material impact on the Company’s consolidated financial statements, although there may be additional disclosures upon adoption.

### Restricted Cash Presentation

On November 17, 2016, the FASB issued ASU No. 2016-18, *Restricted Cash (a consensus of the FASB Emerging Issues Task Force)* (“ASU 2016-18”), which addresses classification and presentation of changes in restricted cash on the statement of cash flows. ASU 2016-18 requires an entity’s reconciliation of the beginning-of-period and end-of-period total amounts shown on the statement of cash flows to include in cash and cash equivalents amounts generally described as restricted cash and restricted cash equivalents. ASU 2016-18 is effective for public business entities for annual and interim periods in fiscal years beginning after December 15, 2017. Early adoption is permitted, including adoption in an interim period. If an entity early adopts the amendments in an interim period, adjustments should be reflected at the beginning of the fiscal year that includes that interim period. The Company early adopted ASU 2016-18 for the fiscal year ended December 31, 2016 using a retrospective transition method for each period presented.

## 4. PROPERTY AND EQUIPMENT

Property and Equipment consists of the following:

	December 31,	
	2016	2015
Computer hardware and software	\$ 96,131	\$ 40,202
Office furniture and equipment	259,138	35,209
Leasehold improvements	188,219	19,310
Construction in progress	—	83,765
Property and equipment, gross	543,488	178,486
Less: accumulated depreciation	(108,237)	(54,348)
Property and equipment, net	\$ 435,251	\$ 124,138

Depreciation expense was approximately \$88,000 and \$44,000 for the years ended December 31, 2016 and 2015, respectively. At December 31, 2015, construction in progress consisted of purchased property and equipment not placed in service until the Company’s relocation into 6,326 square feet of office space in January 2016 (See Note 5). In connection with this relocation, the Company wrote off approximately \$34,482 of fully depreciated property and equipment.

On December 30, 2015, the Company entered into a lease agreement for a copier machine. The cost of the machine was approximately \$12,000 and is included in office furniture and equipment category in the table above. The lease payments commenced when the machine was placed in service in January 2016. The machine is being amortized over the life of the lease, which is for a three-year term and includes a bargain purchase option at the end of the term. See Note 5 for details of this capital lease commitment.

## 5. COMMITMENTS AND CONTINGENCIES

### Operating Lease Commitment

On May 30, 2014, the Company entered into a commercial lease for 2,387 square feet of office space in Norwood, MA. The lease commenced on July 1, 2014, had a three-year term, and required a standby letter of credit of \$13,728 payable in favor of the landlord. In August 2015, the lease was amended for the relocation of the Company into 6,326 square feet of office space within the existing building ("August 2015 Amendment"). In January 2016, the Company began occupying the space under this lease amendment, which was for a five-year term. The amendment also required an increase in the standby letter of credit to \$36,375 (See Note 3).

In September 2016, the lease was amended for the Company's expansion into an additional 4,088 square feet of office space within the existing building ("September 2016 Amendment"). The Company began occupying this space in early November 2016 and the final lease payment per the terms of the September 2016 Amendment is due in January 2021. Additionally, the September 2016 Amendment requires an increase in the standby letter of credit to \$50,000 (See Note 3).

The Company records the total rent payable during the lease term on a straight-line basis over the term of the lease and records the difference between the rents paid and the straight-line rent as deferred rent, which is classified in deferred rent, current and deferred rent, noncurrent in the Company's balance sheet as of December 31, 2016.

Pursuant to the terms of the Company's non-cancelable lease agreements in effect at December 31, 2016, the future minimum rent commitments are as follows:

2017	\$	244,295
2018		249,502
2019		254,709
2020		259,916
2021		21,696
Thereafter		—
Total	\$	<u>1,030,118</u>

Total rent expense for the years ended December 31, 2016 and 2015 was \$229,705 and \$55,496, respectively.

### Capital Lease Commitment

On December 30, 2015, the Company entered into a capital lease agreement for a copier machine. The lease payments commenced when the machine was placed in service in January 2016. The lease is for a three-year term and includes a bargain purchase option at the end of the term. In the accompanying balance sheet as of December 31, 2016, the current portion of this capital lease obligation is classified in accrued expenses and the long-term portion of the capital lease obligation is classified in other long-term liabilities. Pursuant to the terms of this capital lease agreement, the future minimum capital lease commitments are as follows as of December 31, 2016:

2017	\$	4,543
2018		4,543
2019		<u>379</u>
Total future minimum lease payments		9,465
Less: interest		<u>(1,002)</u>
Future capital lease obligations		8,463
Less: current portion		<u>(3,831)</u>
Long-term portion	\$	<u>4,632</u>

Interest expense for this capital lease obligation for the years ended December 31, 2016 and 2015 was \$1,286 and \$0, respectively.

## 6. NOTES PAYABLE

In November 2015, the Company entered into a loan agreement with a financing company for \$207,750 to finance one of the Company's insurance policies. The terms of the loan stipulated equal monthly payments of principal and interest payments of \$23,397 over a nine month period. Interest on this loan was accrued at an annual rate of 3.25%. This loan was fully repaid in July 2016.

In October 2016, the Company entered into a loan agreement with a financing company for \$348,750 to finance one of the Company's insurance policies. The terms of the loan stipulate equal monthly payments of principal and interest payments of \$39,114 over a nine-month period. Interest accrues on this loan at an annual rate of 2.25%.

Interest expense for notes payable for the years ended December 31, 2016 and 2015 totaled \$3,115 and \$2,440, respectively.

Notes payable consisted of the following:

	December 31,	
	2016	2015
Notes payable	\$ 271,757	\$ 162,019
Less: current portion	(271,757)	(162,019)
	<u>\$ —</u>	<u>\$ —</u>

## 7. ACCRUED EXPENSES

Accrued expenses consisted of the following:

	December 31,	
	2016	2015
Accrued clinical operations and trials costs	\$ 1,647,490	\$ 365,188
Accrued product development costs	713,426	152,018
Accrued compensation	778,250	—
Accrued other	117,289	45,073
Total	<u>\$ 3,256,455</u>	<u>\$ 562,279</u>

## 8. DEFERRED REVENUE

In May 2015, the Company received \$1,250,000 upon signing the CFFT award agreement and in the fourth quarter of 2015, the Company received \$1,250,000 from the CFFT upon the achievement of a milestone for dosing the first patient. In August 2016, the Company received a third payment from the CFFT for achieving a milestone in July 2016 related to dosing the median clinical trial patient as per the terms of the Award in the amount of \$1,000,000. In January 2017, the Company received a fourth payment from the CFFT for achieving a milestone in December 2016 related to completing the final visit for the final patient as per the terms of the Award in the amount of \$1,000,000 (See Note 3 and Note 14), which was billed by the Company to CFFT in December 2016 and was classified in grants receivable as of December 31, 2016. The Company recorded these four milestone payments received from the CFFT totaling \$4,500,000 as deferred revenue and is amortizing the deferred revenue and recognizing revenue on a straight-line basis over the performance period for the development program under the Award, which is expected to conclude during the second quarter of 2017. The Company recorded \$1,911,424 and \$648,382 of revenue during the year ended December 31, 2016 and 2015, respectively. Deferred revenue consists of the following:

	December 31,	
	2016	2015
Deferred revenue	\$ 1,940,195	\$ 1,851,618
Less: current portion	(1,940,195)	(1,591,358)
Long term portion	<u>—</u>	<u>260,260</u>

## 9. INCOME TAXES

No provision or benefit for federal or state income taxes has been recorded, as the Company has incurred a net loss for all of the periods presented, and the Company has provided a full valuation allowance against its deferred tax assets.

At December 31, 2016, and 2015, the Company had federal and Massachusetts net operating loss carryforwards of approximately \$55,217,000 and \$22,416,000, respectively, of which federal carryforwards will expire in varying amounts beginning in 2029. As of December 31, 2016 and 2015, approximately \$1,432,000 and \$762,000, respectively, of Federal and Massachusetts net operating loss carryforwards are from excess stock-based compensation, which are not included in the deferred tax asset as of December 31, 2016 and 2015. Massachusetts net operating losses began to expire in 2014. Utilization of net operating losses may be subject to substantial annual limitations due to the "change in ownership" provisions of the Internal Revenue Code, and similar state provisions. The annual limitations may result in the expiration of net operating losses before utilization. The Company has not yet conducted a study to determine if any such changes have occurred that could limit our ability to use the net operating losses and tax credit carryforwards. The Company also had research and development tax credit carryforwards at December 31, 2016 and 2015 of approximately \$986,000 and \$441,000, respectively.

Significant components of the Company's net deferred tax asset are as follows:

	December 31,	
	2016	2015
NOL carryforward	\$ 10,860,828	\$ 4,505,965
Tax credits	673,690	406,888
Stock based compensation	1,177,650	453,906
Accrued expenses	302,943	—
Other temporary differences	225,214	12,581
Subtotal	13,240,325	5,379,340
Valuation allowance	(13,240,325)	(5,379,340)
Net deferred tax asset	\$ —	\$ —

The Company has maintained a full valuation allowance against its deferred tax assets in all periods presented. A valuation allowance is required to be recorded when it is more likely than not that some portion or all of the net deferred tax assets will not be realized. Since the Company cannot determine that it is more likely than not that it will generate taxable income, and thereby realize the net deferred tax assets, a full valuation allowance has been provided. The valuation allowance increased by \$7,860,985 and \$3,615,002 in 2016 and 2015, respectively, due to the increase in deferred tax assets, primarily due to net operating loss carryforwards. The Company has no uncertain tax positions at December 31, 2016 and 2015 that would affect its effective tax rate. The Company does not anticipate a significant change in the amount of uncertain tax positions over the next twelve months. Since the Company is in a loss carryforward position, the Company is generally subject to U.S. federal and state income tax examinations by tax authorities for all years for which a loss carryforward is available.

Income tax benefits computed using the federal statutory income tax rate differs from the Company's effective tax rate primarily due to the following:

	December 31,	
	2016	2015
Tax provision at statutory rate	34.00%	34.00%
State taxes, net of federal benefit	4.76%	4.76%
Permanent differences	-0.65%	-0.62%
Tax credits	1.33%	2.67%
Other	-0.13%	0.04%
Decrease in valuation reserve	-39.31%	-40.85%
Total	0.00%	0.00%

## 10. COMMON STOCK

The Company has authorized 150,000,000 shares of common stock, \$0.0001 par value per share, of which 44,681,745 shares and 37,605,134 shares were issued and outstanding as of December 31, 2016 and 2015, respectively.

In June 2016, the Company completed a sale of shares of its common stock pursuant to the terms of a securities purchase agreement under which the Company sold an aggregate of 5,960,000 shares of its common stock in a registered direct offering to investors at a purchase price of \$2.50 per share with gross proceeds to the Company totaling approximately \$14,900,000 less issuance costs of \$25,222. On February 28, 2017, the Company entered in a securities purchase agreement providing for the issuance and sale by the Company of 3,887,815 shares of its common stock in a registered direct offering to institutional and accredited investors at a purchase price of \$7.00 per share with gross proceeds to the Company totaling \$27,214,705 less estimated issuance costs of approximately \$100,000 (See Note 15).

In November 2016, the Company entered into a sales agreement with Cantor Fitzgerald under which the Company may direct Cantor Fitzgerald as its placement agent to sell common stock under an "At the Market Offering" ("Sales Agreement"). Sales of common stock under the Sales Agreement are made pursuant to an effective registration statement for an aggregate offering of up to \$35 million. In 2016, we sold 188,695 shares of our common stock under the Sales Agreement at an average selling price of approximately \$8.54 per share (net of 3% commission paid to Cantor Fitzgerald) which resulted in proceeds of approximately \$1,621,182 and net proceeds of approximately \$1,426,145 net of incurred issuance costs. Approximately \$330,413 of these proceeds was classified in stock subscriptions receivable as of December 31, 2016 because the Company did not receive these proceeds until January 2017.

During the year ended December 31, 2016, the Company issued 927,916 shares of common stock upon the exercise of stock options and warrants to purchase common stock and the Company received net proceeds of \$468,442 from these exercises.

## 11. STOCK OPTIONS

In April 2014, the Company adopted the Corbus Pharmaceuticals Holdings, Inc. 2014 Equity Incentive Plan (the “2014 Plan”). Pursuant to the 2014 Plan, the Company’s Board of Directors may grant incentive and nonqualified stock options and restricted stock to employees, officers, directors, consultants and advisors. On January 1, 2016, pursuant to an annual evergreen provision contained in the 2014 Plan, the number of shares reserved for future grants was increased by 1,250,000 shares, respectively. As of December 31, 2016, there was a total of 9,916,017 shares reserved for issuance under the 2014 Plan and there were 2,840,133 shares available for future grants. Options issued under the 2014 Plan are exercisable for up to 10 years from the date of issuance.

Pursuant to the terms of an annual evergreen provision in the 2014 Plan, the number of shares of common stock available for issuance under the 2014 Plan shall automatically increase on January 1 of each year by at least seven percent (7%) of the total number of shares of common stock outstanding on December 31st of the preceding calendar year, or, pursuant to the terms of the 2014 Plan, in any year, the Board of Directors may determine that such increase will provide for a lesser number of shares. In accordance with the terms of the 2014 Plan, effective as of January 1, 2017, the number of shares of common stock available for issuance under the 2014 Plan increased by 3,127,722 shares, which was seven percent (7%) of the outstanding shares of common stock on December 31, 2016. As of January 1, 2017, the 2014 Plan had a total reserve of 13,043,739 shares and there were 5,967,855 shares available for future grants.

### *Share-based Compensation*

For stock options issued and outstanding for the years ended December 31, 2016 and 2015, the Company recorded non-cash, stock-based compensation expense of \$3,163,534 and \$1,153,302, respectively, net of estimated forfeitures.

The fair value of each option award is estimated on the date of grant using the Black-Scholes option pricing model that uses the assumptions noted in the following table. Due to its limited operating history and limited number of sales of its common stock, the Company estimated its volatility in consideration of a number of factors, including the volatility of comparable public companies and, commencing in 2015, the Company also included the volatility of its own common stock. The Company uses historical data, as well as subsequent events occurring prior to the issuance of the financial statements, to estimate option exercises and employee terminations within the valuation model. The expected term of options granted under the 2014 Plan, all of which qualify as “plain vanilla” per SEC Staff Accounting Bulletin 107, is based on the average of the 6.25 years. For non-employee options, the expected term is the contractual term. The risk-free rate is based on the yield of a U.S. Treasury security with a term consistent with the option.

The weighted average assumptions used principally in determining the fair value of options granted were as follows:

	2016	2015
Risk free interest rate	1.70%	1.85%
Expected dividend yield	0%	0%
Expected term in years	6.66	6.73
Expected volatility	90.39%	90.68%
Estimated forfeiture rate	5.00%	4.83%

A summary of option activity for years ended December 31, 2016 and 2015 is presented below:

Options	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term in Years	Intrinsic Value
Outstanding at December 31, 2014	3,556,691	\$ 0.83		
Granted	600,002	\$ 2.10		
Exercised	(51,128)	\$ 0.11		
Forfeited	(123,500)	1.00		
Outstanding at December 31, 2015	3,982,065	\$ 1.03		
Granted	3,020,000	\$ 4.42		
Exercised	(326,886)	\$ 1.43		
Forfeited	(65,000)	\$ 2.44		
Outstanding at December 31, 2016	6,610,179	\$ 2.54	8.22	\$ 39,192,254
Vested at December 31, 2016	2,782,551	\$ 1.10	7.21	\$ 20,439,089

The weighted average grant-date fair value of options granted during the years ended December 31, 2016 and 2015 was \$3.81 and \$1.41 per share, respectively. The aggregate intrinsic value of options exercised during the years ended December 31, 2016 and 2015 was approximately \$1,004,321 and \$152,531, respectively. The total fair value of options that were vested as of December 31, 2016 was \$2,561,877. As of December 31, 2016 there was approximately \$9,232,486 of total unrecognized compensation expense, related to non-vested share-based option compensation arrangements. The unrecognized compensation expense is estimated to be recognized over a period of 3.03 years at December 31, 2016.

## 12. WARRANTS

At December 31, 2016, there were warrants outstanding to purchase 1,288,500 shares of common stock with a weighted average exercise price of \$1.00 and a weighted average remaining life of 2.41 years. During the year ended December 31, 2016, warrants to purchase 679,500 shares of common stock were exercised on a cashless basis resulting in the issuance of 599,780 shares and 1,250 shares of common stock were exercised on a for cash basis. During the year ended December 31, 2015, warrants to purchase 11,615,674 shares of common stock were exercised for net proceeds of approximately \$10,814,125 which included warrants to purchase 371,250 shares of common stock that were exercised in cashless exercises, in accordance with the warrant agreements, resulting in the issuance of 255,724 shares. There were no warrants issued or cancelled during the year ended December 31, 2016 or 2015.

## 13. RELATED PARTY TRANSACTIONS

In connection with the formation of Corbus Pharmaceutical Holdings, Inc. in December 2013, certain affiliates of Aegis Capital Corp. (the "Placement Agent") and certain other parties not affiliated with us or the Placement Agent subscribed for an aggregate of 6,000,000 shares of common stock for which they paid an aggregate of \$120,000 (\$0.02 per share), including David Hochman, one of our directors who purchased 450,000 shares and whose family trust purchased 90,000 shares of common stock.

Following the Initial Closing of the 2014 Private Placement, which took place on April 11, 2014, the Placement Agent had a right to appoint one member of the Company's board of directors for a two-year term (the "Aegis Nominee"). David Hochman was appointed as the Aegis Nominee.

On June 21, 2014, the Company entered into a consulting agreement with Orchestra Medical Ventures, LLC ("Orchestra"), of which David Hochman is Managing Partner. The agreement provided that Orchestra would render a variety of consulting and advisory services relating principally to identifying and evaluating strategic relationships, licensing opportunities, and business strategies. Orchestra was compensated at a rate of \$5,000 per month for twelve months, payable quarterly in advance. During the year ended December 31, 2015, the Company paid Orchestra \$15,000. The consulting agreement expired on April 11, 2015 and the Company was not obligated to make future payments. On September 20, 2016, the Company entered into a new consulting agreement with Orchestra for similar services as provided under the previous agreement (the "2016 Consulting Agreement"). The term of the 2016 Consulting Agreement commenced on September 20, 2016 and will expire on March 20, 2017, subject to renewal upon mutual agreement of the parties. Pursuant to the terms of the 2016 Consulting Agreement, the Company will pay to Orchestra cash compensation in an aggregate amount of \$100,000, payable in equal monthly installments over the six-month term of the 2016 Consulting Agreement. In connection with this agreement, the Company granted an equity incentive award to Orchestra consisting of options to purchase 50,000 shares of the Company's common stock at an exercise price of \$7.14 per share pursuant to the Company's 2014 Equity Compensation Plan, which amounted to stock-based compensation expense of approximately \$222,000 during the year ended December 31, 2016.

The Company entered into a non-exclusive financial advisory agreement with Aegis under which the Company paid Aegis \$200,000 upon the execution of the agreement, which commenced on September 1, 2015 and expired on November 30, 2015. The Company also paid Aegis a warrant solicitation fee of \$309,215 in connection with the exercise of warrants that were called and exercised in the third quarter of 2015.

One of the former members of the Company's scientific advisory board was considered an affiliate of the Company as he owned more than 10% of the Company's common stock as of December 31, 2015. This individual's ownership of the Company's common stock was less than 10% as of December 31, 2016.

#### **14. DEVELOPMENT AWARD**

On April 20, 2015, the Company entered into an award agreement with the CFFT, a non-profit drug discovery and development affiliate of the Cystic Fibrosis Foundation, pursuant to which it received a development award (the "Award") for up to \$5 million in funding. The funding from the Award is supporting a first-in-patient Phase 2 clinical trial of the Company's oral anti-inflammatory drug JBT-101 in adults with cystic fibrosis ("CF"). The Company has billed and received a total of \$4.5 million in payments since the inception of the Award as outlined below. The payments received under the award have been recorded as deferred revenue and are being amortized on a straight-line basis over the expected duration of the performance period under the Award, which is expected to conclude in the second quarter of 2017.

Upon the execution of the Award agreement, the Company received a payment of \$1,250,000 in May 2015. In November 2015, the Company received a second payment of \$1,250,000 upon the achievement of a milestone for dosing the first patient. In August 2016, the Company received a third payment from the CFFT in the amount of \$1,000,000 for achieving a milestone in July 2016 related to dosing the median clinical trial patient. In January 2017, the Company received a fourth payment from the CFFT in the amount of \$1,000,000 for achieving a milestone in December 2016 related to completing the final visit for the final patient), which was billed by the Company to CFFT in December 2016 and was classified in grants receivable as of December 31, 2016. The Company expects that the last milestone payment of \$500,000 under the Award will be recorded in the second quarter of 2017 upon the achievement of the final milestone related to the Phase 2 CF clinical trial, as set forth in the Award agreement.

Pursuant to the terms of the Award agreement, the Company is obligated to make royalty payments to CFFT contingent upon commercialization of JBT-101 in the Field of Use (as defined in the Award agreement) including a royalty payment equal to five times the amount the Company receives under the Award agreement, up to \$25 million, payable in three equal annual installments following the first commercial sale of JBT-101, the first of which is due within 90 days following the first commercial sale of JBT-101. The Company is also obligated to make a royalty payment to CFFT equal to the amount the Company receives under the Award agreement, up to \$5 million, due in the first calendar year in which the aggregate cumulative net sales of JBT-101 in the Field of Use exceed \$500 million. Lastly, the Company is obligated to make royalty payment(s) to CFFT of up to approximately \$15 million if the Company transfers, sells or licenses JBT-101 in the Field of Use other than for certain clinical or development purposes, or if the Company enters into a change of control transaction, with such payment(s) to be credited against the royalty payments due upon commercialization. The Field of Use is defined in the Award as the treatment in humans of CF, asbestosis, bronchiectasis, byssinosis, chronic bronchitis/COPD hypersensitivity pneumonitis, pneumoconiosis, primary ciliary dyskinesia, sarcoidosis and silicosis. Either CFFT or the Company may terminate the agreement for cause, which includes the Company's material failure to achieve certain commercialization and development milestones. The Company's payment obligations survive the termination of the Award agreement.

#### **15. SUBSEQUENT EVENTS**

##### *Evergreen Provision*

Pursuant to the terms of an annual evergreen provision in the 2014 Plan, the number of shares of common stock available for issuance under the 2014 Plan shall automatically increase on January 1 of each year by at least seven percent (7%) of the total number of shares of common stock outstanding on December 31st of the preceding calendar year, or, pursuant to the terms of the 2014 Plan, in any year, the Board of Directors may determine that such increase will provide for a lesser number of shares. In accordance with the terms of the 2014 Plan, effective as of January 1, 2017, the number of shares of common stock available for issuance under the 2014 Plan increased by 3,127,722 shares, such amount being seven percent (7%) of the outstanding shares of common stock on December 31, 2016. As of January 1, 2017, the 2014 Plan had a total reserve of 13,043,739 shares and there were 5,967,855 shares available for future grants.

##### *Registered Direct Offering*

On February 28, 2017, the Company entered in a securities purchase agreement with institutional and accredited investors providing for the issuance and sale by the Company of 3,887,815 shares of its common stock in a registered direct offering to investors at a purchase price of \$7.00 per share with gross proceeds to the Company totaling approximately \$27,214,705 less estimated issuance costs of approximately \$100,000.



**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the incorporation by reference in the Registration Statements of Corbus Pharmaceuticals Holdings, Inc. and Subsidiary on Form S-3 (No. 333-207936) and Form S-8 (Nos. 333-200350 and 333-201898 and 333-210428) of our report dated March 8, 2017, on our audits of the consolidated financial statements as of December 31, 2016 and 2015 and for each of the years then ended, which report is included in this Annual Report on Form 10-K to be filed on or about March 8, 2017.

*/s/ EISNERAMPER LLP*

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Iselin, New Jersey  
March 8, 2017

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**CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT  
TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Yuval Cohen, certify that:

- 1 I have reviewed this annual report on Form 10-K for the period ended December 31, 2016 of Corbus Pharmaceuticals Holdings, 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)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) 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) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - 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 8, 2017

/s/ Yuval Cohen

Yuval Cohen  
Chief Executive Officer  
(Principal Executive Officer)

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**CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT  
TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Sean M. Moran, certify that:

1. I have reviewed this annual report on Form 10-K for the period ended December 31, 2016 of Corbus Pharmaceuticals Holdings, 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)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) 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. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - 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 8, 2017

/s/ Sean Moran

Sean Moran  
Chief Financial Officer  
(Principal Accounting and Financial Officer)

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**Certification of Chief Executive Officer Pursuant to  
18 U.S.C. Section 1350,  
as Adopted Pursuant to  
Section 906 of the Sarbanes-Oxley Act of 2002**

This Certification is being filed pursuant to 18 U.S.C. Section 1350, as adopted by Section 906 of the Sarbanes-Oxley Act of 2002. This Certification is included solely for the purposes of complying with the provisions of Section 906 of the Sarbanes-Oxley Act and is not intended to be used for any other purpose. In connection with the accompanying Annual Report on Form 10-K of Corbus Pharmaceuticals Holdings, Inc. for the year ended December 31, 2016, each of the undersigned hereby certifies in his capacity as an officer of Corbus Pharmaceuticals Holdings, Inc. that to such officer's knowledge:

(1) The Annual Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Annual Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 8, 2017

By: */s/ Yuval Cohen*

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Yuval Cohen  
Chief Executive Officer  
(Principal Executive Officer)

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**Certification of Chief Financial Officer Pursuant to  
18 U.S.C. Section 1350,  
as Adopted Pursuant to  
Section 906 of the Sarbanes-Oxley Act of 2002**

This Certification is being filed pursuant to 18 U.S.C. Section 1350, as adopted by Section 906 of the Sarbanes-Oxley Act of 2002. This Certification is included solely for the purposes of complying with the provisions of Section 906 of the Sarbanes-Oxley Act and is not intended to be used for any other purpose. In connection with the accompanying Annual Report on Form 10-K of Corbus Pharmaceuticals Holdings, Inc. for the year ended December 31, 2016, each of the undersigned hereby certifies in his capacity as an officer of Corbus Pharmaceuticals Holdings, Inc. that to such officer's knowledge:

(1) The Annual Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Annual Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 8, 2017

By: /s/ Sean Moran

Sean Moran  
Chief Financial Officer  
(Principal Accounting and Financial Officer)

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