RespireRx Pharmaceuticals Inc.
Form 10-K
April 17, 2018

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

[X] Annual Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the fiscal year ended December 31, 2017

OR

[ ] Transition Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Commission file number 1-16467

RespireRx Pharmaceuticals Inc.

(Exact name of registrant as specified in its charter)

Delaware	**33-0303583**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

126 Valley Road, Suite C

Glen Rock, New Jersey 07452

(Address of principal executive offices, including zip code)

(201) 444-4947

(Registrant's telephone number, including area code)

Securities registered under Section 12(b) of the Act: None

Securities registered under Section 12(g) of the Act:

Common Stock, $0.001 par value

(Title of Class)

Indicate by check mark whether the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES [ ] NO [X]

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

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 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 [X] 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 during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). YES [X] NO [ ]

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of 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, a smaller reporting company or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer,” “smaller reporting company” and “emerging growth company” in Rule 12b-2 of the Exchange Act.

Large accelerated filer [ ] Accelerated filer [ ] Non-accelerated filer [ ] Smaller reporting company [X] Emerging growth co
(Do not check if a smaller reporting company)

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. [ ]

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

The aggregate market value of the voting stock held by non-affiliates as of June 30, 2017 was approximately $3,567,000 (based on the closing sale price of the common stock as reported by the OTC QB) on June 30, 2017.

As of March 31, 2018, there were 3,123,332 shares of the registrant’s common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE: NONE

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In this Annual Report on Form 10-K, the terms “RespireRx,” the “Company,” “we,” “us” and “our” refer to RespireRx Pharmaceuticals Inc. (f/k/a Cortex Pharmaceuticals, Inc.), a Delaware corporation, and, unless the context indicates otherwise, its consolidated subsidiaries.

INTRODUCTORY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K of RespireRx Pharmaceuticals Inc. (“RespireRx” or the “Company”) contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 (the “Exchange Act”) and the Company intends that such forward-looking statements be subject to the safe harbor created thereby. These forward-looking statements are contained principally in the sections entitled “Business,” “Risk Factors,” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” These might include statements regarding the Company’s future plans, targets, estimates, assumptions, financial position, business strategy and other plans and objectives for future operations, and assumptions and predictions about research and development efforts, including, but not limited to, preclinical and clinical research design, execution, timing, costs and results, future product demand, supply, manufacturing, costs, marketing and pricing factors are all forward-looking statements.

In some cases, forward-looking statements may be identified by words including “anticipates,” “believes,” “intends,” “estimates,” “expects,” “plans,” “contemplates,” “targets,” “continues,” “budgets,” “may” and similar expressions include, but limited to, statements regarding (i) future research plans, expenditures and results, (ii) potential collaborative arrangements, (iii) the potential utility of the Company’s proposed products, and (iv) the need for, and availability of, additional financing.

The forward-looking statements included herein are based on current expectations that involve a number of risks and uncertainties. These forward-looking statements are based on assumptions regarding the Company’s business and technology, which involve judgments with respect to, among other things, future scientific, economic and competitive conditions, and future business decisions, all of which are difficult or impossible to predict accurately and many of which are beyond the Company’s control. Although the Company believes that the assumptions underlying the forward-looking statements are reasonable, actual results may differ materially from those set forth in the forward-looking statements. In light of the significant uncertainties inherent in the forward-looking information included herein, the inclusion of such information should not be regarded as a representation by the Company or any other person that the Company’s objectives or plans will be achieved.

Factors that could cause or contribute to such differences include, but are not limited to, regulatory policies or changes thereto, available cash, research and development results, competition from other similar businesses, and market and general economic factors.

For more information about the risks and uncertainties the Company faces, see “Item 1A. Risk Factors” of this Annual Report on Form 10-K. Forward-looking statements speak only as of the date they are made. The Company does not undertake and specifically declines any obligation to update any forward-looking statements or to publicly announce the results of any revisions to any statements to reflect new information or future events or developments.

PART I

Item 1. Business

Since its formation in 1987, the Company has engaged in the discovery, development and commercialization of innovative pharmaceuticals for the treatment of neurological and psychiatric disorders. In 2011, however, we conducted a re-evaluation of our strategic focus and determined that clinical development in the area of respiratory disorders, particularly sleep apneas and respiratory depression produced by drugs and neural damage, provided the most cost-effective opportunities for potential rapid development and commercialization of our compounds. As a result of our scientific discoveries and the acquisition of strategic, exclusive license agreements, we believe we are now a leader in the discovery and development of innovative pharmaceuticals for the treatment of respiratory disorders.

There is a substantial unmet need for new drug treatments for breathing disorders. According to a study commissioned by the American Academy of Sleep Medicine, published in August 2016 ("AASM Commissioned Study"), there are approximately 29.4 million adults with obstructive sleep apnea, of whom 5.9 million are diagnosed. Sleep apnea places a considerable burden on society and the health care system because of its association with co-morbidities and adverse events ranging from vehicular (for example: cars, trucks, trains, buses) and industrial accidents, and loss of productivity to increased risk of cardiopulmonary illness and related death. According to the AASM Commissioned Study, the estimated overall cost of obstructive sleep apnea in the United States in 2015 was $162 billion, of which $12.4 billion relates to diagnosis and treatment and the balance relates to all other categories. No drugs currently are approved for the treatment of sleep apnea.

Even in patients without sleep apneas, the use of drugs such as propofol, used as an anesthetic during surgery, and opioid analgesics such as morphine and oxycodone, used during anesthesia and for the treatment of post-surgical and chronic pain, are well known for producing respiratory depression which is a form of apnea. In fact, while respiratory depression is the leading cause of death from the overdose of most classes of abused drugs, it also arises during normal, physician-supervised procedures such as surgical anesthesia, post-operative analgesia and as a result of normal outpatient management of pain.

Although opioid antagonists such as naloxone (Narcan) and nalmefene (Revex) can reverse respiratory depression associated with opioids, they have several major shortcomings. First and foremost, these opioid antagonists do not reverse the respiratory depression produced by other classes of drugs often given/taken either alone or in combination with opioids. Second, while these drugs reverse the serious side effects of the opioids, they also dramatically reduce their analgesic effectiveness. Third, the side effects of opioid antagonists are themselves serious and include seizures, agitation, convulsions, tachycardia, hypotension, nausea, and vomiting.

Furthermore, respiratory depression can arise as a result of a number of other illnesses that involve neural and muscular disorders. For example, certain spinal injuries can interfere with normal neural communication between the brain and the lungs resulting in reduced respiratory capacity. Pompe Disease is an autosomal, recessive, metabolic disorder that damages muscle and nerve cells throughout the body. One of the first symptoms is a progressive decrease in the strength of muscles such as the diaphragm and other muscles required for breathing and respiratory failure is the most common cause of death. In both of these indications, symptomatic treatment for the respiratory depression is severely lacking.

Accordingly, there is a considerable need for pharmaco-therapeutic agents to (i) treat sleep apnea, (ii) prevent and reverse the respiratory depression produced by different classes of drugs, and (iii) relieve the respiratory depression produced in a number of neurological indications, such as spinal injury and Pompe Disease. The Company currently has two drug platforms, each with a clinical stage compound directed at these needs.

Sleep Apnea

Sleep apnea is a serious disorder in which breathing repeatedly stops long enough to disrupt sleep, and temporarily decreases the amount of oxygen and increases the amount of carbon dioxide in the blood. Apnea is defined by more than five periods per hour of ten seconds or longer without breathing. The repetitive cessation of breathing during sleep has substantial impact on the affected individuals. The disorder is associated with major co-morbidities including excessive daytime sleepiness and increased risk of cardiovascular disease (such as hypertension, stroke and heart failure), diabetes and weight gain. Sleep apnea is often made worse by central nervous system depressants such as opioids, benzodiazepines, barbiturates and alcohol. It is therefore important for these patients to seek treatment.

The most common type of sleep apnea is obstructive sleep apnea ("OSA"), which occurs by narrowing or collapse of the pharyngeal airway during sleep. There is currently no approved pharmacotherapy, and the most common treatment is to use continuous positive airway pressure ("CPAP") delivered via a nasal or full-face mask, as long as patients are able to tolerate the treatment. We believe that patient compliance with CPAP devices is extremely low. Alternative treatments include surgical intervention, dental appliances, hypoglossal nerve stimulation (via surgical implant) and other physical interventions. Given the large patient population and the limited treatment options, there is a very large opportunity for pharmacotherapy to treat this disorder.

Central sleep apnea ("CSA"), a less frequently diagnosed type of sleep apnea, is caused by alterations in the brain mechanisms responsible for maintaining normal respiratory drive. CSA is most frequently observed in patients taking chronic opioids and in heart failure patients and is a major correlate for mortality in these patients. There are no therapeutic options for patients with CSA; CPAP is contra-indicated for the treatment of CSA and no drugs are currently approved for this indication.

In addition, many patients present with a pattern of sleep apnea that has both obstructive and central components.

Cannabinoids

RespireRx is developing dronabinol, a synthetic derivative of a naturally occurring substance in the cannabis plant, otherwise known as Δ9-THC or Δ9-tetrahydrocannabinol, for the treatment of OSA which is discussed above. OSA has been linked to increased risk for hypertension, heart failure, depression, and diabetes. There are no approved drug treatments for OSA.

RespireRx holds the exclusive world-wide license to a family of patents for the use of cannabinoids, a family of compounds found naturally in the cannabis plant, including the synthetic cannabinoid dronabinol, in the treatment of sleep disordered breathing from the University of Illinois at Chicago ("UIC"). In addition, RespireRx has several extensions and pending applications that, if issued, will extend patent protection for over a decade. With approximately $5 million in funding from the National Heart, Lung and Blood Institute of the National Institutes of Health, UIC completed a Phase 2B multi-center, double-blind, placebo-controlled clinical trial of dronabinol in patients with OSA. Entitled **P**harmacotherapy of **A**pnea with **C**annabimimetic **E**nhancement ("PACE"), this study replicated an earlier Phase 2A RespireRx sponsored clinical trial and demonstrated statistically significant improvements in respiration, daytime sleepiness, and patient satisfaction after administration of dronabinol and is discussed in more detail below.

RespireRx believes that the most direct route to commercialization is to proceed directly to a Phase 3 pivotal trial using the currently available dronabinol formulation (2.5, 5 and 10 mg gel caps) and to then commercialize a RespireRx branded dronabinol capsule ("RBDC").

The Company also believes that there are numerous opportunities for reformulation of dronabinol to produce a second generation proprietary, branded product for the treatment of OSA with an improved profile. Therefore, simultaneously with its development of the RBDC, RespireRx plans to develop a proprietary dronabinol formulation to optimize the dose and duration of action for treating OSA.

RespireRx initiated its dronabinol program when it acquired 100% of the issued and outstanding equity securities of Pier Pharmaceuticals, Inc. ("Pier") effective August 10, 2012 pursuant to an Agreement and Plan of Merger. Pier was formed in June 2007 (under the name SteadySleep Rx Co.) as a clinical stage pharmaceutical company to develop a pharmacologic treatment for OSA and had been engaged in research and clinical development activities.

Prior to the merger, Pier conducted a 21 day, randomized, double-blind, placebo-controlled, dose escalation Phase 2 clinical study in 22 patients with OSA, in which dronabinol produced a statistically significant reduction in the Apnea-Hypopnea Index, the primary therapeutic end-point, and was observed to be safe and well tolerated.

Through the merger, RespireRx gained access to a 2007 Exclusive License Agreement (as amended, the "Old License") that Pier had entered into with the University of Illinois on October 10, 2007. The Old License covered certain patents and patent applications in the United States and other countries claiming the use of cannabinoids, including dronabinol, for the treatment of sleep-related breathing disorders (including sleep apnea).

Dronabinol is a Schedule III, controlled generic drug with a relatively low abuse potential that is approved by the U.S. Food and Drug Administration (the "FDA") for the treatment of AIDS-related anorexia and chemotherapy-induced emesis. The use of dronabinol for the treatment of OSA is a novel indication for an already approved drug and, as such, the Company believes that it would only require approval by the FDA of a 505(b)(2) new drug application, an efficient regulatory pathway.

The Old License was terminated effective March 21, 2013, due to the Company's failure to make a required payment. Subsequently, current management opened negotiations with the University of Illinois, and as a result, the Company entered into a new license agreement (the "2014 License Agreement") with the University of Illinois on June 27, 2014, the material terms of which were similar to the Old License.

Similar to the Old License, the 2014 License Agreement grants the Company, among other provisions, exclusive rights: (i) to practice certain patents and patent applications, as defined in the 2014 License Agreement, that are held by the University of Illinois; (ii) to identify, develop, make, have made, import, export, lease, sell, have sold or offer for sale any related licensed products; and (iii) to grant sub-licenses of the rights granted in the 2014 License Agreement, subject to the provisions of the 2014 License Agreement. The Company is required under the 2014 License Agreement, among other terms and conditions, to pay the University of Illinois a license fee, royalties, patent costs and certain milestone payments.

On November 30, 2017, the Company announced the publication by the principal investigators, Dr. Phyllis Zee of Northwestern University and Dr. David Carley of the University of Illinois at Chicago, in the peer-reviewed journal SLEEP, the official publication of the Sleep Research Society, of the positive results of the potentially pivotal, PACE (Pharmacotherapy of Apnea by Cannabimimetic Enhancement) Phase 2B OSA clinical trial, that was fully funded by the National Institutes of Health. The results from PACE were published in the journal Sleep Vol. 41. No. 1, 2018. The results of the PACE clinical trial were previously presented by Dr. Carley at the SLEEP 2017 annual meeting in June 2017. In the PACE trial, dronabinol significantly improved the primary outcome measures of Apnea Hypopnea Index (“AHI”), daytime sleepiness as measured by the Epworth Sleepiness Scale (“ESS”), and overall patient satisfaction as measured by the Treatment Satisfaction Questionnaire for Medications (“TSQM”).

The recently completed PACE trial was a fully-blinded, two-center, Phase II, randomized placebo-controlled trial of dronabinol in 56 adult patients with moderate to severe OSA. By random assignment, 56 adult subjects with BMI<45, Epworth Sleepiness Scale (ESS)>7 and PSG-documented AHI between 15 and 50 received either placebo (N=17), 2.5mg (N=19) or 10.0mg (N=20) of dronabinol daily, one hour before bedtime for 6 weeks. Repeat in- laboratory PSG followed by maintenance of wakefulness (MWT) testing was completed every 2-weeks during the treatment period. At each visit, the ESS and Treatment Satisfaction Questionnaire for Medications also were completed.

Overall, baseline AHI was 26.0±11.6 (SD) and this was equivalent among all treatment groups. In comparison to placebo, statistically significant end of treatment declines in AHI were observed for both the 2.5 and 10 mg doses (-9.7±4.1, p=0.02 and -13.2±4.0, p=0.001, respectively). Statistically significant declines in ESS were observed for subjects receiving 10 mg dronabinol (-4.0±0.8 units, p=0.001) but not those receiving 2.5 mg or placebo. Subjects receiving 10 mg dronabinol also expressed the greatest overall satisfaction with treatment (p=0.02).

The PACE trial enrolled 73 subjects of which 56 were evaluable with moderate to severe OSA who met all inclusion and exclusion criteria for the study. At baseline, overall apnea/hypopnea index (AHI) was 25.9±11.3, Epworth Sleepiness Scale score (ESS) was 11.45±3.8, maintenance of wakefulness test (MWT) mean latency was 19.2±11.8 min, body mass index (BMI) was 33.4±5.4 kg/m2 and age was 53.6±9.0 years. Subjects were randomized to receive placebo, 2.5 mg or 10 mg dronabinol. Randomized subjects completed daily self-administration of study drug for 6 weeks, and returned to the laboratory every 2 weeks for overnight polysomnography (PSG), physical examination, and completion of clinical study procedures.

Subjects receiving 10mg/day of dronabinol expressed the highest overall satisfaction with treatment (p=0.04). In comparison to placebo, dronabinol dose-dependently reduced AHI by 10.7±4.4 (p=0.02) and 12.9±4.3 (p=0.003) events/hour at doses of 2.5 and 10 mg/day, respectively. Dronabinol at 10 mg/day reduced ESS score by -3.8±0.8 points from baseline (p<0.0001) and by -2.3±1.2 points in comparison to placebo (p=0.05). Body weights, MWT sleep latencies, gross sleep architecture and overnight oxygenation parameters were unchanged from baseline in any treatment group. The number and severity of adverse events, and treatment adherence (0.3±0.6 missed doses/week) were equivalent among all treatment groups.

Drug-induced Respiratory Depression or Drug-induced apnea

Drug-induced respiratory depression ("RD") or drug-induced apnea is a life-threatening condition caused by a variety of depressant drugs, including analgesic, hypnotic, and anesthesia medications. We believe that RD is a leading cause of death from the overdose of some classes of abused drugs, yet it also arises during normal, physician-supervised procedures such as surgical anesthesia and post-operative pain management. For example, in the hospital setting, anesthetics such as propofol are well known for their propensity to produce RD, particularly when combined with opioids. According to data from the National Center for Health Statistics, 48 million surgical inpatient procedures were performed in the United States in 2009. It is notable that, according to the HealthGrades Inc. Patient Safety in American Hospitals Study released in 2011, post-operative respiratory failure produces the third highest number of patient safety events, the fourth highest mortality rate, and the second largest overall excess cost to the Medicare system, when compared to other patient safety indicators. The Company believes that, in these patients, the major risk factor for the appearance of RD is a history of sleep apnea.

In the hospital setting, one of the most serious complications of patient-controlled analgesia is RD and, despite nurses' vigilance, adverse events associated with opioids continue to increase. Drug-induced RD is associated with a high mortality rate relative to other adverse drug events. In post-surgical patients taking opioids for pain management, sleep apnea is a major risk factor for the occurrence of RD. If patients with sleep apnea are receiving combination therapies, they are at even higher risk for complications and extended hospital stays.

Outside the hospital, the primary risk factor for RD is the use of a single opioid in large doses or concomitant use of opioids and sedative agents. Whether due to normal outpatient pain management, or as a result of substance abuse, RD has been reported to be the leading cause of death from drug overdose, with the drug overdose death rate tripling since 1991. In patients chronically consuming opioids, CSA is a major correlate for overdose and most likely represents an early and sensitive form of opioid induced RD. In August 2017, the Centers for Disease Control and Prevention ("CDC") reported that approximately 42,000 people died in 2016 from opioid overdoses, including prescription opioids and illegally made fentanyl and heroin. The CDC reported that the common prescription drugs involved in overdoses were methadone, oxycodone (such as OxyContin®) and hydrocodone (such as Vicodin®). In 2016, the CDC reported that 40% of all US opioid deaths involved a prescription opioid. There were 13,000 heroin deaths in 2015. There are two types of fentanyl, pharmaceutical fentanyl used to manage acute and chronic pain and non-pharmaceutical fentanyl that is illicitly manufactured and is often mixed with heroin or cocaine. The CDC also reported that most of the increases in fentanyl deaths involved the illicit fentanyl and not the pharmaceutical fentanyl.

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Drug Abuse

On January 19, 2016, the Company announced that that it had reached an agreement with the Medications Development Program of the National Institute of Drug Abuse ("NIDA") to conduct research on the Company's ampakine compounds CX717 and CX1739. The agreement was entered into as of October 19, 2015, and on January 14, 2016, the Company and NIDA approved the proposed protocols, allowing research activities to commence. NIDA is evaluating the compounds using pharmacologic, pharmacokinetic and toxicologic protocols to determine the potential effectiveness of the ampakines for the treatment of drug abuse and addiction. The Company retains all intellectual property as well as proprietary and commercialization rights to the Company's compounds. Initial studies focus on cocaine and methamphetamine addiction and abuse and are contracted to outside testing facilities and/or government laboratories, with all costs paid by NIDA. In experiments conducted by NIDA, CX717 antagonized the stimulatory effects of methamphetamine. NIDA is in the process of testing CX717 on the interoceptive effects (determinants of addiction liability) of both cocaine and methamphetamine in models of drug discrimination in rats.

Ampakines

RespireRx is developing a class of proprietary compounds known as ampakines, a term used to designate their actions as positive allosteric modulators of the alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid ("AMPA") glutamate receptor. Ampakines are small molecule compounds that enhance the excitatory actions of the neurotransmitter, glutamate at the AMPA receptor complex, which mediates most excitatory transmission in the central nervous system ("CNS"). These drugs do not have agonistic or antagonistic properties but instead modulate the receptor rate constants for transmitter binding, channel opening, and desensitization

Through an extensive translational research effort from the cellular level through Phase 2 clinical trials, the Company has developed a family of ampakines, including CX717, CX1739 and CX1942 that have clinical application in the treatment of CNS-driven respiratory disorders, neurobehavioral disorders, spinal cord injury, neurological diseases, and orphan indications. In particular, we are addressing CNS-driven respiratory disorders that affect millions of people, but for which there are few treatment options and no drug therapies, including opioid induced respiratory disorders, such as apnea (transient cessation of breathing) and hypopnea (transient reduction in breathing). When these symptoms become severe, as in opioid overdose, they are the primary cause of opioid lethality. In addition, we are developing our ampakines for the treatment of disordered breathing and motor impairment resulting from spinal cord injury.

Early preclinical and clinical research suggested that these ampakines might have therapeutic potential for the treatment of memory and cognitive disorders, depression, attention deficit disorder and schizophrenia. Given our current focus on respiratory disorders, we may seek to partner, out-license or sell our rights to the use of ampakine compounds for the treatment of neurological and psychiatric indications, as we focus on the development of our

compounds for the treatment of breathing disorders.

The early ampakines discovered by the Company, Eli Lilly and Company, and others were ultimately abandoned due to the presence of undesirable side effects, particularly convulsive activity. Subsequently, Company scientists discovered a new, chemically distinct series of molecules termed “low impact” as opposed to the “high impact” designation given to the earlier compounds. While these low impact compounds share many pharmacological properties with the high impact compounds, they do not produce convulsive effects in animals. These low impact compounds do not bind to the same molecular site as the high impact compounds and, as a result, do not produce the undesirable electrophysiological and biochemical effects that lead to convulsive activity.

The Company owns patents and patent applications for certain families of chemical compounds that claim the chemical structures, their actions as ampakines and their use in the treatment of various disorders. Patents claiming a family of chemical structures, including CX1739 and CX1942, as well as their use in the treatment of various disorders, extend through at least 2028. Additional patents claiming a family of chemical structures, including CX717, as well as their use in the treatment of various disorders, expired in 2017 in the U.S. and will expire in 2018 internationally. The Company is developing potential market exclusivity strategies for CX717 which may include new patent applications and identifying market opportunities and strategies that may provide exclusivity without patents.

In order to broaden the use of the Company’s ampakine technology into the area of respiratory disorders, on May 8, 2007, the Company entered into a license agreement, as subsequently amended, with the University of Alberta granting the Company exclusive rights to practice patents held by the University of Alberta claiming the use of ampakines for the treatment of various respiratory disorders, including drug induced respiratory depression. These patents extend through at least 2028 and, along with the Company’s own patents claiming chemical structures, comprise the Company’s principal intellectual property supporting the Company’s research and clinical development program in the use of ampakines for the treatment of respiratory disorders.

The Company has obtained preclinical results indicating that several of its low impact ampakines, including CX717, CX1739 and CX1942, were able to antagonize the respiratory depression caused by opioids, barbiturates and anesthetics without offsetting the analgesic effects of the opioid or the sedative effects of the anesthetics. Dr. John Greer, faculty member of the Department of Physiology, Perinatal Research Centre, and Women & Children’s Health Research Institute at the University of Alberta, has shown that these ampakine effects are due to a direct action on neurons in pre-Botzinger’s complex, a brain stem region responsible for regulating respiratory drive.

After several Phase 1 and 2 studies to demonstrate safety and tolerability, the first of these low impact compounds, CX717, was tested in two Phase 2A clinical studies to determine its ability to antagonize the respiratory depressant effects of fentanyl, a potent opioid analgesic. In both of these studies, one of which was published in a peer-reviewed journal, CX717 antagonized the respiratory depression produced by fentanyl without altering the analgesia produced by this drug.

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Despite the loss in 2017 and impending loss in 2018, of U.S. patents and international patents claiming composition-of-matter and certain non-respiratory uses for CX717, the Company believes that CX717 stills retains considerable value as a potential, commercial product, for the following reasons. The Company owns or controls patents claiming the use of CX717 for the treatment of various respiratory disorders that are in effect in the United States and elsewhere at least through 2028, and additional method of treatment patents are planned and are being prepared. Long term preclinical safety studies have been completed and are sufficient to support chronic dosing of CX717 in humans for six months. In nine Phase 1 and Phase 2 clinical studies, CX717 was safe and well tolerated. CX717 has demonstrated the ability to antagonize the respiratory effects of fentanyl, a potent opioid, in two clinical trials, demonstrating target site engagement as well as proof of principle. Promising results also have been observed in clinical trials of attention deficit hyperactivity disorder and cognition. Finally, while CX717 was put on temporary clinical hold by the FDA due to potential neurotoxicity, this hold was completely removed and the Company was allowed to re-initiate clinical trials. This lifting of the clinical hold resulted from the Company obtaining what it believes to be conclusive data showing that the presumed neurotoxicity observed after administration of very high doses of CX717 results from a post-mortem artifact. On December 18, 2017, the Company announced that a paper detailing the neurobiologic safety of CX717 had been accepted for publication by Toxicological Sciences, the Journal of the American Society of Toxicology. The paper, co-authored by RespireRx scientists in conjunction with expert pathologists from around the country who contributed to an extensive neuropathology research program, presents clear scientific evidence that vacuoles that were discovered upon histological evaluation of brain tissue samples from animals treated with high doses of CX717, and which halted the company’s promising CX717 clinical development effort, were actually an artifact of tissue processing rather than a toxic drug effect.

In several Phase 1 clinical studies, the Company’s present lead ampakine, CX1739, has demonstrated good safety and tolerability after single doses up to 1200 mg for seven days, as well as two doses per day of 600 mg each for ten days. Pharmacokinetic results to date from the volunteers who have taken CX1739 show that drug absorption over the range of 50 mg to 1200 mg was linear and predictable, with an approximate half-life of 8 hours.

The Company filed an IND with the FDA in September 2015 to conduct a randomized, double-blind, placebo-controlled, crossover, Phase 2A study of CX1739 (300 mg) versus placebo, followed by dose escalation of CX1739 to 600 and 900 mg, with open-label administration of the IV opioid remifentanil in approximately 18 healthy subjects to assess the ability of CX1739 to antagonize the respiratory depressive effect of remifentanil without altering the analgesic effect of the opioid. The clinical protocol was designed to evaluate the safety and efficacy of CX1739 to antagonize respiratory depression in two models of opioid use and abuse. During REMI-INFUSION, a model of chronic (steady state) opioid use, respiration, pain, pulmometry, and safety were measured during a 30-minute intravenous infusion of remifentanil that produced stable blood levels. During REMI-BOLUS, a model of acute, intravenous opioid overdose, a single, intravenous bolus injection of remifentanil was administered at a dose calculated to achieve significant respiratory depression.

On each study day, REMI-BOLUS was initiated with an intravenous, bolus injection of remifentanil 3 hours after subjects received either placebo or CX1739. Respiration was measured for 20 minutes and then compared to the baseline respiration recorded 5 minutes prior to the bolus injection. REMI-INFUSION was initiated 3.5 hours after placebo or CX1739, with an intravenous infusion protocol designed to maintain stable remifentanil blood levels and

calculated to produce approximately 50% respiratory depression. The ClinicalTrials.gov identifier is NCT02735629.

The commencement of this clinical trial was subject to the resolution of two deficiencies raised by the FDA in its clinical hold letter issued in November 2015, which were satisfactorily resolved in early 2016. As a result, the FDA removed the clinical hold on the Company's IND for CX1739 on February 25, 2016, thus allowing for the initiation of the clinical trial. In March 2016, upon Institutional Review Board approval, the trial was initiated at the Duke Clinical Research Unit, Duke University Medical Center, Durham NC. The dosing and data acquisition phase of the clinical trial was completed in June 2016 and the clinical trial was formally completed on July 11, 2016.

On September 12, 2016, the Company announced preliminary top-line analysis of safety and efficacy data from this clinical trial. On October 3, 2016, the Company discovered an error in the preliminary data reported to it and accordingly, on October 4, 2016, the Company issued a press release retracting the efficacy data contained in the September 12, 2016 press release. On December 15, 2016, the Company announced the corrected results of the trial, and presented the re-analyzed data, as follows.

During REMI-INFUSION, the model of chronic opioid use, CX1739 antagonized the respiratory rate depression produced by remifentanil, with statistically significant effects observed at 300 mg ($p<.005$) and 900 mg ($p<.001$). The antagonism produced by the 600 mg dose did not achieve statistical significance. This lack of a linear, dose response effect is not unusual in early stage clinical trials. During this period, CX1739 did not alter the analgesic and sedative effects of remifentanil. During REMI-BOLUS, the model of IV opioid overdose, CX1739 treatment did not prevent respiratory depression, or improve time to recovery at any of the doses tested.

Overall, CX1739 was found to be safe and well tolerated, both prior to and during administration of remifentanil. Treatment-related adverse events ("AEs") for the various doses of CX1739 were mild, with an incidence comparable to that reported for placebo. The great majority of AEs occurred after remifentanil administration, including nausea and vomiting, which are common side effects associated with opioid administration.

In addition to CX1739, the Company is developing CX1942, a soluble ampakine, as an injectable formulation in a hospital or surgical setting to be used in conjunction with opioids and anesthetics either during or after surgery. Animal studies conducted in collaboration with investigators at the University of Florida and funded by a Small Business Innovation Research contract from the National Institute of Drug Abuse have indicated that CX1942 injected intravenously, intramuscularly or subcutaneously can reverse the respiratory depression produced by fentanyl. Such data will be used to develop an injectable formulation with the flexibility to be administered via different routes.

As part of its preclinical research program, the Company, through Dr. John Greer, Chairman of the RespireRx Scientific Advisory Board, has engaged in research collaborations with a number of academic institutions. As part of its collaborative program with Dr. David Fuller of the University of Florida, studies with RespireRx's ampakines have determined that these compounds improve breathing in animal models of spinal cord injury and Pompe Disease.

Development Goals

To achieve our short-and long-term development goals, as well as to provide for our day-to-day operations, we will need additional capital, the availability of which is subject to uncertainly. Should sufficient financing be available, the Company's short-term development goals consist of the following:

1. The Company intends to have a pre-IND meeting with the FDA in order to identify a Phase 3 plan, a clear pathway for the commercial development of dronabinol for the treatment of OSA, which also may include a request for some form of an accelerated review.

2.

After establishing a clear development strategy, the Company intends to execute a Phase 3 clinical study of dronabinol for the treatment of OSA.

3. The Company intends to initiate a multi-center clinical trial investigating the ability of CX717 or CX1739 to improve breathing in patients with spinal cord injury. Assuming FDA allowance and appropriate approvals by institutional review boards, we intend to have this study conducted at the University of Miami, the University of Florida, the Detroit Medical Center and the Detroit Veterans Administration Hospital.

4. Upon issuance of the final clinical report of the CX1739 Phase 2A trial, the Company intends to seek FDA allowance to conduct a Phase 2 clinical trial investigating the safety and efficacy of CX1739 in chronic opioid patients who have central apnea.

The Company believes that these goals can be achieved in a timely and cost-effective manner. To meaningfully advance any of the above goals, however, the Company must secure sufficient additional financing or enter into one or more arrangements with strategic partner(s). Although the Company is engaged in a number of discussions with potential strategic partners and is periodically involved in financing activities, the Company has not entered into a strategic partnership and does not have sufficient financing resources to pursue these goals, and can provide no assurance that available or future sources of financing or a strategic partner will be secured to enable the Company to pursue or achieve these goals.

See "Risk Factors—*Risks related to our business*—We will need additional capital in the near term and the future and, if such capital is not available on terms acceptable to us or available to us at all, we may need to scale back our research and development efforts and may be unable to continue our business operations."

Competition

The pharmaceutical industry is characterized by intensive research efforts, rapidly advancing technologies, intense competition and a strong emphasis on proprietary therapeutics. Our competitors include many companies, research institutes and universities that are working in a number of pharmaceutical or biotechnology disciplines to develop therapeutic products similar to those we are currently investigating. Most of these competitors have substantially greater financial, technical, manufacturing, marketing, distribution and/or other resources than we do. In addition, many of our competitors have experience in performing human clinical trials of new or improved therapeutic products and obtaining approvals from the FDA and other regulatory agencies. We have no experience in conducting and managing later-stage clinical testing or in preparing applications necessary to obtain regulatory approvals. We expect that competition in this field will continue to intensify.

Regulation

The FDA and other similar agencies in foreign countries have substantial requirements for therapeutic products. Such requirements often involve lengthy and detailed laboratory, clinical and post-clinical testing procedures and are expensive to complete. It often takes companies many years to satisfy these requirements, depending on the complexity and novelty of the product. The review process is also extensive, which may delay the approval process further. Failure to comply with applicable FDA or other requirements may subject a company to a variety of administrative or judicial sanctions, such as the FDA's refusal to approve pending applications, a clinical hold, warning letters, recall or seizure of products, partial or total suspension of production, withdrawal of the product from the market, injunctions, fines, civil penalties or criminal prosecution.

FDA approval is required before any new drug or dosage form, including the new use of a previously approved drug, can be marketed in the United States. Other similar agencies in foreign countries also impose substantial requirements.

The process of developing drug candidates normally begins with a discovery process of potential candidates that are then initially tested in *in vitro* and *in vivo* non-human animal (preclinical) studies which include, but are not limited to toxicity and other safety related studies, pharmacokinetics, pharmacodynamics and ADME (absorption, distribution, metabolism, excretion). Once sufficient preclinical data are obtained, a company must submit an IND and receive authorization from the FDA in order to begin clinical trials in the United States. Successful drug candidates then move

into human studies that are characterized generally as Phase 1, Phase 2 and Phase 3. Phase 1 studies seeking safety and other data normally utilize healthy volunteers. Phase 2 studies utilize one or more prospective patient populations and are designed to establish safety and preliminary measures of efficacy. Sometimes studies may be referred to as Phase 2A and 2B depending on the size of the patient population. Phase 3 studies are large trials in the targeted patient population, performed in multiple centers, often for longer periods of time and are designed to establish statistically significant efficacy as well as safety in the larger population. Most often the FDA and similar regulatory agencies in other countries require two confirmatory Phase 3 or pivotal studies. Upon completion of both the preclinical and clinical phases, an NDA (New Drug Application) is filed with the FDA or a similar filing is made to the regulatory authority in other countries. NDA filings are extensive and include the data from all prior studies. These filings are reviewed by the FDA and, only if approved, may the company or its partners commence marketing of the new drug in the United States.

There also are variations of these procedures. For example, companies seeking approval for new indications for an already approved drug may choose to pursue an abbreviated approval process such as the filing for an NDA under Section 505(b)(2). Another example would be a Supplementary NDA (“SNDA”). A third example would be an Abbreviated NDA (“ANDA”) claiming bio-equivalence to an already approved drug and claiming the same indications such as in the case of generic drugs. Other opportunities allow for accelerated review and approval based upon several factors, including potential fast-track status for serious medical conditions and unmet medical needs, potential breakthrough therapy designation of the drug for serious conditions where preliminary evidence shows that the drug may show substantial improvement over available therapy or orphan designation (generally, an orphan indication in the United States is one with a patient population of less than 200,000).

As of yet, we have not obtained any approvals to market our products. Further, we cannot assure you that the FDA or other regulatory agency will grant us approval for any of our products on a timely basis, if at all. Even if regulatory clearances are obtained, a marketed product is subject to continual review, and later discovery of previously unknown problems may result in restrictions on marketing or withdrawal of the product from the market. See "Risk Factors—*Risks related to our business*—We are at an early stage of development and we may not be able to successfully develop and commercialize our products and technologies."

Manufacturing

We have no experience or capability to either manufacture bulk quantities of the new compounds that we develop, or to produce finished dosage forms of the compounds, such as tablets or capsules. We rely, and presently intend to continue to rely, on the manufacturing and quality control expertise of contract manufacturing organizations or current and prospective corporate partners. There is no assurance that we will be able to enter into manufacturing arrangements to produce bulk quantities of our compounds on favorable financial terms. There is, however, substantial availability of both bulk chemical manufacturing and dosage form manufacturing capability throughout the world that we believe we can readily access. See "Risk Factors—*Risks related to our business*—We are at an early stage of development and we may not be able to successfully develop and commercialize our products and technologies" for a discussion of certain risks related to the development and commercialization of our products.

Marketing

We have no experience in the marketing of pharmaceutical products and do not anticipate having the resources to distribute and broadly market any products that we may develop. We will therefore continue to seek commercial development arrangements with other pharmaceutical companies for our proposed products for those indications that require significant sales forces to effectively market. In entering into such arrangements, we may seek to retain the right to promote or co-promote products for certain of the orphan drug indications in North America. We believe that there is a significant expertise base for such marketing and sales functions within the pharmaceutical industry and expect that we could recruit such expertise if we choose to directly market a drug. See "Risk Factors—*Risks related to our business*—We are at an early stage of development and we may not be able to successfully develop and commercialize our products and technologies" for a discussion of certain risks related to the marketing of our products.

Employees

As of December 31, 2017 and as of the date of filing of this Annual Report on Form 10-K, the Company employed four people (all officers), three of whom were full time. The Company also engages certain contractors who provide

substantial services to the Company. In February 2017, one employee (officer), the Company's Chief Financial Officer resigned, and his responsibilities were subsequently assigned to one of the remaining officers.

Technology Rights

University of Illinois License Agreement

Through the merger with Pier, the Company gained access to the Old License that Pier had entered into with the University of Illinois on October 10, 2007. The Old License covered certain patents and patent applications in the United States and other countries claiming the use of certain compounds referred to as cannabinoids for the treatment of sleep related breathing disorders (including sleep apnea), of which dronabinol is a specific example of one type of cannabinoid. The Old License was terminated effective March 21, 2013 due to the Company's failure to make a required payment.

On June 27, 2014, the Company entered into the 2014 License Agreement with the Board of Trustees of the University of Illinois that was similar, but not identical, to the Old License. In exchange for certain milestone and royalty payments, patent costs and license fees, the 2014 License Agreement grants the Company (i) exclusive rights to several issued and pending patents, and (ii) the non-exclusive right to certain technical information that is generated by the University of Illinois in connection with certain clinical trials as specified in the 2014 License Agreement, all of which relate to the use of cannabinoids for the treatment of sleep related breathing disorders. The Company is developing dronabinol for the treatment of OSA, the most common form of sleep apnea.

University of Alberta License Agreement and Research Agreement

On May 8, 2007, the Company entered into a license agreement, as subsequently amended, with the University of Alberta granting the Company exclusive rights to practice patents held by the University of Alberta claiming the use of ampakines for the treatment of various respiratory disorders. The Company agreed to pay the University of Alberta a licensing fee and a patent issuance fee, which were paid, and prospective payments consisting of a royalty on net sales, sublicense fee payments, maintenance payments and milestone payments. The prospective maintenance payments commence on the enrollment of the first patient into the first Phase 2B clinical trial and increase upon the successful completion of the Phase 2B clinical trial. As the Company does not at this time anticipate scheduling a Phase 2B clinical trial in the near term, no maintenance payments to the University of Alberta are currently due and payable, nor are any expected to be due in the near future.

On January 12, 2016, the Company entered into a Research Contract with the University of Alberta in order to test the efficacy of ampakines at a variety of dosage and formulation levels in the potential treatment of Pompe Disease, apnea of prematurity and spinal cord injury, as well as to conduct certain electrophysiological studies to explore the ampakine mechanism of action for central respiratory depression. The Company agreed to pay the University of Alberta total consideration of approximately CAD$146,000 (approximately US$108,000), consisting of approximately CAD$85,000 (approximately US$63,000) of personnel funding in cash in four installments during 2016, to provide approximately CAD$21,000 (approximately US$16,000) in equipment, to pay patent costs of CAD$20,000 (approximately US$15,000), and to underwrite additional budgeted costs of CAD$20,000 (approximately US$15,000). As of December 31, 2017, the Company had recorded amounts payable in respect to this Research Contract of US$16,207 (CAD$21,222) which amount was paid in US dollars on January 24, 2018. The conversion to US dollars above utilizes an exchange rate of approximately US$0.76 for every CAD$1.00.

The University of Alberta received matching funds through a grant from the Canadian Institutes of Health Research in support of this research. The Company retains the rights to research results and any patentable intellectual property generated by the research. Dr. John Greer, Ph.D., faculty member of the Department of Physiology, Perinatal Research Centre, and Women & Children’s Health Research Institute at the University of Alberta, collaborated on this research. The studies were completed in 2016. Any patentable intellectual property developed in the Research Agreement will be covered by the existing license agreement described above.

University of California, Irvine License Agreements

The Company entered into a series of license agreements in 1993 and 1998 with the University of California, Irvine (“UCI”) that granted the Company proprietary rights to certain chemical compounds that acted as ampakines and their therapeutic uses. These agreements granted the Company, among other provisions, exclusive rights: (i) to practice certain patents and patent applications, as defined in the license agreement, that were then held by UCI; (ii) to

identify, develop, make, have made, import, export, lease, sell, have sold or offer for sale any related licensed products; and (iii) to grant sub-licenses of the rights granted in the license agreements, subject to the provisions of the license agreements. The Company was required, among other terms and conditions, to pay UCI a license fee, royalties, patent costs and certain additional payments.

Under such license agreements, the Company was required to make minimum annual royalty payments of approximately $70,000. The Company was also required to spend a minimum of $250,000 per year to advance the ampakine compounds until the Company began to market an ampakine compound. At December 31, 2012, the Company was not in compliance with its minimum annual payment obligations and believed that this default constituted a termination of the license agreements. On April 15, 2013, the Company received a letter from UCI indicating that the license agreements between UCI and the Company had been terminated due to the Company's failure to make certain payments required to maintain the agreements. Since the patents covered in these license agreements had begun to expire and the therapeutic uses described in these patents were no longer germane to the Company's new focus on respiratory disorders, the loss of these license agreements is not expected to have a material impact on the Company's current drug development programs. In the opinion of management, the Company has made adequate provision for any liability relating to this matter in its financial statements at December 31, 2017 and 2016.

Research and Development Expenses

The Company invested $1,731,565 and $3,176,197 in research and development in 2017 and 2016, respectively. Of those amounts, $633,088 and $1,646,092 were incurred with related parties in 2017 and 2016 respectively. See our consolidated financial statements for the years ended December 31, 2017 and 2016 included in this Annual Report on Form 10-K.

Item 1A. Risk Factors

In addition to the other matters set forth in this Annual Report on Form 10-K, our continuing operations and the price of our common stock are subject to the following risks:

Risks related to our business

Our independent registered public accounting firm has expressed substantial doubt about our ability to continue as a going concern.

In its audit opinion issued in connection with our balance sheets as of December 31, 2017 and 2016 and our statements of operations, stockholders' equity (deficiency), and cash flows for the years ended December 31, 2017 and 2016, our independent registered public accounting firm has expressed substantial doubt about our ability to continue as a going concern given our limited working capital, recurring net losses and negative cash flows from operations. The accompanying consolidated financial statements have been prepared on a going concern basis, which contemplates the realization of assets and the satisfaction of liabilities and commitments in the normal course of business. The consolidated financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or amounts of liabilities that might be necessary should we be unable to continue in existence. While we have relied principally in the past on external financing to provide liquidity and capital resources for our operations, we can provide no assurance that cash generated from our operations together with cash received in the future from external financing, if any, will be sufficient to enable us to continue as a going concern.

We have a history of net losses; we expect to continue to incur net losses and we may never achieve or maintain profitability.

Since our formation on February 10, 1987 through the end of our most recent fiscal year ended December 31, 2017, we have generated only minimal operating revenues. For the fiscal year ended December 31, 2017, our net loss was $4,291,483 and as of December 31, 2017, we had an accumulated deficit of $161,802,262. For the year ended December 31, 2016, our net loss was $9,229,760 and as of December 31, 2016, we had an accumulated deficit of $157,510,779. We have not generated any revenue from product sales to date, and it is possible that we will never generate revenues from product sales in the future. Even if we do achieve significant revenues from product sales, we expect to continue to incur significant net losses over the next several years. As with other biotechnology companies, it is possible that we will never achieve profitable operations.

We will need additional capital in the near term and the future and, if such capital is not available on terms acceptable to us or available to us at all, we may need to scale back our research and development efforts and may be unable to continue our business operations.

We will require substantial additional funds to advance our research and development programs and to continue our operations, particularly if we decide to independently conduct later-stage clinical testing and apply for regulatory approval of any of our proposed products, and if we decide to independently undertake the marketing and promotion of our products. Additionally, we may require additional funds in the event that we decide to pursue strategic acquisitions of or licenses for other products or businesses. Based on our operating plan as of December 31, 2017, we estimated that our existing cash resources will not be sufficient to meet our requirements for 2018. We also need additional capital in the near term to fund on-going operations including basic operations. Additional funds may come from the sale of common equity, preferred equity, convertible preferred equity or equity-linked securities, debt, including debt convertible into equity, or may result from agreements with larger pharmaceutical companies that include the license or rights to the technologies and products that we are currently developing, although there is no assurance that we will secure any such funding or other transaction in a timely manner, or at all.

Our cash requirements in the future may differ significantly from our current estimates, depending on a number of factors, including:

- the results of our clinical trials;
- the time and costs involved in obtaining regulatory approvals;
- the costs of setting up and operating our own marketing and sales organization;
- the ability to obtain funding under contractual and licensing agreements;
- the costs involved in obtaining and enforcing patents or any litigation by third parties regarding intellectual property;
- the costs involved in meeting our contractual obligations including employment agreements; and
- our success in entering into collaborative relationships with other parties.

To finance our future activities, we may seek funds through additional rounds of financing, including private or public equity or debt offerings and collaborative arrangements with corporate partners. We may also seek to exchange or restructure some of our outstanding securities to provide liquidity, strengthen our balance sheet and provide flexibility. We cannot say with any certainty that these measures will be successful, or that we will be able to obtain the additional needed funds on reasonable terms, or at all. The sale of additional equity or convertible debt securities could result in additional and possibly substantial dilution to our stockholders. If we issued preferred equity or debt securities, these securities could have rights superior to holders of our common stock, and such instruments entered into in connection with the issuance of securities could contain covenants that will restrict our operations. We might have to obtain funds through arrangements with collaborative partners or others that may require us to relinquish rights to our technologies, product candidates or products that we otherwise would not relinquish. If adequate funds are not available in the future, as required, we could lose our key employees and might have to further delay, scale back or eliminate one or more of our research and development programs, which would impair our future prospects. In addition, we may be unable to meet our research spending obligations under our existing licensing agreements and may be unable to continue our business operations.

Our product opportunities rely on licenses from research institutions and if we lose access to these technologies or applications, our business could be substantially impaired.

Through the merger with Pier, the Company gained access to a 2007 Exclusive License Agreement (as amended, the "Old License"), that Pier had entered into with the University of Illinois on October 10, 2007. The Old License covered certain patents and patent applications in the United States and other countries claiming the use of certain compounds referred to as cannabinoids for the treatment of sleep related breathing disorders (including sleep apnea), of which dronabinol is a specific example of one type of cannabinoid. Dronabinol is a synthetic derivative of the naturally occurring substance in the cannabis plant, otherwise known as Δ9-THC (Δ9-tetrahydrocannabinol). Dronabinol is currently approved by the FDA and is sold generically for use in chemotherapy-induced nausea and vomiting, as well as for anorexia in patients with AIDS. Pier's business plan was to determine whether dronabinol would significantly improve subjective and objective clinical measures in patients with obstructive sleep apnea. In addition, Pier intended to evaluate the feasibility and comparative efficacy of a proprietary formulation of dronabinol. The Old License was terminated effective March 21, 2013 due to the Company's failure to make a required payment and on June 27, 2014,

the Company entered into the 2014 License Agreement with the University of Illinois that was similar, but not identical, to the Old License that had been terminated. If we are unable to comply with the terms of the 2014 License Agreement, such as required payments thereunder, the 2014 License Agreement might be terminated.

On May 8, 2007, the Company entered into a license agreement with The Governors of the University of Alberta, as subsequently amended, with the University of Alberta granting the Company exclusive rights to practice patents held by the University of Alberta claiming the use of ampakines for the treatment of various respiratory disorders. The Company agreed to pay the University of Alberta a licensing fee and a patent issuance fee, which were paid, and prospective payments consisting of a royalty on net sales, sublicense fee payments, maintenance payments and milestone payments. The prospective maintenance payments commence on the enrollment of the first patient into the first Phase 2B clinical trial and increase upon the successful completion of the Phase 2B clinical trial. As the Company does not at this time anticipate scheduling a Phase 2B clinical trial in the near term, no maintenance payments are currently due and payable nor are expected to be due in the near future, to the University of Alberta in connection with the license agreement.

Under our agreements with The Regents of the University of California, we had exclusive rights to certain ampakine compounds for all applications for which the University had patent rights, other than endocrine modulation. The license securing these rights has since been terminated.

We are at an early stage of development and we may not be able to successfully develop and commercialize our products and technologies.

The development of cannabinoid products and ampakine products is subject to the risks of failure commonly experienced in the development of products based upon innovative technologies and the expense and difficulty of obtaining approvals from regulatory agencies. Drug discovery and development is time consuming, expensive and unpredictable. On average, only one out of many thousands of chemical compounds discovered by researchers proves to be both medically effective and safe enough to become an approved medicine. All of our proposed products are in the preclinical or early clinical stage of development and will require significant additional funding for research, development and clinical testing, which may not be available on favorable terms or at all, before we are able to submit them to any of the regulatory agencies for clearances for commercial use.

The process from discovery to development to regulatory approval can take several years and drug candidates can fail at any stage of the process. Late stage clinical trials often fail to replicate results achieved in earlier studies. Historically, in our industry more than half of all compounds in development failed during Phase 2 trials and 30% failed during Phase 3 trials. We cannot assure you that we will be able to complete successfully any of our research and development activities including those described above under PART I. Item 1. Business-Development Goals.

Even if we do complete them, we may not be able to market successfully any of the products or be able to obtain the necessary regulatory approvals or assure that healthcare providers and payors will accept our products. We also face the risk that any or all of our products will not work as intended or that they will be unsafe, or that, even if they do work and are safe, that our products will be uneconomical to manufacture and market on a large scale. Due to the extended testing and regulatory review process required before we can obtain marketing clearance, we do not expect to be able to commercialize any therapeutic drug for several years, either directly or through our corporate partners or licensees.

We may not be able to enter into the strategic alliances necessary to fully develop and commercialize our products and technologies, and we will be dependent on our strategic partners if we do.

We are seeking pharmaceutical company partners to participate with us in the development of major indications for the cannabinoids and ampakine compounds. These agreements would potentially provide us with additional funds in exchange for exclusive or non-exclusive license or other rights to the technologies and products that we are currently developing. Competition between biopharmaceutical companies for these types of arrangements is intense. We cannot give any assurance that our discussions with candidate companies will result in an agreement or agreements in a timely manner, or at all. Additionally, we cannot assure you that any resulting agreement will generate sufficient revenues to offset our operating expenses and longer-term funding requirements.

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If our third-party manufacturers' facilities do not follow current good manufacturing practices, our product development and commercialization efforts may be harmed.

There are a limited number of manufacturers that operate under the FDA's and European Union's good manufacturing practices regulations and are capable of manufacturing products like those we are developing. Third-party manufacturers may encounter difficulties in achieving quality control and quality assurance and may experience shortages of qualified personnel. A failure of third-party manufacturers to follow current good manufacturing practices or other regulatory requirements and to document their adherence to such practices may lead to significant delays in the availability of products for commercial use or clinical study, the termination of, or hold on, a clinical study, or may delay or prevent filing or approval of marketing applications for our products. In addition, we could be subject to sanctions, including fines, injunctions and civil penalties. Changing manufacturers may require additional clinical trials and the revalidation of the manufacturing process and procedures in accordance with FDA mandated current good manufacturing practices and would require FDA approval. This revalidation may be costly and time consuming. If we are unable to arrange for third-party manufacturing of our products, or to do so on commercially reasonable terms, we may not be able to complete development or marketing of our products.

Our ability to use our net operating loss carry forwards will be subject to limitations upon a change in ownership, which could reduce our ability to use those loss carry forwards following any change in Company ownership.

Generally, a change of more than 50% in the ownership of a Company's stock, by value, over a three-year period constitutes an ownership change for U.S. federal income tax purposes. An ownership change may limit our ability to use our net operating loss carry forwards attributable to the period prior to such change. We have sold or otherwise issued shares of our common stock in various transactions sufficient to constitute an ownership change, including the issuance of the Series G 1.5% Convertible Preferred Stock (as defined below), and the issuance of convertible notes and warrants, some of which have been converted or exercised, as well as the issuance of additional shares of our Common Stock and warrants. As a result, if we earn net taxable income in the future, our ability to use our pre-change net operating loss carry forwards to offset U.S. federal taxable income will be subject to limitations, which would restrict our ability to reduce future tax liability. Future shifts in our ownership, including transactions in which we may engage, may cause additional ownership changes, which could have the effect of imposing additional limitations on our ability to use our pre-change net operating loss carry forwards.

Risks related to our industry

If we fail to secure adequate intellectual property protection, it could significantly harm our financial results and ability to compete.

Our success will depend, in part, on our ability to obtain and maintain patent protection for our products and processes in the United States and elsewhere. We have filed and intend to continue to file patent applications as we need them. However, additional patents that may issue from any of these applications may not be sufficiently broad to protect our technology. Also, any patents issued to us or licensed by us may be designed around or challenged by others, and if such design or challenge is effective, it may diminish our rights and negatively affect our financial results.

If we are unable to obtain and maintain sufficient protection of our proprietary rights in our products or processes prior to or after obtaining regulatory clearances, our competitors may be able to obtain regulatory clearance and market similar or competing products by demonstrating at a minimum the equivalency of their products to our products. If they are successful at demonstrating at least the equivalency between the products, our competitors would not have to conduct the same lengthy clinical tests that we have or will have conducted.

We also rely on trade secrets and confidential information that we protect by entering into confidentiality agreements with other parties. Those confidentiality agreements could be breached, and our remedies may be insufficient to protect the confidential information. Further, our competitors may independently learn our trade secrets or develop similar or superior technologies. To the extent that our consultants, key employees or others apply technological information independently developed by them or by others to our projects, disputes may arise regarding the proprietary rights to such information or developments. We cannot assure you that such disputes will be resolved in our favor.

We may be subject to potential product liability claims. One or more successful claims brought against us could materially affect our business and financial condition.

The clinical testing, manufacturing and marketing of our products may expose us to product liability claims. We have never been subject to a product liability claim, and we require each patient in our clinical trials to sign an informed consent agreement that describes the risks related to the trials, but we cannot assure you that the coverage limits of our insurance policies will be adequate or that one or more successful claims brought against us would not have a material adverse effect on our business, financial condition and result of operations. Further, if one of our cannabinoid or ampakine compounds is approved by the FDA for marketing, we cannot assure you that adequate product liability insurance will be available, or if available, that it will be available at a reasonable cost. Any adverse outcome resulting from a product liability claim could have a material adverse effect on our business, financial condition and results of operations.

We face intense competition, and our competitors may develop products that are superior to those we are developing.

Our business is characterized by intensive research efforts. Our competitors include many companies, research institutes and universities that are working in a number of pharmaceutical or biotechnology disciplines to develop therapeutic products similar to those we are currently investigating. Most of these competitors have substantially greater financial, technical, manufacturing, marketing, distribution and/or other resources than we do. In addition, many of our competitors have experience in performing human clinical trials of new or improved therapeutic products and obtaining approvals from the FDA and other regulatory agencies. We have no experience in conducting and managing later-stage clinical testing or in preparing applications necessary to obtain regulatory approvals. Accordingly, it is possible that our competitors may succeed in developing products that are safer or more effective than those that we are developing and/or may obtain FDA approvals for their products faster than we can. We expect that competition in this field will continue to intensify.

We may be unable to recruit and retain our senior management and other key technical personnel on whom we are dependent.

We are highly dependent upon senior management and key technical personnel and currently do not carry any insurance policies on such persons. In particular, we are highly dependent on Arnold S. Lippa, Ph.D., our Chief Scientific Officer and Executive Chairman (and formerly our President and Chief Executive Officer) James S. Manuso, Ph.D., our President and Chief Executive Officer since 2015 who succeeded Dr. Lippa in those roles, Jeff E. Margolis, our Vice President, Treasurer and Secretary, and Richard Purcell, our Senior Vice President of Research and development. Competition for qualified employees among pharmaceutical and biotechnology companies is intense. The loss of any of our senior management or other key employees, or our inability to attract, retain and motivate the

additional or replacement highly-skilled employees and consultants that our business requires, could substantially hurt our business prospects. Additionally, in February 2017, Robert N. Weingarten resigned as our Chief Financial Officer and member of our Board of Directors, although he remains a consultant to the Company. Jeff E. Margolis has been appointed Chief Financial Officer. There can be no assurance that we will be able to attract and retain a qualified long-term replacement for Mr. Weingarten.

The regulatory approval process is expensive, time consuming, uncertain and may prevent us from obtaining required approvals for the commercialization of some of our products.

The FDA and other similar agencies in foreign countries have substantial requirements for therapeutic products. Such requirements often involve lengthy and detailed laboratory, clinical and post-clinical testing procedures and are expensive to complete. It often takes companies many years to satisfy these requirements, depending on the complexity and novelty of the product. The review process is also extensive, which may delay the approval process even more.

As of yet, we have not obtained any approvals to market our products. Further, we cannot assure you that the FDA or other regulatory agency will grant us approval for any of our products on a timely basis, if at all. Even if regulatory clearances are obtained, a marketed product is subject to continual review, and later discovery of previously unknown problems may result in restrictions on marketing or withdrawal of the product from the market.

Risks related to capital structure

Our stock price may be volatile and our common stock could decline in value.

The market price of securities of life sciences companies in general has been very unpredictable. The range of sales prices of our common stock for the fiscal years ended December 31, 2017 and 2016, as quoted on the OTC QB, was $0.80 to $4.20 and $1.50 to $12.34, respectively as adjusted for our 325-to-1 reverse stock split, effective September 1, 2016. The following factors, in addition to factors that affect that market generally, could significantly affect our business, and the market price of our common stock could decline:

- competitors announcing technological innovations or new commercial products;
- competitors' publicity regarding actual or potential products under development;
- regulatory developments in the United States and foreign countries;
- developments concerning proprietary rights, including patent litigation;
- public concern over the safety of therapeutic products; and
- changes in healthcare reimbursement policies and healthcare regulations.

Our common stock is thinly traded and you may be unable to sell some or all of your shares at the price you would like, or at all, and sales of large blocks of shares may depress the price of our common stock.

Our common stock has historically been sporadically or "thinly-traded," meaning that the number of persons interested in purchasing shares of our common stock at prevailing prices at any given time may be relatively small or nonexistent. As a consequence, there may be periods of several days or more when trading activity in shares of our common stock is minimal or non-existent, as compared to a seasoned issuer that has a large and steady volume of trading activity that will generally support continuous sales without an adverse effect on share price. This could lead to wide fluctuations in our share price. You may be unable to sell your common stock at or above your purchase price, which may result in substantial losses to you. Also, as a consequence of this lack of liquidity, the trading of relatively small quantities of shares by our stockholders may disproportionately influence the price of shares of our common stock in either direction. The price of shares of our common stock could, for example, decline precipitously in the event a large number of share of our common shares are sold on the market without commensurate demand, as compared to a seasoned issuer which could better absorb those sales without adverse impact on its share price.

There is a large number of shares of the Company's common stock that may be issued or sold, and if such shares are issued or sold, the market price of our common stock may decline.

As of December 31, 2017, we had 3,065,261 shares of our common stock outstanding.

If all warrants and options outstanding as of December 31, 2017 are exercised prior to their expiration, up to 5,460,582 additional shares of our common stock could become freely tradable. The issuance of such shares would dilute the interests of the current stockholders and sales of substantial amounts of common stock in the public market could adversely affect the prevailing market price of our common stock and could also make it more difficult for us to raise funds through future offerings of common stock.

In 2014, we issued shares of our Series G 1.5% Convertible Preferred Stock, which were convertible into shares of our common stock (see Note 6 to our consolidated financial statements for the years ended December 31, 2017 and 2016). On November 5, December 9 and December 31, 2014, and again on February 2, 2015 we issued convertible notes and warrants that are convertible and exercisable, respectively, into shares of our common stock (see Note 6 to our consolidated financial statements for the years ended December 31, 2017 and 2016). We may in the future issue additional equity or equity-based securities. All of our Series G 1.5% Convertible Preferred Stock had converted to common stock by April 17, 2016, and some of our convertible notes and related warrants have converted into or been exercised for common stock, and any unexercised warrants associated with our unconverted convertible notes have expired. As of December 31, 2017, however, there were remaining outstanding convertible notes totaling $374,646 of principal and accrued interest that may convert into 32,941 shares of common stock. If we issue additional equity or equity-based securities, the number of shares of our common stock outstanding could increase substantially, which could adversely affect the prevailing market price of our common stock and could also make it more difficult for us to raise funds through future offerings of common stock.

Our charter document may prevent or delay an attempt by our stockholders to replace or remove management.

Certain provisions of our restated certificate of incorporation, as amended, could make it more difficult for a third party to acquire control of our business, even if such change in control would be beneficial to our stockholders. Our restated certificate of incorporation, as amended, allows the Board of Directors of the Company, referred to as the Board or Board of Directors, to issue, as of December 31, 2017, up to 5,000,000 shares of preferred stock, with characteristics to be determined by the board, without stockholder approval. The ability of our Board of Directors to issue additional preferred stock may have the effect of delaying or preventing an attempt by our stockholders to replace or remove existing directors and management.

If our common stock is determined to be a "penny stock," a broker-dealer may find it more difficult to trade our common stock and an investor may find it more difficult to acquire or dispose of our common stock in the secondary market.

In addition, our common stock may be subject to the so-called "penny stock" rules. The United States Securities and Exchange Commission ("SEC") has adopted regulations that define a "penny stock" to be any equity security that has a market price per share of less than $5.00, subject to certain exceptions, such as any securities listed on a national securities exchange. For any transaction involving a "penny stock," unless exempt, the rules impose additional sales practice requirements on broker-dealers, subject to certain exceptions. If our common stock is determined to be a "penny stock," a broker-dealer may find it more difficult to trade our common stock and an investor may find it more difficult to acquire or dispose of our common stock on the secondary market.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

As of December 31, 2017, the Company did not own any real property or maintain any leases with respect to real property. The Company periodically contracts for services provided at the facilities owned by third parties and may, from time-to-time, have employees who work in these facilities.

Item 3. Legal Proceedings

By letter dated February 5, 2016, the Company received a demand from a law firm representing a professional services vendor of the Company alleging an amount due and owing for unpaid services rendered. On January 18, 2017, following an arbitration proceeding, an arbitrator awarded the vendor the full amount sought in arbitration of $146,082. Additionally, the arbitrator granted the vendor attorneys' fees and costs of $47,937. All such amounts have been accrued at December 31, 2017.

We are periodically subject to various pending and threatened legal actions and claims. See Note 9 to our consolidated financial statements for the years ended December 31, 2017 and 2016—Commitments and Contingencies—*Pending or Threatened Legal Actions and Claims* for details regarding these matters.

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

Our common stock is quoted on the OTC QB, under the symbol "RSPI" (and prior to the Company's name change in December 2015, under the symbol "CORX"). The following table presents quarterly information on the high and low closing prices of the common stock furnished by the OTC QB for the fiscal years ended December 31, 2017 and 2016. The quotations on the OTC QB reflect inter-dealer prices, without retail mark-up, mark-down or commission and may not necessarily represent actual transactions. The prices shown in the table below have been conformed to reflect the Company's 325-to-1 reverse stock split, which was effective September 1, 2016.

	High	Low
Fiscal Year ended December 31, 2017		
Fourth Quarter	$2.10	$0.80
Third Quarter	2.00	0.95
Second Quarter	3.79	1.80
First Quarter	4.20	2.80
Fiscal Year ended December 31, 2016		
Fourth Quarter	$4.25	$1.50
Third Quarter	12.01	3.00
Second Quarter	8.12	4.97
First Quarter	12.34	3.31

As of December 31, 2017, there were 90 stockholders of record of our common stock, and approximately 1,200 beneficial owners. The high and low sales prices for our common stock on December 29, 2017, as quoted on the OTC QB market, were 1.35 and $1.03, respectively.

We have never paid cash dividends on our common stock and do not anticipate paying such dividends in the foreseeable future. The payment of dividends, if any, will be determined by the Board in light of conditions then existing, including our financial condition and requirements, future prospects, restrictions in financing agreements, business conditions and other factors deemed relevant by the Board.

During the fiscal year ended December 31, 2017, we did not repurchase any of our securities. During the fiscal year ended December 31, 2016, we did not repurchase any of our securities, except in connection with our 325-to-1 reverse stock split in which we provided cash in lieu of issuing fractional shares, for a total of $1,298 in the aggregate.

Item 6. Selected Financial Data

Not applicable to smaller reporting companies.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis should be read in conjunction with the audited financial statements and notes related thereto appearing elsewhere in this document. Throughout this section, references to number of shares, share price and exercise price have generally been conformed to reflect the effects of the Company's 325-to-1 reverse stock split, effective September 1, 2016.

Overview

Since its formation in 1987, RespireRx Pharmaceuticals Inc. ("RespireRx") has been engaged in the research and clinical development of a class of compounds referred to as ampakines, which act to enhance the actions of the excitatory neurotransmitter glutamate at AMPA glutamate receptors. Several ampakines, in both oral and injectable form, now are being developed by the Company for the treatment of a variety of breathing disorders, particularly sleep apneas and respiratory depression produced by drugs and neural damage.

This focus on respiratory disorders provided the impetus for RespireRx's acquisition of, Pier Pharmaceuticals, Inc. ("Pier") in August 2012. The acquisition of Pier added the dronabinol cannabinoid program for obstructive sleep apnea described below.

The Company underwent a change in management in March 2013, and since then the Company's current management has continued this strategic focus, including seeking the capital to fund such efforts. As a result of the Company's scientific discoveries and the acquisition of strategic, exclusive license agreements, management believes that the Company is now a leader in the discovery and development of innovative pharmaceuticals for the treatment of respiratory disorders.

There is a substantial unmet need for new drug treatments for breathing disorders. According to a study commissioned by the American Academy of Sleep Medicine, published in August 2016 ("AASM Commissioned Study"), there are approximately 29.4 million adults with obstructive sleep apnea, of which 5.9 million are diagnosed. Sleep apnea places a considerable burden on society and the health care system because of its association with co-morbidities and adverse events ranging from vehicular (for example: cars, trucks, trains, buses) and industrial accidents, loss of productivity to increased risk of cardiopulmonary illness and related death. According to the AASM Commissioned Study, the estimated overall cost of obstructive sleep apnea in the United States in 2015 was $162 billion, of which $12.4 billion relates to diagnosis and treatment and the balance relates to all other categories. No drugs currently are approved for the treatment of sleep apnea.

Even in patients without sleep apneas, the use of drugs such as propofol, used as an anesthetic during surgery, and opioid analgesics such as morphine and oxycodone, used during anesthesia and for the treatment of post-surgical and chronic pain, are well known for producing respiratory depression which is a form of apnea. In fact, while respiratory depression is the leading cause of death from the overdose of most classes of abused drugs, it also arises during normal, physician-supervised procedures such as surgical anesthesia, post-operative analgesia and as a result of normal outpatient management of pain.

Although opioid antagonists such as naloxone (Narcan) and nalmefene (Revex) can reverse respiratory depression associated with opioids, they have several major shortcomings. First and foremost, these opioid antagonists do not reverse the respiratory depression produced by other classes of drugs often given/taken either alone or in combination with opioids. Second, while these drugs reverse the serious side effects of the opioids, they also dramatically reduce their analgesic effectiveness. Third, the side effects of opioid antagonists are themselves serious and include seizures, agitation, convulsions, tachycardia, hypotension, nausea, and vomiting.

Furthermore, respiratory depression can arise as a result of a number of other illnesses that involve neural and muscular disorders. For example, certain spinal injuries can interfere with normal neural communication between the brain and the lungs resulting in reduced respiratory capacity. Pompe Disease is an autosomal, recessive, metabolic disorder that damages muscle and nerve cells throughout the body. One of the first symptoms is a progressive decrease in the strength of muscles such as the diaphragm and other muscles required for breathing and respiratory failure is the most common cause of death. In both of these indications, symptomatic treatment for the respiratory depression is severely lacking.

Accordingly, there is a considerable need for pharmaco-therapeutic agents to (i) treat sleep apnea, (ii) prevent and reverse the respiratory depression produced by different classes of drugs, and (iii) relieve the respiratory depression produced in a number of neurological indications, such as spinal injury and Pompe Disease. The Company currently has two drug platforms, each with a clinical stage compound directed at these needs.

Sleep Apnea

Sleep apnea is a serious disorder in which breathing repeatedly stops long enough to disrupt sleep, and temporarily decreases the amount of oxygen and increases the amount of carbon dioxide in the blood. Apnea is defined by more than five periods per hour of ten seconds or longer without breathing. The repetitive cessation of breathing during sleep has substantial impact on the affected individuals. The disorder is associated with major co-morbidities including excessive daytime sleepiness and increased risk of cardiovascular disease (such as hypertension, stroke and heart failure), diabetes and weight gain. Sleep apnea is often made worse by central nervous system depressants such as opioids, benzodiazepines, barbiturates and alcohol. It is therefore important for these patients to seek therapy.

The most common type of sleep apnea is obstructive sleep apnea ("OSA"), which occurs by narrowing or collapse of the pharyngeal airway during sleep. There is currently no approved pharmacotherapy, and the most common treatment is to use continuous positive airway pressure ("CPAP") delivered via a nasal or full-face mask, as long as patients are able to tolerate the treatment. We believe that patient compliance with CPAP devices is extremely low. Alternative treatments include surgical intervention, dental appliances, hypoglossal nerve stimulation (via surgical implant) and other physical interventions. Given the large patient population and the limited treatment options, there is a very large opportunity for pharmacotherapy to treat this disorder.

Central sleep apnea ("CSA"), a less frequently diagnosed type of sleep apnea, is caused by alterations in the brain mechanisms responsible for maintaining normal respiratory drive. CSA is most frequently observed in patients taking chronic opioids and in heart failure patients and is a major correlate for mortality in these patients. There are no therapeutic options for patients with CSA; CPAP is contra-indicated for the treatment of CSA and no drugs are currently approved for this indication.

In addition, many patients present with a pattern of sleep apnea that has both obstructive and central components.

Cannabinoids

RespireRx is developing dronabinol, a synthetic derivative of a naturally occurring substance in the cannabis plant, otherwise known as Δ9-THC or Δ9-tetrahydrocannabinol, for the treatment of OSA, a serious respiratory disorder that impacts an estimated 30 million people in the United States. OSA has been linked to increased risk for hypertension, heart failure, depression, and diabetes, and has an annual economic cost of $162 billion according to the American Academy of Sleep Medicine. There are no approved drug treatments for OSA.

RespireRx holds the exclusive world-wide license to a family of patents for the use of cannabinoids, a family of compounds found naturally in the cannabis plant, including the synthetic cannabinoid dronabinol, in the treatment of sleep disordered breathing from the University of Illinois at Chicago ("UIC"). In addition, RespireRx has several extensions and pending applications that, if issued, will extend patent protection for over a decade. With approximately $5 million in funding from the National Heart, Lung and Blood Institute of NIH, UIC recently completed a Phase 2B multi-center, double-blind, placebo-controlled clinical trial of dronabinol in patients with OSA. Entitled **P**harmacotherapy of **A**pnea with **C**annabimimetic **E**nhancement ("PACE"), this study replicated an earlier Phase 2A RespireRx sponsored clinical trial and demonstrated statistically significant improvements in respiration, daytime sleepiness, and patient satisfaction after administration of dronabinol. The results from PACE were published in the journal Sleep Vol. 41. No. 1, 2018.

RespireRx believes that the most direct route to commercialization is to proceed directly to a Phase 3 pivotal trial using the currently available dronabinol formulation (2.5, 5 and 10 mg gel caps) and to then commercialize a RespireRx branded dronabinol capsule (RBDC).

The Company also believes that there are numerous opportunities for reformulation of dronabinol to produce a second generation proprietary, branded product for the treatment of OSA with an improved profile. Therefore, simultaneous with its development of the RBDC, RespireRx plans to develop a proprietary dronabinol formulation to optimize the dose and duration of action for treating OSA.

RespireRx initiated its dronabinol program when it acquired 100% of the issued and outstanding equity securities of Pier effective August 10, 2012 pursuant to an Agreement and Plan of Merger. Pier was formed in June 2007 (under the name SteadySleep Rx Co.) as a clinical stage pharmaceutical company to develop a pharmacologic treatment for OSA and had been engaged in research and clinical development activities.

Prior to the merger, Pier conducted a 21 day, randomized, double-blind, placebo-controlled, dose escalation Phase 2 clinical study in 22 patients with OSA, in which dronabinol produced a statistically significant reduction in the Apnea-Hypopnea Index, the primary therapeutic end-point, and was observed to be safe and well tolerated.

Through the merger, RespireRx gained access to a 2007 Exclusive License Agreement (as amended, the “Old License”) that Pier had entered into with the University of Illinois on October 10, 2007. The Old License covered certain patents and patent applications in the United States and other countries claiming the use of cannabinoids, including dronabinol, for the treatment of sleep-related breathing disorders (including sleep apnea).

Dronabinol is a Schedule III, controlled generic drug with a relatively low abuse potential that is approved by the U.S. Food and Drug Administration (the "FDA") for the treatment of AIDS-related anorexia and chemotherapy-induced emesis. The use of dronabinol for the treatment of OSA is a novel indication for an already approved drug and, as such, the Company believes that it would only require approval by the FDA of a 505(b)(2) new drug application, an efficient regulatory pathway.

The Old License was terminated effective March 21, 2013, due to the Company's failure to make a required payment. Subsequently, current management opened negotiations with the University of Illinois, and as a result, the Company entered into a new license agreement (the "2014 License Agreement") with the University of Illinois on June 27, 2014, the material terms of which were similar to the Old License.

Similar to the Old License, the 2014 License Agreement grants the Company, among other provisions, exclusive rights: (i) to practice certain patents and patent applications, as defined in the 2014 License Agreement, that are held by the University of Illinois; (ii) to identify, develop, make, have made, import, export, lease, sell, have sold or offer for sale any related licensed products; and (iii) to grant sub-licenses of the rights granted in the 2014 License Agreement, subject to the provisions of the 2014 License Agreement. The Company is required under the 2014 License Agreement, among other terms and conditions, to pay the University of Illinois a license fee, royalties, patent costs and certain milestone payments.

The recently completed PACE trial is described in more detail below in *Recent Developments*.

Drug-induced Respiratory Depression or Drug-induced apnea

Drug-induced respiratory depression ("RD") or drug-induced apnea is a life-threatening condition caused by a variety of depressant drugs, including analgesic, hypnotic, and anesthesia medications. We believe that RD is a leading cause of death from the overdose of some classes of abused drugs, yet it also arises during normal, physician-supervised procedures such as surgical anesthesia and post-operative pain management. For example, in the hospital setting, anesthetics such as propofol are well known for their propensity to produce RD, particularly when combined with opioids. According to data from the National Center for Health Statistics, 48 million surgical inpatient procedures were performed in the United States in 2009. It is notable that, according to the HealthGrades Inc. Patient Safety in American Hospitals Study released in 2011, post-operative respiratory failure produces the third highest number of patient safety events, the fourth highest mortality rate, and the second largest overall excess cost to the Medicare system, when compared to other patient safety indicators. The Company believes that, in these patients, the major risk factor for the appearance of RD is a history of sleep apnea.

In the hospital setting, one of the most serious complications of patient-controlled analgesia is RD and, despite nurses' vigilance, adverse events associated with opioids continue to increase. Drug-induced RD is associated with a high

mortality rate relative to other adverse drug events. In post-surgical patients taking opioids for pain management, sleep apnea is a major risk factor for the occurrence of RD. If patients with sleep apnea are receiving combination therapies, they are at even higher risk for complications and extended hospital stays.

Outside the hospital, the primary risk factor for RD is the use of a single opioid in large doses or concomitant use of opioids and sedative agents. Whether due to normal outpatient pain management, or as a result of substance abuse, RD has been reported to be the leading cause of death from drug overdose, with the drug overdose death rate tripling since 1991. In patients chronically consuming opioids, CSA is a major correlate for overdose and most likely represents an early and sensitive form of opioid induced RD. In August 2017, the Centers for Disease Control and Prevention (CDC) reported that approximately 42,000 people died in 2016 from opioid overdoses, including prescription opioids and illegally made fentanyl and heroin. The CDC reported that the common prescription drugs involved in overdoses were methadone, oxycodone (such as OxyContin®) and hydrocodone (such as Vicodin®). In 2016, the CDC reported that 40% of all US opioid deaths involved a prescription opioid. There were 13,000 heroin deaths in 2015. There are two types of fentanyl, pharmaceutical fentanyl used to manage acute and chronic pain and non-pharmaceutical fentanyl that is illicitly manufactured and is often mixed with heroin or cocaine. The CDC also reported that most of the increases in fentanyl deaths involved the illicit fentanyl and not the pharmaceutical fentanyl.

Drug Abuse

On January 19, 2016, the Company announced that that it had reached an agreement with the Medications Development Program of the National Institute of Drug Abuse ("NIDA") to conduct research on the Company's ampakine compounds CX717 and CX1739. The agreement was entered into as of October 19, 2015, and on January 14, 2016, the Company and NIDA approved the proposed protocols, allowing research activities to commence. NIDA is evaluating the compounds using pharmacologic, pharmacokinetic and toxicologic protocols to determine the potential effectiveness of the ampakines for the treatment of drug abuse and addiction. The Company retains all intellectual property as well as proprietary and commercialization rights to the Company's compounds. Initial studies focus on cocaine and methamphetamine addiction and abuse, and are contracted to outside testing facilities and/or government laboratories, with all costs paid by NIDA. In experiments conducted by NIDA, CX717 antagonized the stimulatory effects of methamphetamine. NIDA is in the process of testing CX717 on the interoceptive effects (determinants of addiction liability) of both cocaine and methamphetamine in models of drug discrimination in rats.

Ampakines

RespireRx is developing a class of proprietary compounds known as ampakines, a term used to designate their actions as positive allosteric modulators of the alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid ("AMPA") glutamate receptor. Ampakines are small molecule compounds that enhance the excitatory actions of the neurotransmitter, glutamate at the AMPA receptor complex, which mediates most excitatory transmission in the central nervous system ("CNS"). These drugs do not have agonistic or antagonistic properties but instead modulate the receptor rate constants for transmitter binding, channel opening, and desensitization

Through an extensive translational research effort from the cellular level through Phase 2 clinical trials, the company has developed a family of ampakines, including CX717, CX1739 and CX1942 that have clinical application in the treatment of CNS-driven respiratory disorders, neurobehavioral disorders, spinal cord injury, neurological diseases, and orphan indications. In particular, we are addressing CNS-driven respiratory disorders that affect millions of people, but for which there are few treatment options and no drug therapies, including opioid induced respiratory disorders, such as apnea (transient cessation of breathing) and hypopnea (transient reduction in breathing). When these symptoms become severe, as in opioid overdose, they are the primary cause of opioid lethality. In addition, we are developing our ampakines for the treatment of disordered breathing and motor impairment resulting from spinal cord injury.

Early preclinical and clinical research suggested that these ampakines might have therapeutic potential for the treatment of memory and cognitive disorders, depression, attention deficit disorder and schizophrenia. Given our current focus on respiratory disorders, we may seek to partner, out-license or sell our rights to the use of ampakine compounds for the treatment of neurological and psychiatric indications, as we focus on the development of our compounds for the treatment of breathing disorders.

The early ampakines discovered by the Company, Eli Lilly and Company, and others were ultimately abandoned due to the presence of undesirable side effects, particularly convulsive activity. Subsequently, Company scientists discovered a new, chemically distinct series of molecules termed “low impact” as opposed to the “high impact” designation given to the earlier compounds. While these low impact compounds share many pharmacological properties with the high impact compounds, they do not produce convulsive effects in animals. These low impact compounds do not bind to the same molecular site as the high impact compounds and, as a result, do not produce the undesirable electrophysiological and biochemical effects that lead to convulsive activity.

The Company owns patents and patent applications for certain families of chemical compounds that claim the chemical structures, their actions as ampakines and their use in the treatment of various disorders. Patents claiming a family of chemical structures, including CX1739 and CX1942, as well as their use in the treatment of various disorders, extend through at least 2028. Additional patents claiming a family of chemical structures, including CX717, as well as their use in the treatment of various disorders, expired in 2017 in the U.S. and will expire in 2018 internationally. The Company is developing potential market exclusivity strategies for CX717 which may include new patent applications and identifying market opportunities and strategies that may provide exclusivity without patents.

In order to broaden the use of the Company’s ampakine technology into the area of respiratory disorders, on May 8, 2007, the Company entered into a license agreement, as subsequently amended, with the University of Alberta granting the Company exclusive rights to practice patents held by the University of Alberta claiming the use of ampakines for the treatment of various respiratory disorders, including drug induced respiratory depression. These patents extend through at least 2028 and, along with the Company’s own patents claiming chemical structures, comprise the Company’s principal intellectual property supporting the Company’s research and clinical development program in the use of ampakines for the treatment of respiratory disorders.

The Company has obtained preclinical results indicating that several of its low impact ampakines, including CX717, CX1739 and CX1942, were able to antagonize the respiratory depression caused by opioids, barbiturates and anesthetics without offsetting the analgesic effects of the opioid or the sedative effects of the anesthetics. Dr. John Greer, faculty member of the Department of Physiology, Perinatal Research Centre, and Women & Children’s Health Research Institute at the University of Alberta, has shown that these ampakine effects are due to a direct action on neurons in pre-Botzinger’s complex, a brain stem region responsible for regulating respiratory drive.

After several Phase 1 and 2 studies to demonstrate safety and tolerability, the first of these low impact compounds, CX717, was tested in two Phase 2A clinical studies to determine its ability to antagonize the respiratory depressant effects of fentanyl, a potent opioid analgesic. In both of these studies, one of which was published in a peer-reviewed journal, CX717 antagonized the respiratory depression produced by fentanyl without altering the analgesia produced by this drug.

The Company owns patents and patent applications for certain families of chemical compounds that claim the chemical structures, their actions as ampakines and their use in the treatment of various disorders. Patents claiming a family of chemical structures, including CX1739 and CX1942, as well as their use in the treatment of various disorders extend through at least 2028. Additional patents claiming a family of chemical structures, including CX717,

as well as their use in the treatment of various disorders, expired in 2017 in the U.S. and will expire in 2018 internationally, though certain patents regarding the use of these chemical structures extend through 2028.

Recent Developments

PACE Clinical Trial with Dronabinol

On November 30, 2017, the Company announced the publication by the principal investigators, Dr. Phyllis Zee of Northwestern University and Dr. David Carley of the University of Illinois at Chicago, in the peer-reviewed journal SLEEP, the official publication of the Sleep Research Society, of the positive results of the potentially pivotal, PACE (Pharmacotherapy of Apnea by Cannabimimetic Enhancement) Phase 2B OSA clinical trial, that was fully funded by the National Institutes of Health. The results from PACE were published in the journal Sleep Vol. 41. No. 1, 2018. The results of the PACE clinical trial were previously presented by Dr. Carley at the SLEEP 2017 annual meeting in June 2017. In the PACE trial, dronabinol significantly improved the primary outcome measures of Apnea Hypopnea Index ("AHI"), daytime sleepiness as measured by the Epworth Sleepiness Scale ("ESS"), and overall patient satisfaction as measured by the Treatment Satisfaction Questionnaire for Medications ("TSQM").

The recently completed PACE trial was a fully-blinded, two-center, Phase II, randomized placebo-controlled trial of dronabinol in 56 adult patients with moderate to severe OSA. By random assignment, 56 adult subjects with BMI<45, Epworth Sleepiness Scale (ESS)>7 and PSG-documented AHI between 15 and 50 received either placebo (N=17), 2.5mg (N=19) or 10.0mg (N=20) of dronabinol daily, one hour before bedtime for 6 weeks. Repeat in- laboratory PSG followed by maintenance of wakefulness (MWT) testing was completed every 2-weeks during the treatment period. At each visit, the ESS and Treatment Satisfaction Questionnaire for Medications also were completed.

Overall, baseline AHI was 26.0±11.6 (SD) and this was equivalent among all treatment groups. In comparison to placebo, statistically significant end of treatment declines in AHI were observed for both the 2.5 and 10 mg doses (-9.7±4.1, p=0.02 and -13.2±4.0, p=0.001, respectively). Statistically significant declines in ESS were observed for subjects receiving 10 mg dronabinol (-4.0±0.8 units, p=0.001) but not those receiving 2.5 mg or placebo. Subjects receiving 10 mg dronabinol also expressed the greatest overall satisfaction with treatment (p=0.02).

The PACE trial enrolled 73 subjects of which 56 were evaluable with moderate to severe OSA who met all inclusion and exclusion criteria for the study. At baseline, overall apnea/hypopnea index (AHI) was 25.9±11.3, Epworth Sleepiness Scale score (ESS) was 11.45±3.8, maintenance of wakefulness test (MWT) mean latency was 19.2±11.8 min, body mass index (BMI) was 33.4±5.4 kg/m2 and age was 53.6±9.0 years. Subjects were randomized to receive placebo, 2.5 mg or 10 mg dronabinol. Randomized subjects completed daily self-administration of study drug for 6 weeks, and returned to the laboratory every 2 weeks for overnight polysomnography (PSG), physical examination, and completion of clinical study procedures.

Subjects receiving 10mg/day of dronabinol expressed the highest overall satisfaction with treatment (p=0.04). In comparison to placebo, dronabinol dose-dependently reduced AHI by 10.7±4.4 (p=0.02) and 12.9±4.3 (p=0.003) events/hour at doses of 2.5 and 10 mg/day, respectively. Dronabinol at 10 mg/day reduced ESS score by -3.8±0.8 points from baseline (p<0.0001) and by -2.3±1.2 points in comparison to placebo (p=0.05). Body weights, MWT sleep latencies, gross sleep architecture and overnight oxygenation parameters were unchanged from baseline in any treatment group. The number and severity of adverse events, and treatment adherence (0.3±0.6 missed doses/week) were equivalent among all treatment groups.

CX1739 Clinical Trial

The Company filed an IND with the FDA in September 2015 to conduct a randomized, double-blind, placebo-controlled, crossover, Phase 2A study of CX1739 (300 mg) versus placebo, followed by dose escalation of CX1739 to 600 and 900 mg, with open-label administration of the IV opioid remifentanil in approximately 18 healthy subjects to assess the ability of CX1739 to antagonize the respiratory depressive effect of remifentanil without altering the analgesic effect of the opioid. The clinical protocol was designed to evaluate the safety and efficacy of CX1739 to antagonize respiratory depression in two models of opioid use and abuse. During REMI-INFUSION, a model of chronic (steady state) opioid use, respiration, pain, pulmometry, and safety were measured during a 30-minute intravenous infusion of remifentanil that produced stable blood levels. During REMI-BOLUS, a model of acute, intravenous opioid overdose, a single, intravenous bolus injection of remifentanil was administered at a dose calculated to achieve significant respiratory depression.

On each study day, REMI-BOLUS was initiated with an intravenous, bolus injection of remifentanil 3 hours after subjects received either placebo or CX1739. Respiration was measured for 20 minutes and then compared to the baseline respiration recorded 5 minutes prior to the bolus injection. REMI-INFUSION was initiated 3.5 hours after placebo or CX1739, with an intravenous infusion protocol designed to maintain stable remifentanil blood levels and calculated to produce approximately 50% respiratory depression. The ClinicalTrials.gov identifier is NCT02735629.

The commencement of this clinical trial was subject to the resolution of two deficiencies raised by the FDA in its clinical hold letter issued in November 2015, which were satisfactorily resolved in early 2016. As a result, the FDA removed the clinical hold on the Company's IND for CX1739 on February 25, 2016, thus allowing for the initiation of the clinical trial. In March 2016, upon Institutional Review Board approval, the trial was initiated at the Duke Clinical Research Unit, Duke University Medical Center, Durham NC. The dosing and data acquisition phase of the clinical trial was completed in June 2016 and the clinical trial was formally completed on July 11, 2016.

On September 12, 2016, the Company announced preliminary top-line analysis of safety and efficacy data from this clinical trial. On October 3, 2016, the Company discovered an error in the preliminary data reported to it and accordingly, on October 4, 2016, the Company issued a press release retracting the efficacy data contained in the September 12, 2016 press release. On December 15, 2016, the Company announced the corrected results of the trial, and presented the re-analyzed data, as follows.

During REMI-INFUSION, the model of chronic opioid use, CX1739 antagonized the respiratory rate depression produced by remifentanil, with statistically significant effects observed at 300 mg ($p<.005$) and 900 mg ($p<.001$). The antagonism produced by the 600 mg dose did not achieve statistical significance. This lack of a linear, dose response effect is not unusual in early stage clinical trials. During this period, CX1739 did not alter the analgesic and sedative effects of remifentanil. During REMI-BOLUS, the model of IV opioid overdose, CX1739 treatment did not prevent respiratory depression, or improve time to recovery at any of the doses tested.

Overall, CX1739 was found to be safe and well tolerated, both prior to and during administration of remifentanil. Treatment-related adverse events ("AEs") for the various doses of CX1739 were mild, with an incidence comparable to that reported for placebo. The great majority of AEs occurred after remifentanil administration, including nausea and vomiting, which are common side effects associated with opioid administration.

The study was conducted at the Duke Clinical Research Unit of the Duke Clinical Research Institute. The ClinicalTrials.gov identifier is NCT02735629.

The Company intends to initiate a multi-center clinical trial investigating the ability of CX717 or CX1739 to improve breathing in patients with spinal cord injury. Assuming FDA allowance and appropriate approvals by institutional review boards, we intend to have this study conducted at the University of Miami, the University of Florida, the Detroit Medical Center and the Detroit Veterans Administration Hospital.

Upon issuance of the final clinical report of the CX1739 Phase 2A trial, the Company intends to seek FDA allowance to conduct a Phase 2 clinical trial investigating the safety and efficacy of CX1739 in chronic opioid patients who have central apnea.

National Institute of Drug Abuse Agreement

On January 19, 2016, the Company announced that that it had reached an agreement with the Medications Development Program of the National Institute of Drug Abuse (“NIDA”) to conduct research on the Company’s ampakine compounds CX717 and CX1739. The agreement was entered into as of October 19, 2015, and on January 14, 2016, the Company and NIDA approved the proposed protocols, allowing research activities to commence. NIDA is evaluating the compounds using pharmacologic, pharmacokinetic and toxicologic protocols to determine the potential effectiveness of the ampakines for the treatment of drug abuse and addiction. The Company retains all intellectual property as well as proprietary and commercialization rights to the Company’s compounds. Initial studies focus on cocaine and methamphetamine addiction and abuse, and are contracted to outside testing facilities and/or government laboratories, with all costs paid by NIDA. In experiments conducted by NIDA, CX717 antagonized the stimulatory effects of methamphetamine. NIDA is in the process of testing CX717 on the interoceptive effects (determinants of additions liability) of both cocaine and methamphetamine in models of drug discrimination in rats.

Research Contract with the University of Alberta

On January 12, 2016, the Company entered into a Research Contract with the University of Alberta in order to test the efficacy of ampakines at a variety of dosage and formulation levels in the potential treatment of Pompe Disease, apnea of prematurity and spinal cord injury, as well as to conduct certain electrophysiological studies to explore the ampakine mechanism of action for central respiratory depression. The Company agreed to pay the University of Alberta total consideration of approximately CAD$146,000 (approximately US$108,000), consisting of approximately CAD$85,000 (approximately US$63,000) of personnel funding in cash in four installments during 2016, to provide approximately CAD$21,000 (approximately US$16,000) in equipment, to pay patent costs of CAD$20,000 (approximately US$15,000), and to underwrite additional budgeted costs of CAD$20,000 (approximately US$15,000). As of December 31, 2017, the Company had recorded amounts payable in respect to this Research Contract of US$16,207 (CAD$21,222) which amount was paid in US dollars on January 24, 2018. The conversion to US dollars above utilizes an exchange rate of approximately US$0.76 for every CAD$1.00.

The University of Alberta received matching funds through a grant from the Canadian Institutes of Health Research in support of this research. The Company retains the rights to research results and any patentable intellectual property generated by the research. Dr. John Greer, Ph.D., Chairman of the Company's Scientific Advisory Board and faculty member of the Department of Physiology, Perinatal Research Centre, and Women & Children's Health Research at the University of Alberta, collaborated on this research. The studies were completed in 2016. Any patentable intellectual property developed in the Research Agreement will be covered by the existing license agreement.

Common Stock and Warrant Financings

1st 2017 Unit Offering

On August 29, 2017, September 27, 2017, September 28, 2017, October 5, 2017, October 25, 2017, November 29, 2017, December 13, 2017, December 21, 2017, December 22, 2017 and December 29, 2017 the Company sold units to investors in the 2nd 2017 Unit Offering for aggregate gross proceeds of $404,500, with each unit consisting of one share of the Company's common stock and one common stock purchase warrant to purchase one share of the Company's common stock. Units were sold for $1.00 per unit and the warrants issued in connection with the units are exercisable through September 29, 2022 at a fixed price $1.10 per share of the Company's common stock. The warrants contain a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants are also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closes at 250% or more of the unit purchase price for any five (5) consecutive trading days. The investors in the offering were not affiliates of the Company. Investors also received an unlimited number of piggy-back registration rights. Investors also received an unlimited number of exchange rights, which are options and

not obligations, to exchange such investor's entire investment (and not less than the entire investment) into one or more subsequent equity financings (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified as stockholders' equity, and excluding any form of debt or convertible debt (each such financing a "Subsequent Equity Financing" as in the 1st 2017 Unit Offering). These exchange rights were effective until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017 and therefore have expired. The dollar amount used to determine the amount invested or exchanged into the subsequent financing would have been 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The exchange right did not permit the investors to exchange into a debt offering or into redeemable preferred stock, therefore, unlike the 2nd 2016 Unit Offering, the 2nd 2017 Unit Offering resulted in the issuance of permanent equity.

The Company evaluated whether the warrants or the exchange rights met criteria to be accounted for as a derivative in accordance with Accounting Standard Codification Topic (ASC) 815 and determined that the derivative criteria were not met. Therefore, the Company determined no bifurcation and separate valuation was necessary and that the warrants and exchange right should be accounted for with the host instrument. The closing market prices of the Company's common stock on March 10, 2017 and March 28, 2017 were $4.05 and $3.80 respectively. In connection with this transaction, Aurora Capital LLC ("Aurora") served as a placement agent and earned $20,000 fees and 8,000 placement agent common stock warrants associated with the closing of the 1st 2017 Unit Offering. The fees were unpaid as of December 31, 2017 and have been accrued in accounts payable and accrued expenses and charged against Additional paid-in capital as of March 31, 2017, June 30, 2017, September 30, 2017 and December 31, 2017. The placement agent common stock warrants were valued at $27,648 and were accounted for in Additional paid-in capital as of March 31, 2017 and remain valued at that amount as of December 31, 2017.

On July 26, 2017, the Company's Board approved an offering of securities conducted via private placement (the "2nd 2017 Unit Offering" as described below) that, because of the terms of the 2nd 2017 Unit Offering as compared to the terms of the 2nd 2016 Unit offering as well as the 1st 2017 Unit Offering, resulted in an exchange of all outstanding units from each of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering for new equity securities of the Company into the 2nd 2017 Unit Offering by all of the investors in the 2nd 2016 Unit Offering and all of the investors in the 1st 2017 Unit Offering.

2nd 2017 Unit Offering

On August 29, 2017, September 27, 2017, September 28, 2017, October 5, 2017, October 25, 2017, November 29, 2017, December 13, 2017, December 21, 2017, December 22, 2017 and December 29, 2017 the Company sold units to investors in the 2nd 2017 Unit Offering for aggregate gross proceeds of $404,500, with each unit consisting of one share of the Company's common stock and one common stock purchase warrant to purchase one share of the Company's common stock. Units were sold for $1.00 per unit and the warrants issued in connection with the units are exercisable through September 29, 2022 at a fixed price $1.10 per share of the Company's common stock. The warrants contain a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants are also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closes at 250% or more of the unit purchase price for any five (5) consecutive trading days. The investors in the offering were not affiliates of the Company. Investors also received an unlimited number of piggy-back registration rights. Investors also received an unlimited number of exchange rights, which are options and not obligations, to exchange such investor's entire investment (and not less than the entire investment) into one or more subsequent equity financings (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified as stockholders' equity, and excluding any form of debt or convertible debt (each such financing a "Subsequent Equity Financing" as in the 1st 2017 Unit Offering). These exchange rights were effective until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017 and therefore have expired. The dollar amount used to determine the amount invested or exchanged into the subsequent financing would have been 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The exchange right did not permit the investors to exchange into a debt offering or into redeemable preferred stock, therefore, unlike the 2nd 2016 Unit Offering, the 2nd 2017 Unit Offering resulted in the issuance of permanent equity.

The Company evaluated whether the warrants or the exchange rights met criteria to be accounted for as a derivative in accordance with Accounting Standard Codification Topic (ASC) 815, and determined that the derivative criteria were not met. Therefore, the Company determined no bifurcation and separate valuation was necessary and the warrants and exchange right should be accounted for with the host instrument. The closing market prices of the Company's common stock on August 29, 2017, September 27, 2017, September 28, 2017, October 5, 2017, October 25, 2017, November 29, 2017, December 13, 2017, December 21, 2017, December 22, 2017 and December 29, 2017 were

$1.00, $1.40, $1.40, $1.50, $0.80, $1.05, $1.45, $1.51, $1.45 and $1.14 respectively. There was no placement agent and therefore no fees associated with the 2nd 2017 Unit Offering.

The terms of the 2nd 2017 Unit Offering, as compared to the terms of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering, were such that all of the units from each of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering were exchanged into securities of the 2nd 2017 Unit Offering. Because the 1st 2017 Unit Offering and the 2nd 2017 Unit Offering were both originally accounted for as equity, a reclassification similar to the 2nd 2016 Unit Offering was not required.

The shares of common stock and warrants in each of the private placements discussed above were offered and sold without registration under the Securities Act of 1933, as amended (the “Securities Act”) in reliance on the exemptions provided by Section 4(a)(2) of the Securities Act as provided in Rule 506(b) of Regulation D promulgated thereunder. None of the shares of common stock issued as part of the units, the warrants, the common stock issuable upon exercise of the warrants or any warrants issued to a qualified referral source have been registered under the Securities Act or any other applicable securities laws, and unless so registered, may not be offered or sold in the United States except pursuant to an exemption from the registration requirements of the Securities Act.

Going Concern

The Company's consolidated financial statements have been presented on the basis that it is a going concern, which contemplates the realization of assets and satisfaction of liabilities in the normal course of business. The Company has incurred net losses of $4,291,483 and $9,229,760 and negative operating cash flows of $697,009 and $1,328,684 for the fiscal years ended December 31, 2017 and 2016, respectively, had a stockholders' deficiency of $4,355,384 at December 31, 2017, and expects to continue to incur net losses and negative operating cash flows for at least the next few years. As a result, management has concluded that there is substantial doubt about the Company's ability to continue as a going concern, and the Company's independent registered public accounting firm, in its report on the Company's consolidated financial statements for the year ended December 31, 2017, has expressed substantial doubt about the Company's ability to continue as a going concern.

The Company is currently, and has for some time, been in significant financial distress. It has limited cash resources and current assets and has no ongoing source of revenue. Current management is continuing to address various aspects of the Company's operations and obligations, including, without limitation, debt obligations, financing requirements, intellectual property, licensing agreements, legal and patent matters and regulatory compliance, and has continued to raise new debt and equity capital to fund the Company's business activities.

In January 2016, the Company's Chief Executive Officer and Chief Scientific Officer each advanced an additional $52,600 to the Company for working capital purposes under secured short-term promissory notes payable aggregating $105,200 and three year warrants exercisable into 18,400 shares of Common Stock in the aggregate.

During April and May 2016, the Company entered into Note Exchange Agreements with certain note holders representing an aggregate of $303,500 of principal amount of the Notes (out of a total of $579,500 of original principal amount of the Notes). Pursuant to the Note Exchange Agreements, an aggregate of $344,483, which included accrued interest of $40,983, of the Notes were exchanged (together with original warrants to purchase 26,681 shares of the Company's common stock, New Warrants to purchase 14,259 shares of the Company's common stock, and the payment of an aggregate of $232,846 in cash) into a total of 101,508 shares of the Company's common stock. None of the Notes had previously been converted into shares of the Company's common stock.

During April and May 2016, the Company also entered into Unit Exchange Agreements with certain warrant holders who had acquired units in connection with the Second Amended and Restated Common Stock and Warrant Purchase Agreement on August 28, 2015, September 28, 2015 or November 2, 2015. The Unit Exchange Agreements provided for the warrant holders to exchange (i) existing warrants to purchase an aggregate of 217,187 shares of the Company's common stock, plus (ii) an aggregate of $529,394 in cash, in return for (i) an aggregate of 108,594 shares of the Company's common stock with a total market price of $728,859 (average $6.7275 per share), and (ii) new warrants to purchase an aggregate of 108,594 shares of the Company's common stock with an exercise price of $4.8750 per share,

exercisable for cash or on a cashless basis through the original expiration date of September 30, 2020.

In September 2016, the Company's Chief Executive Officer and Chief Scientific Officer each advanced an additional $25,000 to the Company for working capital purposes under secured short-term promissory notes payable aggregating $50,000 and three year warrants exercisable into 10,155 shares of common stock in the aggregate.

On December 29, 2016 and December 30, 2016, the Company sold units comprised of one share of Common Stock and one Common Stock Purchase Warrant to purchase one share of Common Stock in a private placement ("2nd 2016 Unit Offering") for gross proceeds of $185,000. The per unit purchase price was $1.42. The warrant exercise price was $1.562 per share of Common Stock. The warrants were exercisable until December 31, 2021. The warrants had a cashless exercise provision, "blocker" provisions similar to those described above and may be redeemed or called by the Company for a price of $0.001 per share if the closing price of the Company's Common Stock is equal to or greater than 200% of the unit purchase price or $2.82 for five consecutive trading days. The Company has had the right to call or redeem these warrants several times since issuance, but has chosen not to do so through the date of the issuance of this Form 10-K. Investors in the 2nd 2016 Unit Offering had an exchange right, that under certain circumstances permitted such investors to exchange their investment in the 2nd 2016 Unit Offering into subsequent financings until December 30, 2017 with an exchange ratio of 1.2 times the amount invested in the 2nd 2016 Unit Offering and under certain circumstances, a ratio of 1.4.

On March 10, 2017 and March 28, 2017, the Company sold units to investors in the 1st 2017 Unit Offering for aggregate gross proceeds of $350,000, with each unit consisting of one share of the Company's common stock and one common stock purchase warrant to purchase one share of the Company's common stock. Units were sold for $2.50 per unit and the warrants issued in connection with the units are exercisable through December 31, 2021 at a fixed price $2.75 per share of the Company's common stock. The warrants contain a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants were also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closes at 200% or more of the unit purchase price for any five (5) consecutive trading days. The investors were not affiliates of the Company. Investors received an unlimited number of piggy-back registration rights. Investors also received an unlimited number of exchange rights, which are options and not obligations, to exchange such investor's entire investment (and not less than the entire investment) into one or more subsequent equity financings (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified as stockholders' equity, and excluding any form of debt or convertible debt (each such financing a "Subsequent Equity Financing"). These exchange rights were effective until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017. The dollar amount used to determine the amount invested or exchanged into the subsequent financing would have been 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The exchange right did not permit the investors to exchange into a debt offering or into redeemable preferred stock. In connection with this transaction, Aurora Capital LLC ("Aurora") served as a placement agent and earned $20,000 of cash fees and 8,000 placement agent common stock warrants associated with the closing of 1st 2017 Unit Offering. The cash fees were unpaid as of December 31, 2017.

On July 26, 2017, the Company's Board approved the "2nd 2017 Unit Offering. The terms of the 2nd 2017 Unit Offering as compared to the terms of the 1st 2017 Unit Offering were such, that it resulted in an exchange of units from the 1st 2017 Unit Offering for new equity securities and warrants of the Company in the 2nd 2017 Unit Offering by the Company by all of the investors in the 1st 2017 Unit Offering.

On August 29, 2017, September 27, 2017, September 28, 2017, October 5, 2017, October 25, 2017, November 29, 2017, December 13, 2017, December 21, 2017, December 22, 2017 and December 29, 2017 the Company sold units to investors in the 2nd 2017 Unit Offering for aggregate gross proceeds of $404,500, with each unit consisting of one share of the Company's common stock and one common stock purchase warrant to purchase one share of the Company's common stock (2nd 2017 Unit Offering). Units were sold for $1.00 per unit and the warrants issued in connection with the units are exercisable through September 29, 2022 at a fixed price $1.10 per share of the Company's common stock. The warrants contain a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants are also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closes at 250% or more of the unit purchase price for any five (5) consecutive trading days. Investors were not affiliates of the Company. Investors also received an unlimited number of piggy-back registration rights. Investors received an unlimited number of exchange rights, which were options and not obligations, to exchange such investor's entire investment (and not less than the entire investment) into one or more subsequent equity financings (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified as stockholders' equity, and excluding any form of debt or convertible debt (each such financing a "Subsequent Equity Financing"). These exchange rights were effective until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017, and have therefore expired. The dollar amount used to determine the amount invested or exchanged into the subsequent financing would have been 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The exchange right did not permit the investors to exchange into a debt offering or into redeemable preferred stock. There was no placement agent and therefore no fees associated with the 2nd 2017 Unit Offering.

The terms of the 2nd 2017 Unit Offering as compared to the terms of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering, has resulted in an exchange of all of the units from each of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering into equity securities and warrants of the 2nd 2017 Unit Offering.

The Company is continuing its efforts to raise additional capital in order to be able to pay its liabilities and fund its business activities on a going forward basis, including an increase in the Company's research and development activities. As a result of the Company's current financial situation, the Company has limited access to external sources of debt and equity financing. Accordingly, there can be no assurances that the Company will be able to secure additional financing in the amounts necessary to fully fund its operating and debt service requirements. If the Company is unable to access sufficient cash resources, the Company may be forced to discontinue its operations entirely and liquidate.

Recent Accounting Pronouncements

In August 2017, the Financial Accounting Standards Board (the "FASB") issued Accounting Standards Update No. 2017-12 —Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities. The new standard is intended to improve and simplify accounting rules around hedge accounting. The new standard refines and expands hedge accounting for both financial (e.g., interest rate) and commodity risks. Its provisions create more transparency around how economic results are presented, both on the face of the financial statements and in the footnotes, for investors and analysts. The new standard takes effect for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018, for public companies and for fiscal years beginning after December 15, 2019 (and interim periods for fiscal years beginning after December 15, 2020), for private companies. Early adoption is permitted in any interim period or fiscal years before the effective date of the standard. The adoption of ASU 2017-12 is not expected to have any impact on the Company's financial statement presentation or disclosures.

In July 2017, the FASB issued Accounting Standards Update No. 2017-11 (ASU 2017-11), Earnings Per Share (Topic 260): Distinguishing Liabilities from Equity (Topic 480): Derivatives and Hedging (Topic 815). The relevant section for the Company is Tock 815 where it pertains to accounting for certain financial instruments with down round features. Until the issuance of this ASU, financial instruments with down round features required fair value measurement and subsequent changes in fair value were recognized in earnings. As a result of the ASU, financial instruments with down round features are no longer treated as a derivative liability measured at fair value. Instead, when the down round feature is triggered, the effect is treated as a dividend and as a reduction of income available to common shareholders in basic earnings per share. For public entities, the ASU is effective for fiscal years beginning after December 15, 2018. Early adoption is permitted including adoption in an interim period. The adoption of ASU 2017-11 is not expected to have any impact on the Company's financial statement presentation or disclosures.

In May 2017, the FASB issued ASU No. 2017-09, "Compensation – Stock Compensation (Topic 718)." The amendments in in this update provide guidance about which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting in Topic 718. An entity should account for the effects of a modification unless all the following are met: (i) the fair value (or calculated value or intrinsic value, if such an alternative measurement method is used) of the modified award is the same as the fair value (or calculated value or intrinsic value, if such an alternative measurement method is used) of the original award immediately before the original award is modified, (ii) the vesting conditions of the modified award are the same as the vesting conditions of the original award immediately before the original award is modified and (iii) the classification off the modified award as an equity instrument or a liability instrument is the same as the classification of the original award immediately before the original award is modified. The amendments in this update are effective for annual periods beginning after December 15, 2017 and for interim periods within those annual periods and are not expected to have any impact on the Company's financial statement presentation or disclosures.

In April 2016, the FASB issued ASU 2016-10, "Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing." The amendments in this update affect the guidance in Accounting Standards

Update 2014-09, Revenue from Contracts with Customers (Topic 606), which we are required to apply for annual and interim periods beginning after December 15, 2017. Management's current analysis is that the new guidelines currently will not substantially impact our revenue recognition. The adoption of the ASU is not expected to have any impact on the Company's financial statement presentation or disclosure.

In March 2016, the FASB issued Accounting Standards Update No. 2016-09 (ASU 2016-09), Compensation – Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting. ASU 2016-09 requires, among other things, that all income tax effects of awards be recognized in the statement of operations when the awards vest or are settled. ASU 2016-09 also allows for an employer to repurchase more of an employee's shares than it can today for tax withholding purposes without triggering liability accounting and allows for a policy election to account for forfeitures as they occur. ASU 2016-09 is effective for fiscal years beginning after December 15, 2016 and therefore is effective for this annual period. The adoption of ASU 2016-09 has not had a significant impact on the Company's financial statement presentation or disclosures.

Management does not believe that any other recently issued, but not yet effective, authoritative guidance, if currently adopted, would have a material impact on the Company's financial statement presentation or disclosures.

Concentration of Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash and cash equivalents. The Company limits its exposure to credit risk by investing its cash with high credit quality financial institutions.

The Company's research and development efforts and potential products rely on licenses from research institutions and if the Company loses access to these technologies or applications, its business could be substantially impaired.

Under a patent license agreement with The Governors of the University of Alberta, the Company has exclusive rights to the use of certain ampakine compounds to prevent and treat respiratory depression induced by opioid analgesics, barbiturates and anesthetic and sedative agents.

On May 8, 2007, the Company entered into a license agreement, as subsequently amended, with the University of Alberta granting the Company exclusive rights to practice patents held by the University of Alberta claiming the use of ampakines for the treatment of various respiratory disorders. The Company agreed to pay the University of Alberta a licensing fee and a patent issuance fee, which were paid, and prospective payments consisting of a royalty on net sales, sublicense fee payments, maintenance payments and milestone payments. The prospective maintenance payments commence on the enrollment of the first patient into the first Phase 2B clinical trial and increase upon the successful completion of the Phase 2B clinical trial. As the Company does not at this time anticipate scheduling a Phase 2B clinical trial, no maintenance payments are currently due and payable to the University of Alberta. In addition, no other prospective payments are currently due and payable to the University of Alberta.

Through the merger with Pier, the Company gained access to the Old License that Pier had entered into with the University of Illinois on October 10, 2007. The Old License covered certain patents and patent applications in the United States and other countries claiming the use of certain compounds referred to as cannabinoids for the treatment of sleep related breathing disorders (including sleep apnea), of which dronabinol is a specific example of one type of cannabinoid. Dronabinol is a synthetic derivative of the naturally occurring substance in the cannabis plant, otherwise known as Δ9-THC (Δ9-tetrahydrocannabinol). Dronabinol is currently approved by the FDA and is sold generically for use in refractory chemotherapy-induced nausea and vomiting, as well as for anorexia in patients with AIDS. Pier's business plan was to determine whether dronabinol would significantly improve subjective and objective clinical measures in patients with OSA. In addition, Pier intended to evaluate the feasibility and comparative efficacy of a proprietary formulation of dronabinol. The Old License was terminated effective March 21, 2013 due to the Company's failure to make a required payment and on June 27, 2014, the Company entered into the 2014 License Agreement with the University of Illinois, the material terms of which were similar to the Old License that had been terminated. If the Company is unable to comply with the terms of the 2014 License Agreement, such as required payments thereunder, the Company risks the 2014 License Agreement being terminated.

Critical Accounting Policies and Estimates

The Company prepared its consolidated financial statements in accordance with accounting principles generally accepted in the United States of America. The preparation of these consolidated financial statements requires the use of 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 amount of revenues and expenses during the reporting period. Management periodically evaluates the estimates and judgments made. Management bases its estimates and judgments on historical experience and on various factors that are believed to be reasonable under the circumstances. Actual results may differ from these estimates as a result of different assumptions or conditions.

The following critical accounting policies affect the more significant judgments and estimates used in the preparation of the Company's consolidated financial statements.

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Convertible Notes Payable and Related Warrants

The Company accounted for the beneficial conversion features with respect to the sale of the convertible notes and the issuance of the warrants in 2015 and 2016 in accordance with ASC 470-20, Accounting for Debt with Conversion and Other Options.

The Company considered the face value of the convertible notes to be representative of their fair value. The Company determined the fair value of the warrants based on the Black-Scholes option-pricing model. The relative fair value method generated respective fair values for each of the convertible notes and the warrants of approximately 50% for the convertible notes and approximately 50% for the warrants. Once these values were determined, the fair value of the warrants and the fair value of the beneficial conversion feature (which were calculated based on the effective conversion price) were recorded as a reduction to the face value of the promissory note obligation. As a result, this aggregate debt discount reduced the carrying value of the convertible notes to zero at each issuance date. The excess amount generated from this calculation was not recorded, as the carrying value of a convertible note cannot be reduced below zero. The aggregate debt discount is being amortized as interest expense over the original term of the convertible notes. The difference between the amortization of the debt discount calculated based on the straight-line method and the effective yield method was not material.

The cash fees paid to placement agents and for legal costs were deferred and capitalized as deferred offering costs and are being amortized to interest expense over the original term of the convertible notes on the straight-line method. The placement agent warrants were considered as an additional cost of the offering and were included in deferred offering costs at fair value. The difference between the amortization of the deferred offering costs calculated based on the straight-line method and the effective yield method was not material.

On August 13, 2015, the Company elected to extend the maturity date of the convertible notes to September 15, 2016. As a consequence of this election, under the terms of the convertible notes, the Company was required to issue to convertible note holders additional warrants (the “New Warrants”). In connection with the extension of the maturity date of the convertible notes, the Board of Directors of the Company determined to extend the termination date of the original warrants (the “Old Warrants”), so that they were coterminous with the new maturity date of the convertible notes.

The Company reviewed the guidance in ASC 405-20, Extinguishment of Liabilities, and determined that the notes had not been extinguished. The Company therefore concluded that the guidance in ASC 470-50, Modifications and Extinguishments, should be applied, which states that if the exchange or modification is not to be accounted for in the same manner as a debt extinguishment, then the fees shall be associated with the replacement or modified debt instrument and, along with any existing unamortized premium or discount, amortized as an adjustment of interest expense over the remaining term of the replacement or modified debt instrument using the interest method.

With regard to the modification of the convertible notes and the issuance of the New Warrants, the Company deferred the debt modification costs over the remaining term of the extended notes. The Company accounted for such costs as a discount to the notes and amortized such costs to interest expense over the extended term of the notes on the straight-line method. The difference between the amortization of these costs calculated based on the straight-line method and the effective yield method was not material.

With regard to the extension of the Old Warrants, the Company deferred the debt modification costs over the remaining term of the extended convertible notes. The Company accounted for such costs as a discount to the notes and amortized such costs to interest expense over the extended term of the convertible notes on the straight-line method. The difference between the amortization of these costs calculated based on the straight-line method and the effective yield method was not material.

The closing market price of the Company’s common stock on the extension date of September 15, 2015 was $10.075 per share, as compared to the fixed conversion price of the convertible notes and the fixed exercise price of both the Old Warrants and the New Warrants of $11.375 per share. The Company has accounted for the beneficial conversion features with respect to the extension of the convertible notes and the extension of the Old Warrants and the issuance of the New Warrants in accordance with ASC 470-20, Accounting for Debt with Conversion and Other Options.

The Company considered the face value of the convertible notes, plus the accrued interest thereon, to be representative of their fair value. The relative fair value method generated respective fair values for each of the convertible notes, including accrued interest, and the New Warrants and extension of the Old Warrants, of approximately 55% for the convertible notes, including accrued interest, and approximately 45% for the New Warrants and extension of the Old Warrants. Once these values were determined, the fair value of the New Warrants and extension of the Old Warrants and the fair value of the beneficial conversion feature (which were calculated based on the effective conversion price) were recorded as a reduction to the face value of the convertible note obligation. The aggregate debt discount is being amortized as interest expense over the extended term of the convertible notes. The difference between the amortization of the debt discount calculated based on the straight-line method and the effective yield method was not material.

Note Exchange Agreements and Unit Exchange Agreements

See Note 3 to our consolidated financial statements for the years ended December 31, 2017 and 2016 for information on our “Note Exchange Agreements” and “Unit Exchange Agreements.”

Research Grants

The Company recognizes revenues from research grants as earned based on the percentage-of-completion method of accounting and issues invoices for contract amounts billed based on the terms of the grant agreement. Revenues recorded under research grants in excess of amounts earned are classified as unearned grant revenue liability in the Company’s consolidated balance sheet. Grant receivable reflects contractual amounts due and payable under the grant agreement. Payments of grants receivable are based on progress reports provided to the grant provider by the Company.

Research grants are generally funded and paid through government or institutional programs. Amounts received under research grants are nonrefundable, regardless of the success of the underlying research project, to the extent that such amounts are expended in accordance with the approved grant project.

Stock-Based Compensation

The Company periodically issues common stock and stock options to officers, directors and consultants for services rendered. Such issuances vest and expire according to terms established at the issuance date of each grant.

The Company accounts for stock-based payments to officers and directors by measuring the cost of services received in exchange for equity awards based on the grant date fair value of the awards, with the cost recognized as compensation expense on the straight-line basis in the Company's financial statements over the vesting period of the awards. The Company accounts for stock-based payments to consultants by determining the value of the stock compensation based upon the measurement date at either (a) the date at which a performance commitment is reached, or (b) at the date at which the necessary performance to earn the equity instruments is complete.

Stock grants, which are generally time vested, are measured at the grant date fair value and charged to operations ratably over the vesting period.

Stock options granted to members of the Company's Scientific Advisory Board and to outside consultants are revalued each reporting period until vested to determine the amount to be recorded as an expense in the respective period. As the stock options vest, they are valued on each vesting date and an adjustment is recorded for the difference between the value already recorded and the value on the date of vesting.

The fair value of stock options is determined utilizing the Black-Scholes option-pricing model, and is affected by several variables, the most significant of which are the life of the equity award, the exercise price of the security as compared to the fair market value of the common stock on the grant date, and the estimated volatility of the common stock over the term of the equity award. Estimated volatility is based on the historical volatility of the Company's common stock. The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant. The fair value of common stock is determined by reference to the quoted market price of the Company's common stock.

Stock options and warrants issued to non-employees as compensation for services to be provided to the Company or in settlement of debt are accounted for based upon the fair value of the services provided or the estimated fair value of the stock option or warrant, whichever can be more clearly determined. Management utilizes the Black-Scholes option-pricing model to determine the fair value of the stock options and warrants issued by the Company. The Company recognizes this expense over the period in which the services are provided.

The Company recognizes the fair value of stock-based compensation in general and administrative costs and in research and development costs, as appropriate, in the Company's consolidated statements of operations. The Company issues new shares of common stock to satisfy stock option exercises.

Research and Development Costs

Research and development costs consist primarily of fees paid to consultants and outside service providers and organizations (including research institutes at universities), patent fees and costs, and other expenses relating to the acquisition, design, development and testing of the Company's treatments and product candidates.

Research and development costs incurred by the Company under research grants are expensed as incurred over the life of the underlying contracts, unless the terms of the contract indicate that a different expensing schedule is more appropriate.

The Company reviews the status of its research and development contracts on a quarterly basis.

License Agreements

Obligations incurred with respect to mandatory payments provided for in license agreements are recognized ratably over the appropriate period, as specified in the underlying license agreement, and are recorded as liabilities in the Company's consolidated balance sheet, with a corresponding charge to research and development costs in the Company's consolidated statement of operations. Obligations incurred with respect to milestone payments provided for in license agreements are recognized when it is probable that such milestone will be reached, and are recorded as liabilities in the Company's consolidated balance sheet, with a corresponding charge to research and development costs in the Company's consolidated statement of operations. Payments of such liabilities are made in the ordinary course of business.

Patent Costs

Due to the significant uncertainty associated with the successful development of one or more commercially viable products based on the Company's research efforts and any related patent applications, all patent costs, including patent-related legal and filing fees, are expensed as incurred.

Results of Operations

The Company's consolidated statements of operations as discussed herein are presented below.

	Years Ended December 31,	
	2017	2016
Operating expenses:		
General and administrative	2,515,846	5,295,683
Research and development	1,731,565	3,176,207
Total operating expenses	4,247,411	8,471,890
Loss from operations	(4,247,411)	(8,471,890)
Gain on settlements with service providers	-	1,076
Fair value of inducement cost to effect exchange of convertible notes	-	(188,274)
Interest income	-	8
Interest expense	(102,225)	(586,346)
Foreign currency transaction gain	58,153	15,666
Net loss	(4,291,483)	(9,229,760)
Adjustment related to Series G 1.5% Convertible Preferred Stock:		
Dividends on Series G 1.5% Convertible Preferred Stock	-	(1,165)
Net loss attributable to common stockholders	$(4,291,483)	$(9,230,295)
Net loss per common share - basic and diluted	$(1.77)	$(4.95)
Weighted average common shares outstanding - basic and diluted	2,418,271	1,864,045

Years Ended December 31, 2017 and 2016

Revenues. The Company had no research grant revenues or other revenues during the years ended December 31, 2017 and December 31, 2016.

General and Administrative. For the year ended December 31, 2017, general and administrative expenses were $2,515,846, a decrease of $2,779,837, as compared to $5,295,683 for the year ended December 31, 2016. The decrease in general and administrative expenses for the year ended December 31, 2017, as compared to the year ended December 31, 2016, is primarily due to decreases of $2,227,310 in stock-based compensation, $198,811 in administrative salaries and employee benefits and Board of Directors fees, $209,560 in corporate legal expenses and $59,820 in investor relations expenses. There were also decreases in accounting and consulting costs, offset by increases in insurance and a number of other smaller offsetting increases and decreases.

Stock-based compensation costs included in general and administrative expenses were $1,164,538 for the year ended December 31, 2017, as compared to $3,391,848 for the year ended December 31, 2016. Salaries, employee benefits and board fees included in general and administrative expenses were $696,445 for the year ended December 31, 2017, as compared to $895,256 for the year ended December 31, 2016. The net change reflects the effects of the termination of employment of the Company's former Chief Financial Officer in February 2017, partially offset by the increase in base compensation of the officer taking over the Chief Financial Officer responsibilities. It also reflects of the gain experienced by the Company upon the forgiveness of accrued compensation by certain officers, a former officer and the independent members of the Board of Directors, partially offset by the value of options granted to those individuals on the same date.

The Company experienced a net benefit of $59,338 when, on December 9, 2017, certain officers, one former officer, two independent members of the Board of Directors and two vendors forgave $1,861,221 of compensation, benefits and other expenses and received, on the same date, options valued at $1,801,883.

In addition, during 2017, the Company experienced an increase in the costs of directors and officers liability insurance and general office insurance.

Research and Development. For the year ended December 31, 2017, research and development expenses were $1,731,565, a decrease of $1,444,642, as compared to $3,176,207 for the year ended December 31, 2016. The decrease in research and development expenses for the year ended December 31, 2017, as compared to the year ended December 31, 2016, is primarily a result of a $580,325 decrease in stock-based compensation and a $566,222 decrease in research contract related expenses, most of which is related to the CX1739 clinical trial at Duke University School

of Medicine, a $264,426 decrease in research and development expenses at other research institutes and vendors, as well as a $42,572 decrease in patent legal and other fees.

The Company experienced a net benefit of $25,742 when, on December 9, 2017, an officer whose compensation and related benefit expenses that are included in research and development expenses forgave $807,497 of such compensation and related expenses, and received in exchange options valued at $781,755.

Interest Expense. During the year ended December 31, 2017, interest expense was $102,225 (including $15,220 to related parties), a decrease of $484,121, as compared to $586,346 (including $151,958 to related parties) for the year ended December 31, 2016. The decrease in interest expense resulted primarily from the exchanges of certain convertible notes for common stock.

Foreign Currency Transaction Gain. Foreign currency transaction gain was $58,153 for the year ended December 31, 2017, as compared to a foreign currency transaction gain of $15,666 for the year ended December 31, 2016. The foreign currency transaction gain relates to the $399,774 loan from SY Corporation Co., Ltd., formerly known as Samyang Optics Co. Ltd., made in June 2012, which is denominated in the South Korean Won.

Net Loss. For the year ended December 31, 2017, the Company incurred a net loss of $4,291,483, as compared to a net loss of $9,229,760 for the year ended December 31, 2016.

Dividends on Series G 1.5% Convertible Preferred Stock. There were no dividends on the Series G 1.5% Convertible Preferred Stock for the year ended December 31, 2017, as compared to dividends of $1,165 for the year ended December 31, 2016. On April 17, 2016, all remaining previously unconverted outstanding shares of Series G 1.5% Convertible Preferred Stock were automatically and mandatorily redeemed by conversion into shares of common stock at a conversion price of $1.0725 per share.

Net Loss Attributable to Common Stockholders. For the year ended December 31, 2017, the Company incurred a net loss attributable to common stockholders of $4,291,483, as compared to a net loss attributable to common stockholders of $9,230,925 for the year ended December 31, 2016.

Liquidity and Capital Resources

The Company’s consolidated financial statements have been presented on the basis that it is a going concern, which contemplates the realization of assets and satisfaction of liabilities in the normal course of business. The Company has incurred net losses of $4,291,483 and $9,229,760 and negative operating cash flows of $697,009 and $1,328,684 for the fiscal years ended December 31, 2017 and 2016, respectively, had a stockholders’ deficiency of $4,355,384 at December 31, 2017, and expects to continue to incur net losses and negative operating cash flows for at least the next few years. As a result, management has concluded that there is substantial doubt about the Company’s ability to continue as a going concern, and the Company’s independent registered public accounting firm, in its report on the Company’s consolidated financial statements for the year ended December 31, 2017, has expressed substantial doubt about the Company’s ability to continue as a going concern.

At December 31, 2017, the Company had a working capital deficit of $4,373,443, as compared to a working capital deficit of $5,493,377 at December 31, 2016, reflecting an increase in working capital (a decrease in working capital deficit) of $1,119,934 for the year ended December 31, 2017. The decrease in the working capital deficit during the year ended December 31, 2017 is comprised primarily of a decrease in accrued compensation and related expenses of $1,465,259 arising primarily by the forgiveness described above partially offset by increases in accounts payable and accrued expenses of $427,284, and a net decrease of other current liabilities of $139,095 (inclusive of accrued interest), partially offset by net decrease of $11,827 in current prepaid expenses.

At December 31, 2017, the Company had cash aggregating $84,902, as compared to $92,040 at December 31, 2016, reflecting a decrease in cash of $7,138 for the year ended December 31, 2017. The decrease in cash at December 31, 2017 was primarily the result of principal amounts of short-term notes repaid of $64,629 and $697,009 of cash used in operating activities, partially offset by $ 754,500 of cash raised in financing activities.

The Company is currently, and has for some time, been in significant financial distress. It has limited cash resources and current assets and has no ongoing source of revenue. Current management is continuing to address numerous aspects of the Company’s operations and obligations, including, without limitation, debt obligations, financing requirements, intellectual property, licensing agreements, legal and patent matters and regulatory compliance, and has continued to raise new debt and equity capital to fund the Company’s business activities.

From January 8, 2016 through June 30, 2016, the Company sold units comprised of one share of Common Stock and one Common Stock Purchase Warrant to purchase two shares of Common Stock in a private placement ("1st 2016 Unit Offering"). The per unit purchase price was $7.2085 and the warrant exercise price is $7.93. The warrants are exercisable until January 31, 2021. The warrants have a cashless exercise provision and certain "blocker" provisions that prevent or postpone exercise if such exercise would cause the investor to own more than 4.99% of the shares of Common Stock of the Company offer exercise. Gross proceeds were $307,985. In connection with the 1st 2016 Unit Offering, 43,003 shares of Common Stock were issued and 86,005 warrants to purchase Common Stock were issued. No fees were paid to qualified referral sources in connection with the 1st 2016 Unit Offering.

On December 29, 2016 and December 30, 2016, the Company sold units comprised of one share of Common Stock and one Common Stock Purchase Warrant to purchase one share of Common Stock in a private placement ("2nd 2016 Unit Offering") for gross proceeds of $185,000. The per unit purchase price was $1.42. The warrant exercise price was $1.562 per share of Common Stock. The warrants were exercisable until December 31, 2021. The warrants had a cashless exercise provision, "blocker" provisions similar to those described above and may be redeemed or called by the Company for a price of $0.001 per share if the closing price of the Company's Common Stock is equal to or greater than 200% of the unit purchase price or $2.82 for five consecutive trading days. The Company had the right to call or redeem these warrants several times since issuance but has chosen not to do so. Investors in the 2nd 2016 Unit Offering had an exchange right, that under certain circumstances permitted such investors to exchange their investment in the 2nd 2016 Unit Offering into subsequent financings until December 30, 2017 with an exchange ratio of 1.2 times the amount invested in the 2nd 2016 Unit Offering and under certain circumstances, a ratio of 1.4.

The exchange right permitted the investors to exchange into a subsequent debt offering. The Company accounts for non-permanent equity as a liability and such portion of that liability due or to be outstanding for one year or less as a current liability. The Company determined that until the earlier of the completion of aggregate subsequent financings of at least $15 million or December 30, 2017, because the exchange right permitted an exchange into a subsequent debt instrument, this financing should be accounted for as non-permanent equity and had therefore classified the total amount of the gross proceeds of the offering as a current liability as of December 31, 2016. In 2017, all of the investors in the 2nd 2016 Unit Offering exchanged into the 2nd 2017 Unit Offering described below, which was an equity offering at which time the Company determined than any further exchanges into anything other than a permanent equity offering was highly unlikely and reclassified the $185,000 from a current liability to permanent equity. As of December 31, 2017, investors in the 2nd 2016 Unit Offering had no further exchange rights.

On March 10, 2017 and March 28, 2017, the Company sold units to investors in the 1st 2017 Unit Offering for aggregate gross proceeds of $350,000, with each unit consisting of one share of the Company's common stock and one common stock purchase warrant to purchase one share of the Company's common stock. Units were sold for $2.50 per unit and the warrants issued in connection with the units were exercisable through December 31, 2021 at a fixed price $2.75 per share of the Company's common stock. The warrants contained a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants were also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closed at 200% or more of the unit purchase price for any five (5) consecutive trading days. The investors in the offering were not

affiliates of the Company. Investors also received an unlimited number of piggy-back registration rights. Investors also received an unlimited number of exchange rights, which were options and not obligations, to exchange such investor's entire investment (and not less than the entire investment) into one or more subsequent equity financings (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified as stockholders' equity, and excluding any form of debt or convertible debt (each such financing a "Subsequent Equity Financing"). These exchange rights were effective until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017. The dollar amount used to determine the amount invested or exchanged into the subsequent financing was 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The exchange right did not permit the investors to exchange into a debt offering or into redeemable preferred stock, therefore, unlike the 2nd 2016 Unit Offering, the 2017 Unit Offering resulted in the issuance of permanent equity.

The Company evaluated whether the warrants or the exchange rights met criteria to be accounted for as a derivative in accordance with Accounting Standard Codification Topic (ASC) 815 and determined that the derivative criteria were not met. Therefore, the Company determined no bifurcation and separate valuation was necessary and that the warrants and exchange right should be accounted for with the host instrument. The closing market prices of the Company's common stock on March 10, 2017 and March 28, 2017 were $4.05 and $3.80 respectively. In connection with this transaction, Aurora Capital LLC ("Aurora") served as a placement agent and earned $20,000 fees and 8,000 placement agent common stock warrants associated with the closing of 1st 2017 Unit Offering. The fees were unpaid as of December 31, 2017 and have been accrued in accounts payable and accrued expenses and charged against Additional paid-in capital as of March 31, 2017, June 30, 2017 and September 30, 2017 and December 31, 2017. The placement agent common stock warrants were valued at $27,648 and were accounted for in Additional paid-in capital as of March 31, 2017 and remain valued at that amount as of December 31, 2017.

On July 26, 2017, the Company's Board approved the 2nd 2017 Unit Offering, an offering of securities conducted via private placement that, because of the terms of the 2nd 2017 Unit Offering as compared to the terms of the 2nd 2016 Unit offering as well as the 1st 2017 Unit Offering, resulted in an exchange of all outstanding units from each of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering for new equity securities of the Company into the 2nd 2017 Unit Offering by all of the investors in the 2nd 2016 Unit Offering and all of the investors in the 1st 2017 Unit Offering.

On August 29, 2017, September 27, 2017, September 28, 2017, October 5, 2017, October 25, 2017, November 29, 2017, December 13, 2017, December 21, 2017, December 22, 2017 and December 29, 2017 the Company sold units to investors in the 2nd 2017 Unit Offering for aggregate gross proceeds of $404,500, with each unit consisting of one share of the Company's common stock and one warrant to purchase one share of the Company's common stock. Units were sold for $1.00 per unit and the warrants issued in connection with the units are exercisable through September 29, 2022 at a fixed price $1.10 per share of the Company's common stock. The warrants contain a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants are also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closes at 250% or more of the unit purchase price for any five (5) consecutive trading days. The investors in the offering were not affiliates of the Company. Investors received an unlimited number of piggy-back registration rights. Investors also received an unlimited number of exchange rights, which are options and not obligations, to exchange such investor's entire investment (and not less than the entire investment) into one or more subsequent equity financings (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified as stockholders' equity, and excluding any form of debt or convertible debt (each such financing a "Subsequent Equity Financing"). These exchange rights were effective until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017, and therefore have expired. The dollar amount used to determine the amount invested or exchanged into the subsequent financing would have been 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The exchange right did not permit the investors to exchange into a debt offering or into redeemable preferred stock, therefore, unlike the 2nd 2016 Unit Offering, the 2nd 2017 Unit Offering resulted in the issuance of permanent equity.

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The Company evaluated whether the warrants or the exchange rights met criteria to be accounted for as a derivative in accordance with Accounting Standard Codification Topic (ASC) 815, and determined that the derivative criteria were not met. Therefore, the Company determined no bifurcation and separate valuation was necessary and the warrants and exchange right should be accounted for with the host instrument. The closing market prices of the Company's common stock on August 29, 2017, September 27, 2017, September 28, 2017, October 5, 2017, October 25, 2017, November 29, 2017, December 13, 2017, December 21, 2017, December 22, 2017 and December 29, 2017 were $1.00, $1.40, $1.40, $1.50, $0.80, $1.05, $1.45, $1.51, $1.45 and $1.14 respectively. There was no placement agent and therefore no fees associated with the 2nd 2017 Unit Offering.

The terms of the 2nd 2017 Unit Offering, as compared to the terms of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering, were such that all of the units from each of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering were exchanged into securities of the 2nd 2017 Unit Offering. Because the 1st 2017 Unit Offering and the 2nd 2017 Unit Offering were both originally accounted for as equity, a reclassification similar to the 2nd 2016 Unit Offering was not required.

The shares of common stock and warrants in each of the private placements discussed above were offered and sold without registration under the Securities Act of 1933, as amended (the "Securities Act") in reliance on the exemptions provided by Section 4(a)(2) of the Securities Act as provided in Rule 506(b) of Regulation D promulgated thereunder. None of the shares of common stock issued as part of the units, the warrants, the common stock issuable upon exercise of the warrants or any warrants issued to a qualified referral source. have been registered under the Securities Act or any other applicable securities laws, and unless so registered, may not be offered or sold in the United States except pursuant to an exemption from the registration requirements of the Securities Act.

The Company is continuing its efforts to raise additional capital in order to be able to pay its liabilities and fund its business activities on a going forward basis and regularly evaluates various measures to satisfy the Company's liquidity needs, including developing agreements with collaborative partners and seeking to exchange or restructure some of the Company's outstanding securities. As a result of the Company's current financial situation, the Company has limited access to external sources of debt and equity financing. Accordingly, there can be no assurances that the Company will be able to secure additional financing in the amounts necessary to fully fund its operating and debt service requirements. If the Company is unable to access sufficient cash resources, the Company may be forced to discontinue its operations entirely and liquidate.

Operating Activities. For the year ended December 31, 2017, operating activities utilized cash of $697,009, as compared to utilizing cash of $1,328,684 for the year ended December 31, 2016, to support the Company's ongoing operations, including legal and accounting fees and costs related to the preparation of financial statements and SEC filings, research and development activities, patent fees and related legal costs, and settlement agreements.

Investing Activities. The Company did not generate cash from investing activities in 2017 or 2016.

Financing Activities. For the year ended December 31, 2017, financing activities generated cash of $689,871 comprised of $754,500 from the sale of units comprised of common stock and warrants and which was partially offset by principal paid on short-term notes of $64,629. For the year ended December 31, 2016, financing activities generated $494,985 from the sale of units comprised of common stock and warrants, $762,240 from warrant exchanges, $155,200 from notes payable to officers, partially offset by cash used to pay principal amounts of short-term notes payable of $39,602, cash paid in lieu of the issuance of fractional shares associated with the reverse stock split of $1,298 and fees associated with financings of $4,000.

Principal Commitments

Employment Agreements

On August 18, 2015, the Company entered into an employment agreement with Dr. James S. Manuso to be its new President and Chief Executive Officer. In connection therewith, and in addition to other provisions, the Board of Directors of the Company awarded Dr. Manuso stock options to purchase a total of 261,789 shares of common stock, of which options for 246,154 shares were granted pursuant to the Company's 2015 Plan and options for 15,635 shares were granted pursuant to the Company's 2014 Plan. The stock options vested 50% on August 18, 2015 (at issuance), 25% on February 18, 2016, and 25% on August 18, 2016, and will expire on August 18, 2025. The exercise price of the stock options was established on the grant date at $6.4025 per share, which is equal to the simple average of the most recent four full trading weeks, weekly Volume Weighted Average Prices ("VWAPs") of the Company's common stock price immediately preceding the date of grant as reported by the OTC markets, as compared to the closing market price of the Company's common stock on August 18, 2015 of $7.02 per share. The aggregate grant date fair value of these stock options calculated pursuant to the Black-Scholes option-pricing model was $1,786,707. Additional information with respect to other provisions of the employment agreement is provided in the Company's Consolidated Financial Statements at Note 9.

On August 18, 2015, the Company also entered into employment agreements with Dr. Arnold S. Lippa, its new Chief Scientific Officer, Robert N. Weingarten, its Vice President and Chief Financial Officer, and Jeff E. Margolis, its Vice President, Treasurer and Secretary. In connection therewith, and in addition to other provisions, the Board of Directors of the Company awarded to each of those officers stock options to purchase a total of 30,769 shares of common stock pursuant to the Company's 2015 Plan. The stock options vested 25% on December 31, 2015, 25% on March 31, 2016, 25% on June 30, 2016, and 25% on September 30, 2016, and will expire on August 18, 2022. The exercise price of the stock options was established on the grant date at $6.4025 per share, which is equal to the simple average of the most recent four full trading weeks, weekly VWAPs of the Company's common stock price immediately preceding the date of grant as reported by the OTC Markets, as compared to the closing market price of the Company's common stock on August 18, 2015 of $7.0200 per share. The aggregate grant date fair value of these stock options calculated pursuant to the Black-Scholes option-pricing model was $609,000. During the years ended December 31, 2016 and 2015, the Company recorded charges to operations of $569,222 and $1,223,772, respectively, with respect to these stock option and the stock options issued to Dr. Manuso described in the prior paragraph. Additional information with respect to

other provisions of the employment agreement is provided in the Company's Consolidated Financial Statements at Note 9.

In February 2017, Robert N. Weingarten resigned as the Company's Vice President and Chief Financial Officer and resigned as a member of the Company's Board of Directors. The Board of Directors accepted Mr. Weingarten's resignation and appointed Mr. Margolis to the additional title of Chief Financial Officer. Other than the additional title and responsibilities, there were no changes to Mr. Margolis' compensation arrangements at that time. Mr. Weingarten remains a consultant to the Company.

Jeff E. Margolis' employment agreement was amended effective July 1, 2017 and he was named Chief Financial Officer (no longer interim). The employment agreement amendment called for payment in three installments in cash of the $60,000 bonus granted on June 30, 2015. A minimum of $15,000 was to be payable in cash as follows: (a) $15,000 payable in cash upon the next closing (after July 1, 2017) of any financing in excess of $100,000 (b) $15,000 payable by the end of the following month assuming cumulative closings (beginning with the closing that triggered (a)) in excess of $200,000 and (c) $30,000 payable in cash upon the next closing of any financing in excess of an additional $250,000. The conditions of (a), (b) and (c) above were met as of December 31, 2017, however Mr. Margolis has waived the Company's obligation to make any payments of the cash bonus until the Board of Directors of the Company determines that sufficient capital has been raised by the Company or is otherwise available to fund the Company's operations on an ongoing basis. Obligations through September 30, 2017 were forgiven by Mr. Margolis as described below.

On March 31, 2016, the Board of Directors of the Company awarded stock options for a total of 523,075 shares of common stock in various quantities to twelve individuals who are members of management, the Company's Scientific Advisory Board, independent members of the Board of Directors, or outside service providers pursuant to the Company's 2015 Plan. The stock options vested 25% on each of March 31, 2016, June 30, 2016, September 30, 2016, and December 31, 2016, and will expire on March 31, 2021. The exercise price of the stock options was established on the grant date at $7.3775 per share, which was the closing market price of the Company's common stock on such date. The aggregate grant date fair value of these stock options, as calculated pursuant to the Black-Scholes option-pricing model, was $3,774,000. During the three months and nine months ended September 30, 2016, the Company recorded a charge to operations of $844,650 and $2,686,800, respectively, with respect to these stock options.

On September 12, 2016, the Company entered into an agreement for consulting services, which provided for the payment of a fee through the grant of a non-qualified stock option to purchase a total of 2,608 shares of common stock pursuant to the Company's 2015 Plan. The stock option was fully vested on the date of grant and will expire on September 12, 2021. The exercise price of the stock option was established on the grant date at $5.7500 per share, which was the closing market price of the Company's common stock on the date of grant. The aggregate grant date fair value of the stock option, calculated pursuant to the Black-Scholes option-pricing model, was $14,384, which was charged to operations on the date of grant.

On January 17, 2017, the Board of Directors further increased the number of shares that may be issued under the 2015 Plan to 3,038,461 shares of the Company's common stock. On December 9, 2017, the Board of Directors further increased the number of shares that may be issued under the 2015 Plan to 6,985,260 shares of the Company's common stock.

On January 17, 2017, the Board of Directors of the Company awarded stock options for a total of 395,000 shares of Common Stock in various quantities to seventeen individuals or their designees pursuant to the Company's 2015 Plan. The individuals are members of management, the Company's Scientific Advisory Board, independent members of the

Board of Directors or outside service providers. The stock options vested 25% on the date of the grant, and will vest 50% on March 31, 2017 and 25% on June 30, 2017, and are exercisable for five years at $3.90 per share of Common Stock.

On July 26, 2017, the Company granted Jeff E. Margolis, 25,000 non-qualified stock options from the 2015 Plan, all of which vested by December 31, 2017. The options have an exercise price of $2.00 per share and expire on July 26, 2022.

On July 28, 2017, the Board of Directors awarded 34,000 non-qualified stock options from the 2015 Plan to two consultants totaling. The options have an exercise price of $1.35 per share of common stock and expire on July 28, 2022. All of these options were vested by December 31, 2017.

On December 9, 2017, the Company accepted offers from Dr. Arnold S. Lippa, Dr. James S. Manuso, Jeff E. Margolis, James E. Sapirstein, Kathryn MacFarlane and Robert N. Weingarten (former Chief Financial Officer) pursuant to which such individuals would forgive accrued compensation and related accrued expenses as of September 30, 2017 in the following amounts: $807,497; $878,360; $560,876; $55,000; $55,000 and $200,350, respectively, for a total of $2,557,083. On the same date, the Board of Directors of the Company granted to the same individuals, or designees of such individuals from the 2015 Plan, non-qualified stock options, exercisable for 10 years with an exercise price of $1.45 per share of common stock, among other terms and features as follows: 559,595; 608,704; 388,687; 38,114; 38,114 and 138,842, respectively, for options exercisable into a total of 1,772,055 shares of common stock.

On December 9, 2017, the Board of Directors of the Company awarded 100,000 non-qualified stock options from the 2015 Plan to Richard Purcell, the Company’s Senior Vice President of Research and Development as a bonus. These options vested upon grant, have an exercise price of $1.45 and are exercisable for 10 years.

Information with respect to the issuance of common stock options in connection with the settlement of debt obligations and as payment for consulting services is provided in the Company's Consolidated Financial Statements at Note 5.

Information with respect to common stock awards issued to officers and directors as compensation is provided above under "Common Stock."

Information with respect to the Black-Scholes variables used in connection with the evaluation of the fair value of stock-based compensation is provided in the Company's Consolidated Financial Statements at Note 2.

University of Alberta License Agreement

On May 8, 2007, the Company entered into a license agreement, as amended, with the University of Alberta granting the Company exclusive rights to practice patents held by the University of Alberta claiming the use of ampakines for the treatment of various respiratory disorders. The Company agreed to pay the University of Alberta a licensing fee and a patent issuance fee, which were paid, and prospective payments consisting of a royalty on net sales, sublicense fee payments, maintenance payments and milestone payments. The prospective maintenance payments commence on the enrollment of the first patient into the first Phase 2B clinical trial and increase upon the successful completion of the Phase 2B clinical trial. As the Company does not at this time anticipate scheduling a Phase 2B clinical trial, no maintenance payments are currently due and payable to the University of Alberta. In addition, no other prospective payments are currently due and payable to the University of Alberta.

University of Illinois 2014 Exclusive License Agreement

On June 27, 2014, the Company entered into an Exclusive License Agreement (the "2014 License Agreement") with the University of Illinois, the material terms of which were similar to the License Agreement between the parties that had been previously terminated on March 21, 2013. The 2014 License Agreement became effective on September 18, 2014, upon the completion of certain conditions set forth in the 2014 License Agreement, including: (i) the payment by the Company of a $25,000 licensing fee, (ii) the payment by the Company of outstanding patent costs aggregating $15,840, and (iii) the assignment to the University of Illinois of rights the Company held in certain patent applications, all of which conditions were fulfilled.

The 2014 License Agreement granted the Company (i) exclusive rights to several issued and pending patents in numerous jurisdictions and (ii) the non-exclusive right to certain technical information that is generated by the University of Illinois in connection with certain clinical trials as specified in the 2014 License Agreement, all of which relate to the use of cannabinoids for the treatment of sleep related breathing disorders. The Company is developing dronabinol (Δ9-tetrahydrocannabinol), a cannabinoid, for the treatment of OSA, the most common form of sleep apnea.

The 2014 License Agreement provides for various commercialization and reporting requirements commencing on June 30, 2015. In addition, the 2014 License Agreement provides for various royalty payments, including a royalty on net sales of 4%, payment on sub-licensee revenues of 12.5%, and a minimum annual royalty beginning in 2015 of $100,000, which is due and payable on December 31 of each year beginning on December 31, 2015. The minimum annual royalty of $100,000 was paid as scheduled in December 2017 and 2016, respectively. In the year after the first application for market approval is submitted to the FDA and until approval is obtained, the minimum annual royalty will increase to $150,000. In the year after the first market approval is obtained from the FDA and until the first sale of a product, the minimum annual royalty will increase to $200,000. In the year after the first commercial sale of a product, the minimum annual royalty will increase to $250,000. The Company recorded a charge to operations of $100,000 with respect to its 2017 minimum annual royalty obligation, which is included in research and development expenses in the Company’s consolidated statement of operations for the year ended December 31, 2017.

The 2014 License Agreement also provides for certain one-time milestone payments. A payment of $75,000 is due within five days after any one of the following: (a) dosing of the first patient with a product in a Phase 2 human clinical study anywhere in the world that is not sponsored by the University of Illinois, (b) dosing of the first patient in a Phase 2 human clinical study anywhere in the world with a low dose of dronabinol, or (c) dosing of the first patient in a Phase 1 human clinical study anywhere in the world with a proprietary reformulation of dronabinol. A payment of $350,000 is due within five days after dosing of the first patient with a product in a Phase 3 human clinical trial anywhere in the world. A payment of $500,000 is due within five days after the first new drug application filing with the FDA or a foreign equivalent for a product. A payment of $1,000,000 is due within 12 months after the first commercial sale of a product.

Research Contract with the University of Alberta

On January 12, 2016, the Company entered into a Research Contract with the University of Alberta in order to test the efficacy of ampakines at a variety of dosage and formulation levels in the potential treatment of Pompe Disease, apnea of prematurity and spinal cord injury, as well as to conduct certain electrophysiological studies to explore the ampakine mechanism of action for central respiratory depression. The Company agreed to pay the University of Alberta total consideration of approximately CAD$146,000 (approximately US$108,000), consisting of approximately CAD$85,000 (approximately US$63,000) of personnel funding in cash in four installments during 2016, to provide approximately CAD$21,000 (approximately US$16,000) in equipment, to pay patent costs of CAD$20,000 (approximately US$15,000), and to underwrite additional budgeted costs of CAD$20,000 (approximately US$15,000). As of December 31, 2017, the Company had recorded amounts payable in respect to this Research Contract of US$16,207 (CAD$21,222) which amount was paid in US dollars in January 2018. The conversion to US dollars above utilizes an exchange rate of approximately US$0.76 for every CAD$1.00.

The University of Alberta received matching funds through a grant from the Canadian Institutes of Health Research in support of this research. The Company will retain the rights to research results and any patentable intellectual property generated by the research. Dr. John Greer, Ph.D., faculty member of the Department of Physiology, Perinatal Research Centre, and Women & Children's Health Research Institute at the University of Alberta, collaborated on this research. The studies were completed in 2016.

Duke University Clinical Trial Agreement

On January 27, 2015, the Company entered into a Clinical Study and Research Agreement (the "Agreement") with Duke University to develop and conduct a protocol for a program of clinical study and research at a total cost of $50,579, which was completed in March 2015. On October 30, 2015, the Agreement was amended to provide for certain additional services related to the Company's Phase 2A clinical trial of CX1739. The commencement of this clinical trial was subject to resolution of two deficiencies raised by the FDA in its clinical hold letter issued in November 2015, which were satisfactorily resolved in early 2016, as a result of which the FDA removed the clinical hold on the Company's IND for CX1739 on February 25, 2016, thus allowing for the initiation of the clinical trial. During March 2016, upon receiving unconditional approval from the Institutional Review Board of the Duke Clinical Research Unit, this Phase 2A clinical trial at Duke University School of Medicine was initiated. There were no direct costs in 2017 with respect to this clinical trial. The Company incurred $602,642 of direct costs in 2016 with respect to this clinical trial, which was completed in 2016.

Sharp Clinical Services, Inc. Agreement

On August 31, 2015, the Company entered into an agreement with Sharp Clinical Services, Inc. to provide packaging, labeling, distribution and analytical services for the Company with respect to CX1739. The Company incurred $28,467 and $83,081 of such services in 2017 and 2016, respectively.

Contractual Obligations and Commitments

The following table sets forth the Company's principal cash obligations and commitments for the next five fiscal years as of December 31, 2017, aggregating $1,340,350.

		Payments Due By Year				
	Total	2018	2019	2020	2021	2022
Research and development contracts	$-	$-	$-	$-	$-	$-
Clinical trial agreements	-	-	-	-	-	-
License agreements	500,000	100,000	100,000	100,000	100,000	100,000
Digital media consulting agreement	20,000	20,000				
Employment and consulting agreements (1)	820,350	820,350	-	-	-	-
Total	$1,340,350	$940,350	$100,000	$100,000	$100,000	$100,000

(1) The payment of such amounts has been deferred indefinitely, as described above at "Employment Agreements".

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Off-Balance Sheet Arrangements

At December 31, 2017, the Company did not have any transactions, obligations or relationships that could be considered off-balance sheet arrangements.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Not applicable for smaller reporting companies.

Item 8. Financial Statements and Supplementary Data

Our financial statements and other information required by this item are set forth herein in a separate section beginning with the Index to Consolidated Financial Statements on page F-1.

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

Not applicable.

Item 9A. Controls and Procedures

Disclosure Controls and Procedures

The Company maintains disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act") that are designed to ensure that information required to be disclosed in the reports that the Company files with the Securities and Exchange Commission (the "SEC") under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to the Company's management,

including its Chief Executive Officer and Chief Financial Officer, to allow for timely decisions regarding required disclosures.

The Company carried out an evaluation, under the supervision and with the participation of its management, consisting of its principal executive officer and principal financial officer, of the effectiveness of the Company's disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act). Based upon that evaluation, the Company's principal executive officer and principal financial officer concluded that, as of the end of the period covered in this Annual Report on Form 10-K, the Company's disclosure controls and procedures were not effective to ensure that information required to be disclosed in reports filed under the Exchange Act is recorded, processed, summarized and reported within the required time periods and is accumulated and communicated to the Company's management, consisting of the Company's principal executive officer and principal financial officer, to allow timely decisions regarding required disclosure.

The Company failed to complete and file various periodic reports in 2012, 2013 and 2014 in a timely manner because the Company's accounting and financial staff had resigned by October 26, 2012 and its financial and accounting systems had been shut-down at December 31, 2012. Current management, two of whom joined the Company in March 2013, has been focusing on developing replacement controls and procedures that are adequate to ensure that information required to be disclosed in reports filed under the Exchange Act is recorded, processed, summarized and reported within the required time periods and is accumulated and communicated to the Company's management to allow timely decisions regarding required disclosure. Current management has instituted a program to reestablish the Company's accounting and financial staff and install new accounting and internal control systems, and has retained accounting personnel, established accounting and internal control systems, addressed the preparation of delinquent financial statements, and worked diligently to bring current delinquent SEC filings as promptly as reasonably possible under the circumstances. The Company is current in its SEC periodic reporting obligations, but as of the date of the filing of this Annual Report on Form 10-K, the Company had not yet completed the process to establish adequate internal controls over financial reporting. In February 2017, the Company's Chief Financial Officer resigned and one of the existing officers was appointed Interim Chief Financial Officer and subsequently, Chief Financial Officer. The Company has not completed its search for a permanent replacement.

The Company's management, consisting of its principal executive officer and principal financial officer, does not expect that its disclosure controls and procedures or its internal controls will prevent all error or fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Furthermore, 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. Due to 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. In addition, as conditions change over time, so too may the effectiveness of internal controls. However, management believes that the financial statements included in this Annual Report on Form 10-K fairly present, in all material respects, the Company's financial condition, results of operations and cash flows for the periods presented.

Management's Annual 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. Our internal control over financial reporting is designed to ensure that material information regarding our operations is made available to management and the board of directors to provide them reasonable assurance that the published financial statements are fairly presented. There are limitations inherent in any internal control, such as the possibility of human error and the circumvention or overriding of controls. As a result, even effective internal controls can provide only reasonable assurance with respect to financial statement preparation. As conditions change over time so too may the effectiveness of internal controls.

Our management, consisting of our Chief Executive Officer and our Chief Financial Officer, has evaluated our internal control over financial reporting as of December 31, 2017 based on the 2013 Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations ("COSO") of the Treadway Commission. Based on this assessment, and taking into account the operating structure of the Company as it has existed from October 2012 through December 2017, as well as the various factors discussed herein, our management has concluded that material weaknesses in the Company's internal control over financial reporting existed as of December 31, 2017, as a result of which our internal control over financial reporting was not effective at December 31, 2017.

Prior management, which had essentially ceased business operations and was preparing to shut down the Company and cause it to file for liquidation under Chapter 7 of the United States Bankruptcy Code, was replaced on March 22, 2013 in conjunction with the change in control of the Board of Directors on such date. Since that date, new management has instituted a program to reestablish the Company's accounting and financial staff functions, as well as to install new accounting and internal control systems.

Within the constraints of the Company's limited financial resources, new management has retained accounting personnel, established accounting and internal control systems, addressed the preparation of delinquent SEC financial filings, and filed all delinquent SEC filings. As of the date of the filing of this Annual Report on Form 10-K, the Company has not yet completed this process of reestablishing adequate internal controls over financial reporting.

This Annual Report on Form 10-K does not include an attestation report of the Company's independent registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by the Company's independent registered public accounting firm pursuant to rules of the SEC that permit the Company to provide only management's report in this Annual Report on Form 10-K.

Changes in Internal Control over Financial Reporting

The Company's management, consisting of its principal executive officer and principal financial officer, has determined that no change in the Company's internal control over financial reporting (as that term is defined in Rules 13(a)-15(f) and 15(d)-15(f) of the Securities Exchange Act of 1934) occurred during or subsequent to the fourth quarter of the year ended December 31, 2017 that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting. The Company's management has made this determination as of December 31, 2017 and 2016.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Directors

The names of each of the directors and certain biographical information about them are set forth below:

Name	Age	Director Since	Principal Occupation
James S Manuso, Ph.D.	69	2015	President, Chief Executive Officer and Vice Chairman of the Company
Arnold S Lippa, Ph.D.	71	2013	Chief Scientific Officer and Chairman of the Board of the Company
Jeff E. Margolis	62	2013	Senior Vice President, Chief Financial Officer, Treasurer and Secretary of the Company and President of Aurora Capital LLC
James Sapirstein, RPh. M.B.A.	56	2014	CEO ContraVir Pharmaceuticals, Inc.
Kathryn MacFarlane, PharmD	52	2014	Owner and Managing Partner of SmartPharma LLC

James S. J. Manuso, Ph.D.: Dr. Manuso is the former Chairman of the Board of Directors and Chief Executive Officer of Astex Pharmaceuticals, Inc. (“Astex”) (NASDAQ: ASTX), having served in such positions from July 2011 through October 2013. Dr. Manuso had previously served as the President and Chief Executive Officer, as well as Chairman of the Board of Directors, of Astex (formerly SuperGen, Inc.: NASDAQ: SUPG) from January 2004 to July 2011, and as a director of Astex since February 2001. Dr. Manuso currently serves on the board of directors of privately-held KineMed, Inc. Previously, Dr. Manuso served on the boards of directors of The Biotechnology Industry Organization (BIO) and its Health Section Governing Board, Novelos Therapeutics, Inc. (NVLT.OB; now Cellectar Biosciences, Inc.), Symbiontics, Inc., Quark Pharmaceuticals, Inc., EuroGen, Ltd. (London, UK), where he was chairman, and other industry companies.

We believe that Dr. Manuso’s qualifications to serve on our Board include his position as the Company’s President and Chief Executive Officer, and his experience working in management roles in other pharmaceutical companies as

described above, including overseeing the successful efforts to sell Astex for approximately $886 million. In addition to being knowledgeable regarding public markets, especially in the pharmaceutical industry, Dr. Manuso provides the Board with both technical and scientific expertise in drug discovery and drug development, research management, governmental regulations and strategic planning expertise that is important to the advancement of our research platforms as well as to the overall success of the Company. Dr. Manuso was appointed to our board of directors in August 2015.

Arnold S. Lippa, Ph.D.: Dr. Lippa is a Senior Managing Director and founder of T Morgen Capital LLC through which he administers his family's assets. T Morgen Capital LLC is a significant equity owner and managing member of Aurora Capital LLC ("Aurora"), a boutique investment bank and securities firm of which Mr. Margolis is the president and founder, which has served as a placement agent with respect to the Company's recent financings. Dr. Lippa and Mr. Margolis jointly manage, since 2004, Atypical BioCapital Management LLC and Atypical BioVentures Fund LLC, a life sciences fund management company and venture fund, respectively. Since 2006, Dr. Lippa has also been the Executive Chairman of the board of Xintria Pharmaceutical Corporation, a Delaware corporation, as well as a member of its board of directors. Dr. Lippa was co-founder of DOV Pharmaceutical, Inc., where he served as Chairman of the Board and Chief Executive Officer from its inception in 1995 through 2005. Dr. Lippa stepped down as a director of DOV Pharmaceuticals, Inc. in 2006.

We believe that Dr. Lippa's qualifications to serve on our Board include his position as the Company's Chief Scientific Officer, and his experience working in management roles in other pharmaceutical companies as described above. Dr. Lippa provides the Board with both technical and scientific expertise in drug discovery and drug development, research management, governmental regulations and strategic planning expertise that is important to the advancement of our research platforms as well as to the overall success of the Company. Dr. Lippa was appointed to our board of directors in March 2013.

Jeff E. Margolis: Mr. Margolis is the president and founder of Aurora, and has been since its inception in 1994. Aurora Capital Corp., a corporation wholly owned by Mr. Margolis, is a significant equity owner and managing member of Aurora. Dr. Lippa and Mr. Margolis jointly manage, since 2004, Atypical BioCapital Management LLC and Atypical BioVentures Fund LLC, a life sciences fund management company and venture fund, respectively. Since 2006, Mr. Margolis has also been the Chief Financial Officer of Xintria Pharmaceutical Corporation, a Delaware corporation, as well as a member of its board of directors.

We believe that Mr. Margolis's qualifications to serve on our Board include his significant experience in financial, operational and management roles within pharmaceutical companies and within the financial industry as described above. He also has extensive prior experience working in business development and provides the Company with extremely useful expertise in financing and capital markets, knowledge gained though his position as President of Aurora. Mr. Margolis also provides broad financial expertise. Mr. Margolis was appointed to our board of directors in March 2013.

James Sapirstein, RPh. M.B.A.: Mr. Sapirstein has been the Chief Executive Officer and director of ContraVir Pharmaceuticals, Inc., a public reporting company, since March 20, 2014. Prior to joining Contravir, Mr. Sapirstein served as the Chief Executive Officer of Alliqua Biomedical, Inc., a public reporting company. He is considered a start-up and turnaround specialist, with 30 years of pharmaceutical and biotechnology industry experience. He was a founder and Chief Executive Officer and President of Tobira Therapeutics, Inc. from October 2006 to April, 2011, a company that has been approved for listing on NASDAQ. At Tobira Therapeutics, Inc. Mr. Sapirstein led an experienced biotechnology development team. He has launched several HIV/AIDS agents worldwide during his career in the biotechnology and pharmaceutical industry. Mr. Sapirstein was with Bristol-Myers Squibb from 1996-2000. While at Bristol-Myers Squibb he served as the Head of the International HIV business as well as working in its Infectious Disease marketing teams. In 2002, he accepted the position of Executive Vice President for Serono Laboratories, where he led a team of over 100 professionals in the HIV and pediatric growth hormone business. He had held positions at Gilead Sciences (where he was responsible for the product Viread®), Bristol-Myers Squibb, Hoffmann-LaRoche Ltd. and Eli Lilly and Company. He serves as a member of the Advisory Board at MusclePharm Corp., a public reporting company and a member of the Board of Directors of Clinical Supplies Management, Inc., a private company. He currently serves as an Advisory Board Director at the Fairleigh Dickinson School of Pharmacy. Mr. Sapirstein previously served as a Director of Tobira Therapeutics, Inc. as well as a Director of Alliqua, Inc. He is also Chairman of BioNJ and a Board director for BIO, where he Board sits on both the Health Section Governing Board and Emerging Companies Section Governing Board. Mr. Sapirstein received his Pharmacy degree from the Ernest Mario School of Pharmacy at the Rutgers University, and his Masters of Business Administration degree from Farleigh Dickinson University.

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We believe that Mr. Sapirstein's qualifications to serve on our Board include his experience working in management roles in other biopharmaceutical companies as described above, as well as his service on both public and private boards. Mr. Sapirstein provides the Board with additional technical and scientific expertise in drug discovery and drug development, as well as expertise in all phases of start-ups and turnarounds of biopharmaceutical companies, all of which is important to the advancement of our research platforms as well as to the overall success of the Company. Mr. Sapirstein was appointed to our board of directors in September 2014.

Kathryn MacFarlane, PharmD: Kathryn MacFarlane has over 25 years of experience in the pharmaceutical industry with expertise in marketing, new product planning, and commercialization. She is currently an owner and Managing Partner of SmartPharma LLC, a pharmaceutical consulting firm specializing in commercial consulting for emerging pharmaceutical companies. Dr. MacFarlane is an Affiliate Faculty member to the Purdue School of Pharmacy, where she was named a Distinguished Alumna in 1999, and in 2012, she was named the Eaton Entrepreneur of the Year. She has completed a Postdoctoral Fellowship in Industrial Pharmacy Practice with Rutgers University and Hoffmann-LaRoche. MacFarlane currently serves on the Purdue University School of Pharmacy Dean's Advisory Council and is a Founding Member and Advisor to IPhO. She also serves on the Board of Directors for INMED Partnerships for Children, an NGO dedicated to providing food security and health services to women and children. MacFarlane received her Bachelor of Science in Pharmacy and Doctor of Pharmacy degrees from Purdue University. She also serves as Senior Vice President of Commercial Development for Napo Pharmaceuticals. Her expertise includes market assessment and commercial planning for products in development as well as evaluating products for licensing or acquisition. Prior to Napo Pharmaceuticals, Dr. MacFarlane was the Chief Commercial Officer of Agile Therapeutics. Before joining Agile Therapeutics, Dr. MacFarlane served as President and CEO at Xintria Pharmaceutical Corporation, a private company from 2006 through 2007, a company for which Arnold S. Lippa and Jeff E. Margolis served as officers and directors and prior to that, served as Vice President of Women's Health and New Product Planning at Warner Chilcott from 2001 through 2006, now part of Activis plc. She had responsibility for the launches of Lipitor®, Celexa®, and Loestrin® 24. She has completed a Postdoctoral Fellowship in Industrial Pharmacy Practice with Rutgers University and Hoffmann-LaRoche.

We believe Ms. MacFarlane's qualifications to serve on our Board include both her biopharmaceutical consulting background and her familiarity with the biopharmaceutical regulatory and commercialization environment, as well as the breadth of her technical and therapeutic knowledge, as discussed above. Ms. Macfarlane has also served in numerous senior executive positions at various biopharmaceutical companies. Ms. MacFarlane was appointed to our board of directors in September 2014.

Executive Officers

Each executive officer of the Company serves at the discretion of the Board of Directors. The names of the Company's executive officers are set forth below. At December 31, 2017, each of our executive officers except Richard Purcell was also a member of our board of directors, and the biographical information of those officers appears above in the immediately prior section.

Name	Position with Company
James S. Manuso, Ph.D.	President, Chief Executive Officer and Vice Chairman
Arnold S. Lippa, Ph.D.	Chief Scientific Officer and Chairman of the Board
Jeff E. Margolis	Senior Vice President, Chief Financial Officer, Treasurer and Secretary
Richard Purcell	Senior Vice President of Research and Development

Richard Purcell: In addition to his role at the Company, Richard Purcell (Age: 56), manages a consulting firm, DNA Healthlink, Inc. through which he is contracted as the President of intelliSanté, Inc., a private company. He is also the Senior Vice President of Generex Biotechnology. He is a biopharmaceutical development specialist, with extensive experience in providing consulting services to financial, venture capital, and start-up companies to concentrate on new business strategy and clinical development of novel compounds. Previously, Mr. Purcell was president of ClinPro, Inc., a mid-sized clinical research organization ("CRO"), where he led this full-service, technology driven CRO specializing in Phase I, II, and III clinical trial management. His work included the design and implementation of a number of early stage clinical development programs. Prior to joining ClinPro, Mr. Purcell worked for SCP Communications, a medical communications company, where he served as Corporate Vice President and General Manager of the Clinical Programs Division. Mr. Purcell previously headed the Life Sciences Consulting Group for Kline and Company. Mr. Purcell started his career as a molecular biologist, where he developed and patented a second generation TPA (tissue plasminogen activator) with increased half-life. He has also conducted primary research and published manuscripts on the topics of AIDS and immunomodulators. Mr. Purcell graduated with a degree in Biochemical Sciences from Princeton University, and attended Rutgers Graduate School of Management focusing in marketing and finance.

BOARD COMMITTEES

The board of directors does not maintain any separate standing board committees. Instead, the functions of each of the Audit Committee, the Compensation Committee and the Governance and Nomination Committee have been and are currently being addressed by the full board of directors.

***Audit Committee*.** The board of directors meets with the Company's independent registered public accountants and management to prepare for and to review the results of the annual audit and to discuss the annual and quarterly financial statements, earnings releases and related matters. The board of directors, among other things, (i) selects and retains the independent registered public accountants, (ii) reviews with the independent registered public accountants the scope and anticipated cost of their audit, and their independence and performance, (iii) reviews accounting practices, financial structure and financial reporting, (iv) receives and considers the independent registered public accountants' comments as to controls, adequacy of staff and management performance and procedures in connection with audit and financial controls, (v) reviews and pre-approves all audit and non-audit services provided to the Company by the independent registered public accountants, and (vi) reviews and pre-approves all related-party transactions. The board of directors does not itself prepare financial statements or perform audits, and its members are not auditors or certifiers of the Company's financial statements.

Since the change in composition of our board of directors in March 2013, the composition of an Audit Committee has not been determined, nor has the current board of directors adopted an amended written charter. When an Audit Committee is reestablished along with a written charter, such charter will be made available on the Company's website at www.respirerx.com.

Compensation Committee. The traditional functions of the Compensation Committee include, without limitation, administering the Company's incentive ownership programs and approving the compensation to be paid to the Company's directors and executive officers. The board of directors acting in the capacity of a Compensation Committee typically meets no less frequently than annually as circumstances dictate to discuss and determine executive officer and director compensation. Historically, the Company's Chief Executive Officer annually reviews the performance of each executive officer (other than the Chief Executive Officer, whose performance is reviewed by the board of directors). The conclusions reached and recommendations based on these reviews, including with respect to salary adjustments and annual award amounts, are presented to the board of directors, which can exercise its discretion in modifying any recommended adjustments or awards to executive officers. The board of directors is entitled to, but generally does not, retain the services of any compensation consultants. Neither the board of directors nor management has engaged a compensation consultant in the past fiscal year.

Since the change in composition of our board of directors in March 2013, the members of the board of directors have performed the functions of a Compensation Committee and the composition of a Compensation Committee has not been determined nor has the current board of directors adopted a written committee charter. When a Compensation Committee is reestablished along with a written charter, such charter will be made available on the Company's website at www.respirerx.com.

Governance and Nominations Committee. The traditional functions of the Governance and Nominations Committee include, without limitation, (i) identifying individuals qualified to become members of the board of directors, (ii) recommending director nominees for the next annual meeting of stockholders and to fill vacancies that may be created by the expansion of the number of directors serving on the board of directors and by resignation, retirement or other termination of services of incumbent directors, (iii) developing and recommending to the board of directors corporate governance guidelines and changes thereto, (iv) ensuring that the board of directors and the Company's Certificate of Incorporation and Bylaws are structured in a way that best serves the Company's practices and objectives, (v) leading the board of directors in its annual review of the board of directors' performance; and (vi) recommending to the board of directors nominees for each committee. Accordingly, the board of directors, acting in the capacity of a Governance and Nominations Committee, annually reviews the composition of the board of directors as a whole and makes recommendations, if deemed necessary, to enhance the composition of the board of directors. The board of directors first considers a candidate's management experience and then considers issues of judgment, background, conflicts of interest, integrity, ethics and commitment to the goal of maximizing stockholder value when considering director candidates. The board of directors also focuses on issues of diversity, such as diversity of gender, race and national origin, education, professional experience and differences in viewpoints and skills. The board of directors does not have a formal policy with respect to diversity; however, the board of directors believes that it is essential that the members of the board of directors represent diverse viewpoints. In considering candidates for the board of directors, the board considers the entirety of each candidate's credentials in the context of these standards. With respect to the nomination of continuing directors for re-election, the individual's contributions to the board of directors are also considered.

Since the change in composition of our board of directors in March 2013, the members of the board of directors have performed the functions of a Governance and Nominations Committee and the composition of a Governance and Nominations Committee has not been determined nor has the current board of directors adopted a written charter. When a Governance and Nominations Committee is reestablished along with a written committee charter, such charter will be made available on the Company's website at www.respirerx.com.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires the Company's executive officers and directors and persons who beneficially own more than 10% of the Company's outstanding common stock, whom the Company refers to collectively as the "reporting persons," to file reports of ownership and changes in ownership with the SEC, and to furnish the Company with copies of these reports.

Based solely on the Company's review of the copies of these reports received by it and written representations received from certain of the reporting persons with respect to the filing of reports on Forms 3, 4 and 5, the Company believes that all such filings required to be made by the reporting persons for the fiscal year ended December 31, 2017 were made on a timely basis, except for any Form 3 or Form 4 that may be required for any of the beneficial holders, other than officers and directors, listed in Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

Code of Ethics

The Company previously adopted a Code of Business Conduct and Ethics, which covered all of our directors and employees, including our principal executive and financial officers. That Code of Business Conduct and Ethics has never been formally ratified or approved by the current Board of Directors after a change in management occurred in March 2013. When practicable, Board of Directors intends to adopt an Amended and Restated Code of Business Conduct and Ethics, and that document, and any further amendment to, or waiver from, any applicable provision (related to elements listed under Item 406(b) of Regulation S-K) of our Code of Business Conduct and Ethics that applies to our directors or executive officers will be posted on our website at www.respirerx.com or in a report filed with the SEC on a Current Report on Form 8-K.

Item 11. Executive Compensation

Summary Compensation Table for 2017

The table below summarizes the total compensation paid or earned by each of the named executive officers for the fiscal years ended December 31, 2017, 2016 and 2015. The information contained under the heading “Stock Awards” for all named executive officers includes the estimated value of equity awards using the Black-Scholes option-pricing model and does not reflect actual cash payments or actual dollars awarded.

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)(1)	All Other Compensation ($)(2)	Total ($)
James S. J. Manuso, Ph.D President,	2017	414,600		366,782	(28,001)	753,381
Chief Executive Officer and Vice Chairman	2016	421,350		588,300		1,009,650
Arnold S Lippa, Ph.D. Executive Chairman	2017	339,600		274,106	(25,742)	587,964
and Chief Scientific Officer	2016	339,800		532,800		872,600
Jeff E. Margolis Senior Vice President,	2017	269,100		301,034	(17,881)	552,253
Chief Financial Officer, Treasurer and Secretary	2016	216,600		532,800		749,400

(1) The 2017 salary amounts in the table above do not include the net benefit associated with the forgiveness of accrued compensation on December 9, 2017 offset by the expense incurred on that same date associated with option awards. The 2017 salary amounts are shown in the table above before the benefit associated with the

forgiveness that is reflected in the "All Other Compensation" column in the table above. On January 17, 2017, the Board of Directors awarded from the 2015 Plan, non-qualified stock options with respect to 225,000 shares of common stock to the named executive officers (and Mr. Weingarten) who were also directors of the Company at the time and options with respect to 40,000 shares of common stock to an additional officer and options with respect to 50,000 shares of common stock, in the aggregate to the two independent directors. On July 26, 2017, the Board of Directors awarded non-qualified stock options with respect to 25,000 shares of common stock to Jeff E. Margolis and the Company recorded an expense of $27,225 for this award. On December 9, 2017, the Board of Directors awarded non-qualified stock options from the 2015 Plan with respect to 1,695,827 shares of common stock to the four named executive officers, three of whom were directors at the time, options with respect to 100,000 shares of common stock to an additional officer and options with respect to 76,228 shares of common stock in the aggregate, to the two independent directors.

On June 30, 2017, the Board of Directors awarded from the 2015 Plan, non-qualified stock options with respect to 150,000 shares of common stock to the named executive officers who were also directors of the Company at the time and options with respect to 40,000 shares of common stock to an additional officer and options with respect to 50,000 shares of common stock, in the aggregate to the two independent directors.

On March 31, 2016, the Board of Directors of the Company awarded non-qualified stock option with respect to a total 523,085 shares of common stock, of which 303,080 the four named executive officers who were also directors of the Company at the time, and options for 61,539 for an additional officer and 30,770 to each of the two independent directors, as well as 30,770 to the Chairman of the Scientific Advisory Board. The remaining 66,156 were granted to advisors. These award were made with an exercise price of $7.3775, as compared to the closing market price of the Company's common stock on such date of $7.3669 reflecting an exercise price premium per share of $0.0106 or 0.14%. These awards were made to those individuals on that date as partial compensation for services rendered through December 31, 2016. During the year ended December 31, 2016, the Company recorded an aggregate charge to operations of $2,186,700 with respect to these stock options awarded to named executive officers, reflecting the grant date fair value of the stock options calculated pursuant to the Black-Scholes option-pricing model.

On August 18, 2015, the Company awarded stock options to certain officers and independent directors to purchase an aggregate of 156,927 shares of common stock of the Company, consisting of options for 30,770 shares to each of the Company's three executive officers at that time (excluding Dr. Manuso who is discussed separately below), who were also all of the directors of the Company at that time, and options for 9,231 shares to each of seven others, including the Company's two independent directors. The exercise price of the stock options was established on the grant date at $6.396 per share, which is equal to the simple average of the most recent four full trading weeks, weekly VWAPs of the Company's common stock price immediately preceding the date of grant as reported by OTC Markets, as compared to the closing market price of the Company's common stock on August 18, 2015 of $6.6883 per share. The stock options were awarded partially as compensation for those individuals through December 31, 2015 and partially as 2016 compensation. During the year ended December 31, 2015, the Company recorded an aggregate charge to operations of $201,510 with respect to these stock options, or $67,170 per individual. The balance of the total aggregate amount of $609,000 ($203,000 per individual) reflecting the grant date fair value of the stock options calculated pursuant to the Black-Scholes option-pricing model, was recorded as a charge to operations in 2016.

Pursuant to his employment agreement, upon commencement of his employment with the Company, Dr. Manuso received options with respect to 261,789 shares of the Company, of which 15,635 were incentive stock options. The options have a term of 10 years and vest 50% on the Effective Date (as defined in the employment agreement, 25% on the date six months after the Effective Date and 25% on the first Anniversary of the Effective date. The exercise price of the stock options was established on the grant date at $6.396 per share, which is equal to the simple average of the most recent four full trading weeks, weekly Volume Weighted Average Prices ("VWAPs") of the Company's common stock price immediately preceding the date of grant as reported by OTC Markets, as compared to the closing market price of the Company's common stock on August 18, 2015 of $6.6883 per share. During the year ended December 31, 2015, the Company recorded an aggregate charge to operations of $1,223,772 with respect to these stock options. The balance of the total aggregate amount of $1,786,707, reflecting the grant date fair value of the stock options calculated pursuant to the Black-Scholes option-pricing model was recorded as a charge to operations in 2016.

(2) In accordance with Securities and Exchange Commission rules, “Other Annual Compensation” in the form of perquisites and other personal benefits has been omitted where the aggregate amount of such perquisites and other personal benefits was less than $10,000. This column also reflects the amount of the benefit resulting from the forgiveness of accrued compensation and related costs.

Narrative to Summary Compensation Table

In 2017 and 2016, no cash bonuses, performance or otherwise were awarded.

The options that were awarded to our named executive officers in January 2017, vested 25% on January 17, 2017 (at issuance), 25% on March 31, 2017 and 50% on June 30, 2017, thus all options awarded on that date vested before December 31, 2017. The options that were awarded to our named executive officers on December 9, 2017, all vested immediately upon award, this all options awarded on that date were vested before December 31, 2017. The options that were awarded to our named executive officers in March 2016, vested 25% on each of March 31, 2016 (at issuance), June 30, 2016, September 30, 2016 and December 31, 2016, thus all options granted on that date had vested by December 31, 2016. The options that were awarded to our named executive officers in August 2015 vest in four equal installments on December 31, 2015, March 31, 2016, June 30, 2016 and September 30, 2016, and expire on August 18, 2022. These awards were made under the Company’s 2015 Stock and Stock Option Plan. Accordingly, the options will provide a return to the named executive officer only if the market price of the Company’s common stock appreciates over the option term.

In connection with the recent changes to our board membership and taking into account the Company’s current operating structure and business plans, management is currently reevaluating the compensation policies of the Company and, as a result of that reassessment, and in light of the Company’s current financial circumstances, has made departures from the Company’s historic compensation policies and will likely make substantial adjustments to such policies, including the termination of such policies, in the future.

On August 18, 2015, the Company awarded stock options to certain officers and independent directors to purchase an aggregate of 15,693 shares of common stock of the Company, consisting of options for 30,770 shares to each of the Company’s three executive officers at that time (excluding Dr. Manuso who is discussed separately below), who were also all of the directors of the Company at that time, and options for 9,271 shares to each of seven others, including the Company’s two independent directors. The stock options were awarded partially as compensation for those individuals through December 31, 2015 and partially as 2016 compensation.

Pursuant to his employment agreement, upon commencement of his employment with the Company, Dr. Manuso received options with respect to 261,789 shares of the company, of which 14,313 were incentive stock options. The

options have a term of 10 years and vest 50% on the Effective Date (as defined in the employment agreement, 25% on the date six months after the Effective Date and 25% on the first Anniversary of the effective date. This award was made to Dr. Manuso on that date as partially as compensation through December 31, 2015 and partially as 2016 compensation.

Outstanding Equity Awards at Fiscal Year End

The following table shows information concerning outstanding equity awards at December 31, 2017, made by The Company to its named executive officers.

	Option Awards				
Name	Number of Securities Underlying Unexercised Options Exercisable (#)	Number of Securities Underlying Unexercised Options Unexercisable (#)	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price ($)	Option Expiration Date
James S. D. Manuso	261,789	0	0	$ 6.396	8/18/25
	81,539	0	0	$ 7.3775	3/31/21
	75,000	0	0	$ 3.90	1/17/22
	50,000	0	0	$ 2.00	6/30/22
	608,704	0	0	$ 1.45	12/9/27
Arnold S. Lippa	46,154	0	0	$ 8.125	6/30/22
	30,769	0	0	$ 6.396	8/18/22
	73,847	0	0	$ 7.3775	3/31/21
	15,385	0	0	$ 16.25	7/17/19
	50,000	0	0	$ 3.90	1/17/22
	50,000	0	0	$ 2.00	6/30/22
	559,595	0	0	$ 1.45	12/9/27
Jeff E. Margolis	46,154	0	0	$ 8.125	6/30/22
	30,769	0	0	$ 6.396	8/18/22
	73,847	0	0	$ 7.3775	3/31/21
	15,385	0	0	$ 16.25	7/17/19
	50,000	0	0	$ 3.90	1/17/22
	50,000	0	0	$ 2.00	6/30/22
	25,000	0	0	$ 2.00	7/26/22
	388,687	0	0	$ 1.45	12/9/27

At December 31, 2017, there were 2,432,624 options outstanding to named executive officers all of which had vested.

OPTION EXERCISES AND STOCK VESTED FOR 2016

None of the Company's named executive officers exercised any options to purchase shares of the Company's common stock during the year ended December 31, 2017. There were no unvested option awards as of December 31, 2017 and 2016. As of December 31, 2017, collectively, the named executive officers, held options to purchase 2,787,621 shares of the Company's common stock, all of which had vested, at an exercise prices ranging from $1.45 – $16.2500 per share.

Employment Agreements – Termination or Change in Control

The Company's named executive officers James S. Manuso, Arnold S. Lippa, Ph.D. and Jeff E. Margolis (each an "Executive"), entered into employment agreements with the Company on August 18, 2015. Upon entering into such agreements, the Company disclosed these agreements and filed them as exhibits on a Current Report on Form 8-K filed August 19, 2015. That 8-K was subsequently amended by an 8-K/A filing dated November 2, 2016, to correct an aspect of Dr. Manuso's compensation. Following is a summary of the arrangements that provide for payment to a named executive officer at, following or in connection with any termination, including resignation, retirement or other termination, or in connection with a change of control or a change in the named executive officer's responsibilities following a change in control. Robert N. Weingarten, a former named executive officer, resigned in February 2017, thus terminating his employment agreement.

Each of the Executive employment agreements provide that if the Executive is terminated by the Company for cause, or by the Executive without good reason, or as a result of death or disability, Executive (or his estate) would be entitled to receive (i) any base salary earned but not paid through the date of such termination, paid on the next regularly scheduled payroll date following such termination and (ii) all other benefits, if any, due Executive, as determined in accordance with the plans, policies and practices of the Company. There are currently no plans policies or practices of the Company under clause (ii) of the prior sentence that would provide any additional benefits.

Each of the Executive employment agreements provide that if the Executive is terminated by the Company without cause, or by the Executive for good reason, the Executive Officer would be entitled to (i) a lump sum payment equal to twelve months of the Executive's then current base salary and (ii) full acceleration of the vesting of any then unvested stock options or other equity compensation awards held by the Executive (with any unvested performance-based awards accelerated at 100% of target performance levels).

If the Executive were to breach any of section of the employment agreement related to confidentiality, inventions or restrictive covenants, or the Company determines that Executive engaged in an act or omission that, if discovered during Executive's employment, would have entitled the Company to terminate Executive's employment hereunder for Cause, the Executive would forfeit the right to any unpaid severance and any unexercised options.

As used in the employment agreements, "cause" means (i) any act of personal dishonesty taken by the Executive in connection with his employment hereunder, (ii) the Executive's conviction or plea of *nolo contendere* to a felony, (iii) any act by the Executive that constitutes material misconduct and is injurious to the Company, (iv) continued violations by the Executive of the Executive's obligations to the Company, (v) material breach of the employment agreement, (vi) commission of any act of serious moral turpitude, or (vii) material failure to comply with the lawful direction of the Board. As used in the employment agreements, "for good reason" means without Executive's express written consent (i) a material diminution of Executive's duties, position or responsibilities relative to Executive's duties, position or responsibilities in effect immediately prior to such reduction; (ii) a material diminution by the Company of Executive's base salary as in effect immediately prior to such reduction, other than a general reduction in base salary that affects all of the Company's executive officers; (iii) any material breach by the Company of the employment agreement; or (iv) the relocation of Executive to a facility or a location more than fifty (50) miles from the current location of the Executive's principal office, which the Company and Executive agree would constitute a material change in the geographic location at which Executive must perform services to the Company.

In the event of a change in control of the company prior to the vesting of any of the options granted to the Executive in connection with entering into the employment agreement, all such unvested options would vest and become exercisable and would be exercised by cashless or net exercise, subject to any limitations set forth in the applicable option plans, option agreements and applicable law. As used in the employment agreements, "Change in Control" means the occurrence of any of the following events: (i) any "person" (as such term is used in Sections 13(d) and 14(d) of the Exchange Act) becomes the "beneficial owner" (as defined in Rule 13d-3 of the Exchange Act), directly or indirectly, of securities of the Company representing more than fifty percent (50%) of the total voting power represented by the

Company’s then outstanding voting securities; (ii) the consummation of the sale or disposition by the Company of all or substantially all of the Company’s assets; or (iii) the consummation of a merger or consolidation of the Company with any other corporation, other than a merger consolidation which would result in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity or its parent) more than fifty percent (50%) of the total voting power represented by the voting securities of the Company or such surviving entity or its parent outstanding immediately after such merger or consolidation; provided, however, that notwithstanding the foregoing, the following shall not constitute a Change in Control: (A) any acquisition directly from the Company, (B) any acquisition by the Company, (C) any acquisition by any employee benefit plan (or related trust) sponsored or maintained by the Company or one of its affiliates, (D) any joint venture, (E) any royalty agreement, or (F) any license agreement.

Director Compensation

The Compensation Committee historically had used a combination of cash and stock-based incentive compensation to attract and retain qualified candidates to serve on the Board of Directors. In setting director compensation, the Compensation Committee considers the significant amount of time that directors expend in fulfilling their duties to the Company, as well as the skill-level required by the Company of members of the Board of Directors.

In August 2015, each of James Sapirstein and Kathryn MacFarlane received options to purchase 9,231 shares of common stock of the Company at an exercise price of $6.4025 per share, which vested 25% on December 31 2015, 25% on March 31, 2016, 25% on June 30, 2016 and 25% on September 30, 2016. The stock options were awarded in August partially as compensation for those individuals through December 31, 2015 and partially as 2016 compensation.

In March 2016, each of James Sapirstein and Kathryn MacFarlane received options to purchase 30,769 shares of common stock of the Company at an exercise price of $7.3669 per share, which vested 25% on each of March 31, 2016, June 30, 2016, September 30, 2016 and December 31, 2016. The stock options were awarded as compensation for 2016. During the year ended December 31, 2016, the Company recorded an aggregate charge to operations of $444,000 with respect to these stock options, or $222,000 per individual.

On January 17, 2017, each of James Sapirstein and Kathryn MacFarlane received options to purchase 25,000 shares of common stock of the Company at an exercise price of $3.90 per share which vested 25% on January 17, 2017 (date of the award), 25% on March 31, 2017, and 50% on June 30, 2017. The stock options were awarded as compensation for 2017. During the year ended December 31, 2017, the Company recorded an aggregate charge to operations of $92,678 with respect to these stock options, or $46,339 per individual.

On June 30, 2017, each of James Sapirstein and Kathryn MacFarlane received options to purchase 25,000 shares of common stock of the Company at an exercise price of $2.00 per share which vested immediately upon award. The stock options were awarded as compensation for 2017. During the year ended December 31, 2017, the Company recorded an aggregate charge to operations of $92,678 with respect to these stock options, or $46,339 per individual.

On December 9, 2017, each of James Sapirstein and Kathryn MacFarlane forgave $55,000 of accrued directors fees which represented accrued and unpaid directors fees through September 30, 2017 and which in the aggregate totaled $110,000. On December 9, 2017, each of James Sapirstein and Kathryn MacFarlane received options to purchase 38,114 shares of common stock of the Company at an exercise price of $1.45 which vested immediately. During the year ended December 31, 2017, the Company recorded an aggregate charge to operations of $106,490 with respect to

these options or $53,245 per individual.

Director Summary Compensation Table

The following table shows the compensation received by the non-employee members of our board of directors for the year ended December 31, 2017. Directors who are also employees/officers of the Company did not receive any additional compensation for services as a director.

Name	Fees Earned or Paid in Cash ($)(2)	Stock Awards ($)	Option Awards ($)(1)	Total ($)
James Sapirstein	20,000	0	$137,053	$157,053
Kathryn MacFarlane	20,000	0	$137,053	$157,053

(1) Value of option awards with respect to (i) 25,000 shares with an exercise price of $3.90, 25,000 shares with an exercise price of $2.00 and 38,114 shares with an exercise price of $1.45, both as described above.

(2) $20,000 per individual was earned in 2017. Of the amount earned, but not paid in cash, $15,000 was forgiven by each of Mr. Sapirstein and Ms. MacFarlane on December 9, 2017 as part of a larger forgiveness of $55,000 each, which also included amounts from prior years, earned, but not paid in cash. Reflected in this table is the $20,000 earned net of the $15,000 forgiven.

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

Beneficial Ownership of Common Stock

The following table sets forth certain information regarding the beneficial ownership of the Company's common stock as of December 31, 2017, by (i) each person known by the Company to be the beneficial owner of more than 5% of the outstanding common stock, (ii) each of the Company's directors, (iii) each of the Company's named executive officers, and (iv) all of the Company's executive officers and directors as a group. Except as indicated in the footnotes to this table, the Company believes that the persons named in this table have sole voting and investment power with respect to the shares of common stock indicated. In computing the number and percentage ownership of shares beneficially owned by a person, shares of common stock that a person has a right to acquire within sixty (60) days of December 31, 2017 pursuant to options, warrants or other rights are considered as outstanding, while these shares are not considered as outstanding for computing the percentage ownership of any other person or group.

Directors, Officers and 5% Stockholders[1]	Number of Shares of Beneficial Ownership of Common Stock	Percent of Class
Arnold Lippa Family Trust of 2007[2]	1,108,846	28.5 %
Robert N. Weingarten[3]	401,150	11.7 %
John Safranek MD[4]		
3508 Poppleton Avenue	258,415	8.4 %
Omaha, NE 68105		
Big Rock LLC[5]		
34 Page Street	240,000	7.8 %
San Francisco, CA 94102		
Dariusz Naziek[6]	212,764	6.8 %
55 Hardwick Lane		

Wayne, NJ 07470

DIRECTORS AND OFFICERS

James S. J. Manuso, Ph.D.[7]	1,199,857	28.6	%
Jeff E. Margolis[8]	731,252	19.5	%
Arnold S. Lippa, Ph.D.[9]	16,880	0.6	%
James Sapirstein[10]	140,421	4.5	%
Kathryn MacFarlane[11]	140,421	4.5	%
Richard Purcell[12]	263,077	7.9	%
All directors and officers as a group	2,491,908	48.2	%

(1) Except as otherwise indicated, the address of such beneficial owner is c/o RespireRx Pharmaceuticals Inc., 126 Valley Road, Suite C, Glen Rock, New Jersey 07452.

(2) All of these holdings were acquired by Dr. Arnold Lippa and subsequently transferred to the Trust, or are held by an entity owned by the Trust. Dr. Lippa is neither the trustee nor the beneficiary of the Trust. Linda Lippa, his wife, is a beneficiary of the Trust.

(3) Mr. Weingarten's holdings include: (i) 46,153 shares of common stock, and (ii) options to acquire an additional 354,997 shares of common stock. Mr. Weingarten holds these shares and options indirectly through Resource One Group LLC, an entity he controls and well as individually.

(4) Dr. Safranek's holdings include 216,138 shares of common stock acquired in various private placement unit offerings, some of which shares of common stock are held jointly with his spouse. Also included in Dr. Safranek's holdings are warrants to purchase 42,277 shares of common stock, also acquired in various private placement unit offerings. Excluded from Dr. Safranek's holdings are warrants to purchase 195,000 shares of common stock due to certain blocker provisions prohibiting exercise of such warrant in part or in whole if such exercise were to increase the investor's holding above 4.99%.

(5) Big Rock LLC's holdings include 240,000 shares of common stock, ultimately acquired after exchanging into the 2nd 2017 Unit Offering after initially participating in the 1st 2017 Unit Offering. Excluded from Big Rock LLC's holding are warrants to purchase 240,000 shares of common stock due to certain blocker provisions prohibiting exercise of such warrant in part or in whole if such exercise were to increase the investor's holding above 4.99%.

(6) Dr. Nasiek's holdings include 168,697 shares acquired by the conversion of Series G Convertible Preferred Stock or by exchange of his Convertible Note and the related Warrant and Extension Warrant and by exchange in respect to the 2015 unit offering. Dr. Nasiek also holds 44,067 warrants. Some of Dr. Nasiek's holdings are owned jointly with his spouse.

(7) Dr. Manuso's holdings include: 73,155 shares of common stock acquired in August 2015 and by exchange of warrants pursuant to an Exchange Agreement in respect to the 2015 Unit Offering as well as 1,077,032 options to acquire common stock and warrants to acquire 49,670 shares of common stock.

(8) Mr. Margolis's holdings other than his 6,993 incentive stock options and 25,000 non-qualified stock options were transferred to six trusts of which Mr. Margolis is the trustee of three of those trusts and Mr. Margolis' spouse is the trustee of the other three trusts. In the aggregate, the holdings of the trusts include: (i) 46,565 shares of common stock, (ii) options to acquire an additional 679,842 shares of common stock, and (iii) the 4,845 warrants to purchase shares of common received as an owner of Aurora Capital LLC from the warrants Aurora received as a placement agent in the sale of the Company's Common Stock and Warrant Financing.

(9) Dr. Lippa's holdings include: (i) 598 shares of common stock, and (ii) 15,482 warrants to purchase shares of common stock. In addition, Dr. Lippa no longer beneficially owns many of the shares of the Company that were initially awarded to him because he has transferred these shares into family trusts, of which he is neither the trustee nor the beneficiary, including the Arnold Lippa Family Trust of 2007 as noted in footnote 2 above. In addition, Dr. Lippa has been awarded options to acquire an additional 15,385 shares of common stock which have been assigned to another family trust for the benefit of other family members. Dr. Lippa is neither the trustee nor the beneficiary of that trust.

(10) Dr. Sapirstein's holdings include: (i) 6,153 shares of common stock, and (ii) options to purchase 134,268 shares of common stock.

(11) Dr. MacFarlane's holdings include: (i) 6,153 shares of common stock, and (ii) options to purchase 134,268 shares of common stock.

(12) Dr. Purcell's holdings include: (i) 6,153 shares of common stock, and (ii) options to purchase 256,294 shares of common stock.

The Company is not aware of any arrangements that may at a subsequent date result in a change of control of the Company.

EQUITY COMPENSATION PLAN INFORMATION

The following table sets forth information regarding outstanding options, warrants and rights and shares reserved for future issuance under our existing equity compensation plans as of December 31, 2017. In March 2014, the Company's stockholders approved, by written consent, the Cortex Pharmaceuticals, Inc. 2014 Equity, Equity-Linked and Equity Derivative Incentive Plan, filed as exhibit 10.2 to the Company's Current Report on Form 8-K filed March 24, 2014, which provides for the issuance of equity and equity derivative securities such as options. On June 30, 2015, the Board of Directors adopted the 2015 Stock and Stock Option Plan, filed as exhibit 10.1 to the Company's Current Report on Form 8-K filed July 8, 2015, which similarly provides for the issuance of equity and equity derivative securities such as options. The Company amended the 2015 Stock and Stock Option Plan on March 31, 2016 and January 17, 2017 and filed descriptions of such amendments on the Company Current Report on Form 8-K on April 6, 2016 and January 23, 2017, respectively. The Company amended the 2015 Stock and Stock Option Plan on December 9, 2017 and filed descriptions of such amendments on the Company Current Report on Form 8-K on December 14, 2017. The amendments discussed above primarily increased the number of shares available under the Plan as approved by the board of directors, with the latest amendment expanding the plan to 6,985,260 shares. The Company has not presented, nor does it intend to present, the 2015 Stock and Stock Option Plan to shareholders for approval.

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)		Weighted average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	61,792	(1)(4)	$ 16.250	63,245
Equity compensation plans not approved by security holders	3,881,104	(2)(3)(4)(5)	$ 3.343	3,059,812
Total	3,942,896		$ 3.545	3,123,057

(1) On July 17, 2014, the Board of Directors of the Company awarded stock options to purchase a total of 46,155 shares of common stock of the Company, consisting of options for 15,385 shares to each of the Company's three executive officers, Dr. Arnold S. Lippa, Jeff E. Margolis and Robert N. Weingarten, who were also all of the directors of the Company at that time. The stock options were awarded as compensation for those individuals through December 31, 2014. The stock options vested in three equal installments on July 17, 2014 (at issuance), September 30, 2014, and December 31, 2014, and expire on July 17, 2019. The exercise price of the stock options was established on the grant date at $16.25 per share, as compared to the closing market price of the Company's common stock on such date of $14.30 per share, reflecting an exercise price premium of $1.95 per share or 13.6%. These awards were made under the Company's 2014 Equity, Equity-Linked and Equity Derivative Incentive Plan.

(2) On June 30, 2015, the Company issued fully-vested stock options to purchase 87,913 shares of common stock exercisable at $5.6875 per share for a period of five years in partial payment of an obligation to its current law firm. This issuance was made under the Company's 2015 Stock and Stock Option Plan.

(3) On June 30, 2015, the Board of Directors of the Company awarded stock options to purchase a total of 169,232 shares of common stock, consisting of options for 46,154 shares to each of the Company's then three executive officers, Dr. Arnold S. Lippa, Jeff E. Margolis and Robert N. Weingarten, and options for 6,154 shares to each of five other individuals who are members of management, the Company's Scientific Advisory Board, or independent members of the Board of Directors. The stock options were awarded as partial compensation for those individuals through December 31, 2015. The stock options vested 50% on June 30, 2015 (at issuance), 25% on September 30, 2015 and 25% on December 31, 2015, and will expire on June 30, 2022. The exercise price of the stock options was established on the grant date at $8.125 per share, as compared to the closing market price of the Company's common stock on such date of $5.6875 per share, reflecting an exercise price premium of $2.4375 per share or 42.9%. These awards were made under the Company's 2015 Stock and Stock Option Plan.

(4) On August 18, 2015, the Company entered into an employment agreement with Dr. James S. Manuso to be its new President and Chief Executive Officer. In connection therewith, and in addition to other provisions, the Board of

Directors of the Company awarded Mr. Manuso stock options to purchase a total of 261,789 shares of common stock, of which options for 246,154 shares were granted pursuant to the Company's 2015 Stock and Stock Option Plan and options for 15,635 shares were granted pursuant to the Company's 2014 Equity, Equity-Linked and Equity Derivative Incentive Plan. The stock options vested 50% on August 18, 2015 (at issuance), 25% on February 18, 2016 and 25% on August 18, 2016, and will expire on August 18, 2025. The exercise price of the stock options was established on the grant date at $6.396 per share, which is equal to the simple average of the most recent four full trading weeks, weekly Volume Weighted Average Prices ("VWAPs") of the Company's common stock price immediately preceding the date of grant as reported by OTC IQ, as compared to the closing market price of the Company's common stock on August 18, 2015 of $6.6883 per share.

(5) On August 18, 2015, the Company entered into employment agreements with Dr. Arnold S. Lippa, its new Chief Scientific Officer, Robert N. Weingarten, its Vice President and Chief Financial Officer, and Jeff E. Margolis, its Vice President, Treasurer and Secretary. In connection therewith, and in addition to other provisions, the Board of Directors of the Company awarded to each of those officers stock options to purchase a total of 30,770 shares of common stock pursuant to the Company's 2015 Stock and Stock Option Plan. The stock options vested 25% on December 31, 2015, 25% on March 31, 2016, 25% on June 30, 2016 and 25% on September 30, 2016, and will expire on August 18, 2022. The exercise price of the stock options was established on the grant date at $6.396 per share, which is equal to the simple average of the most recent four full trading weeks, weekly VWAPs of the Company's common stock price immediately preceding the date of grant as reported by OTC IQ, as compared to the closing market price of the Company's common stock on August 18, 2015 of $6.6883 per share.

On August 18, 2015, the Board of Directors of the Company awarded stock options for 9,231 shares of common stock to each of seven other individuals who are members of management, the Company's Scientific Advisory Board, independent members of the Board of Directors, or outside service providers pursuant to the Company's 2015 Stock and Stock Option Plan, representing stock options for a total of 64,617 shares of common stock. The stock options vested 25% on December 31, 2015, 25% on March 31, 2016, 25% on June 30, 2016 and 25% on September 30, 2016, and will expire on August 18, 2020 as to stock options for 27,693 shares of common stock and August 18, 2022 as to stock options for 36,924 shares of common stock. The exercise price of the stock options was established on the grant date at $6.396 per share, which is equal to the simple average of the most recent four full trading weeks, weekly VWAPs of the Company's common stock price immediately preceding the date of grant as reported by OTC IQ, as compared to the closing market price of the Company's common stock on August 18, 2015 of $6.6883 per share.

On December 11, 2015, the Company entered into a consulting agreement for the provision of investor relations services. The fee for such services was paid through the granting of non-qualified stock options to purchase a total of 8,792 shares of common stock pursuant to the Company's 2015 Stock and Stock Option Plan. The stock options will vested in equal installments on the last day of each month during the term of the consulting agreement, December 11, 2015 through March 31, 2016, and will expire on December 11, 2020. The exercise price of the stock options was established on the grant date at $6.825 per share, which was the closing market price of the Company's common stock on the date of grant.

On March 31, 2016, the Board of Directors of the Company awarded stock options for 81,539 shares of common stock to Dr. James S. Manuso, President and Chief Executive Officer and 73,847 to each of Arnold S. Lippa, Robert N. Weingarten and Jeff E. Margolis, all executive officers as described above. All four individuals are also members of the Board of Directors. The stock options were awarded as compensation for the year 2016. In addition, on that date, Board of Directors of the Company awarded stock options for 30,770 shares of common stock to the two independent members of the Board of Directors, stock options for 61,539 to a service provider who is an executive officer of the Company, but not a member of the Board of Directors as compensation for services for the year 2016, and additional stock options were awarded for 96,298 shares of common stock to other service providers. These stock options were awarded as partial or full payment for services. All stock options that were awarded on March 31, 2016 vested 25% upon issuance and 25% on each of June 30, 2016, September 30, 2016 and December 31, 2016. All stock options awarded on March 31, 2016 have an exercise price of $7.3775 per share of common stock and expire on March 31, 2021. The exercise price of $7.3775 as compared to the closing market price of the Company's common stock on March 31, 2016 of $7.3669 represents a premium of 0.14%. All of these options were awarded pursuant to the Company's 2015 Stock and Stock Option Plan.

On September 2, 2016 and September 12, 2016, pursuant to the Company's 2015 Stock and Stock Option Plan, stock options for 9,830 shares of common stock were awarded to two service providers and vested immediately upon issuance. Stock options for 7,222 shares of common stock have an exercise price of $4.50 per share and stock options for 2,608 shares have an exercise price of $5.75.

On January 17, 2017, pursuant to the Company's 2015 Stock and Stock Option Plan, stock options for 395,000 shares of common stock were awarded to four executive officers, two independent directors, one additional officer, and ten service providers, all of which vested 25% upon award on January 17, 2017, 25% on March 31, 2017 and 50% on June 30, 2017. The stock options for all 395,000 shares of common stock had an exercise price of $3.90 per share.

On June 30, 2017, pursuant to the Company's 2015 Stock and Stock Option Plan, stock options for 285,000 shares of common stock were awarded to three executive officers, two independent directors, one additional officer, and three service providers, all of which vested upon award on June 30, 2017. The stock options for all 285,000 shares of common stock had an exercise price of $2.00 per share.

On July 26, 2017, pursuant to the Company's 2015 Stock and Stock Option Plan, a stock option for 25,000 shares were awarded to Jeff E. Margolis, the Company's Senior Vice President, Chief Financial Officer, Treasurer and Secretary and a director, which vested 25% upon award on July 26, 2017, 25% on September 30, 2017 and 50% on December 31, 2017. The stock option for the 25,000 shares of common stock had an exercise price of $2.00 per share.

On July 28, 2017, pursuant to the Company's 2015 Stock and Stock Option Plan, stock options for 34,000 shares were awarded to two service providers. Options with respect to 9,000 shares of common stock vested one-third upon award on July 28, 2017, one-third on August 31, 2017 and one-third on September 30, 2017. Options with respect to 25,000 shares of common stock vested 20% on each of August 31, 2017, September 30, 2017, October 31, 2017, November 30, 2017 and December 31, 2017. The stock options on all 34,000 shares of common stock had an exercise price of $1.35 per share.

On December 9, 2017, pursuant to the Company's 2015 Stock and Stock Option Plan, stock options for 1,949,418 shares were awarded to four executive officers, one former executive officer, two independent directors, one additional officer, and two service providers, all of which vested immediately upon award. The stock options for 1,849,418 shares of common stock were issued to individuals and one entity that had, on the same date, forgiven $2,668,718 of accrued compensation and related costs and other accounts payable. The stock option for 100,000 shares was a bonus to the additional officer. All stock options for 1,949,418 shares of common stock had an exercise price of $1.45 per share.

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

Director Independence

As of December 31, 2017, James Sapirstein, RPh., M.B.A. and Kathryn MacFarlane, PharmD. were "independent directors", as that term is defined under Section 803 of the NYSE Amex Company Guide. As noted above, as of December 31, 2017, all of the functions of the Audit, Compensation and Governance and Nominations Committees were being performed by the full board of directors.

Transactions with Related Persons

In 2016, the Company engaged in certain transactions with Arnold S. Lippa, our Chairman and Chief Scientific Officer, and certain of his affiliates, and James S. Manuso, our Chief Executive Officer. These transactions have been previously disclosed and are discussed in and Note 1 to our consolidated financial statements for the years ended December 31, 2017 and 2016—Organization and Business Operations—*Going Concern* and Note 4 to our consolidated financial statements for the years ended December 31, 2017 and 2016—Notes Payable—*Advances and Notes Payable to Officers.*

In connection with 1st 2017 Unit Offering, Aurora Capital LLC ("Aurora") served as a placement agent and earned $20,000 fees and 8,000 placement agent common stock warrants. The 1st 2017 Unit Offering is discussed in greater retail in Management's Discussion and Analysis of Financial Condition and Results of Operations—Recent

Developments—*Common Stock and Warrant Financings*. The fees were unpaid as of December 31, 2017 and have been accrued in accounts payable and accrued expenses and charged against Additional paid-in capital as of March 31, 2017, June 30, 2017 and September 30, 2017 and December 31, 2017. The placement agent common stock warrants were valued at $27,648 and were accounted for in Additional paid-in capital as of March 31, 2017 and remain valued at that amount as of December 31, 2017.

Item 14. Principal Accountant Fees and Services

Haskell & White LLP, acted as our independent registered public accounting firm for the fiscal years ended December 31, 2016 and 2017 and for the interim periods in such fiscal years. The following table shows the approximate fees that were incurred by us for audit and other services provided by Haskell & White LLP in fiscal 2016 and 2017.

	2016	2017
Audit Fees[1]	$65,250	$81,070
Audit-Related Fees[2]	2,560	2,250
Tax Fees[3]	—	—
All Other Fees[4]	—	—
Total	$67,810	$83,320

(1) Audit fees represent fees for professional services provided in connection with the audit of our annual financial statements and the review of our financial statements included in our Quarterly Reports on Form 10-Q and services that are normally provided in connection with statutory or regulatory filings.

(2) Audit-related fees, if any, represent fees for assurance and related services that are reasonably related to the performance of the audit or review of our financial statements and not reported above under “Audit Fees” and, in 2016, for services performed in connection with an S-8 registration statement and our proxy statement in respect to our reverse stock split.

(3) Tax fees, if any, represent fees for professional services related to tax compliance, tax advice and tax planning.

(4) All other fees, if any, represent fees for products and services rendered by our independent registered accounting firm other than those listed above.

All audit related services, tax services and other services rendered by Haskell & White LLP were pre-approved by our Board of Directors. The Board of Directors has adopted a pre-approval policy that provides for the pre-approval of all services performed for us by our independent registered public accounting firm.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) List of documents filed as part of this report:

(1) Financial Statements

Reference is made to the Index to Financial Statements on page F-1, where these documents are listed.

(2) Financial Statement Schedules

The financial statement schedules have been omitted because the required information is not applicable, or not present in amounts sufficient to require submission of the schedules, or because the information is included in the financial statements or notes thereto.

(3) Exhibits

A list of exhibits required to be filed as a part of this Annual Report on Form 10-K is set forth in the Exhibit Index, which is presented elsewhere in this document and incorporated herein by reference.

Item 16. Form 10-K Summary

Not applicable

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RESPIRERX PHARMACEUTICALS INC.

AND SUBSIDIARY

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

(INCLUDING REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM)

Years Ended December 31, 2017 and 2016

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors

RespireRx Pharmaceuticals Inc. and Subsidiary

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of RespireRx Pharmaceuticals Inc. and Subsidiary (the "Company") as of December 31, 2017 and 2016, the related consolidated statements of operations, stockholders' equity (deficiency), and cash flows for each of the years then ended, and the related notes (collectively, the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Company as of December 31, 2017 and 2016, and the consolidated results of its operations and its cash flows for each of the years then ended, in conformity with U.S. generally accepted accounting principles.

Going Concern

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 2 to the consolidated financial statements, the Company has experienced recurring losses, negative cash flows from operations, has limited capital resources, and a net stockholders' deficiency. These matters raise substantial doubt about the Company's ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 2. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

We have served as the Company's auditor since 2004.

/s/ HASKELL & WHITE LLP

Irvine, California

April 17, 2018

RESPIRERX PHARMACEUTICALS INC.

AND SUBSIDIARY

CONSOLIDATED BALANCE SHEETS

	December 31, 2017	2016
ASSETS		
Current assets:		
Cash and cash equivalents	$84,902	$92,040
Advance payment on research contract	48,912	48,912
Prepaid expenses, including current portion of long-term prepaid insurance of $14,945 at December 31, 2017 and 2016	42,897	54,724
Total current assets	176,711	195,676
Equipment, net of accumulated depreciation of $20,897 and $15,730 at December 31, 2017 and 2016, respectively	-	5,167
Long-term prepaid insurance, net of current portion of $14,945 at December 31, 2017 and 2016	18,059	33,004
Total assets	$194,770	$233,847
LIABILITIES AND STOCKHOLDERS' DEFICIENCY		
Current liabilities:		
Accounts payable and accrued expenses, including $228,939 and $194,066 payable to related parties at December 31, 2017 and 2016, respectively	$2,922,013	$2,494,729
Accrued compensation and related expenses	479,300	1,944,559
Convertible notes payable, currently due and payable on demand, including accrued interest of $98,646 and $62,616 at December 31, 2017 and 2016, respectively, (of which $91,028, including accrued interest of $25,028, was deemed to be in default at December 31, 2017) (Note 4)	374,646	338,616
Note payable to SY Corporation, including accrued interest of $267,335 and $219,362 at December 31, 2017 and 2016, respectively (payment obligation currently in default – Note 4)	583,827	594,007
Notes payable to officers, including accrued interest of $26,538 and $11,018 at December 31, 2017 and 2016, respectively (Note 4)	181,738	166,218
Non-permanent equity (Note 6)	-	185,000
Other short-term notes payable	8,630	4,095
Total current liabilities	4,550,154	5,727,224

Commitments and contingencies (Note 9)		
Stockholders' deficiency: (Note 6)		
Series B convertible preferred stock, $0.001 par value; $0.6667 per share liquidation preference; aggregate liquidation preference $25,001; shares authorized: 37,500; shares issued and outstanding: 37,500; common shares issuable upon conversion at 0.00030 common shares per Series B share: 11	21,703	21,703
Common stock, $0.001 par value; shares authorized: 65,000,000; shares issued and outstanding: 3,065,261 and 2,149,045 at December 31, 2017 and 2016, respectively (Note 1)	3,065	2,149
Additional paid-in capital	157,422,110	151,993,550
Accumulated deficit	(161,802,262)	(157,510,779)
Total stockholders' deficiency	(4,355,384)	(5,493,377)
Total liabilities and stockholders' deficiency	$194,770	$233,847

See accompanying notes to consolidated financial statements and

report of independent registered public accounting firm.

RESPIRERX PHARMACEUTICALS INC.

AND SUBSIDIARY

CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,	
	2017	2016
Operating expenses:		
General and administrative, including $1,846,947 and $4,198,750 to related parties for the years ended December 31, 2017 and 2016, respectively	$2,515,846	$5,295,683
Research and development, including $1,132,604 and $1,646,092 to related parties for the years ended December 31, 2017 and 2016, respectively	1,731,565	3,176,207
Total operating costs and expenses	4,247,411	8,471,890
Loss from operations	(4,247,411)	(8,471,890)
Gain on settlements with service providers	-	1,076
Fair value of inducement cost to effect exchange of convertible notes payable for common stock	-	(188,274)
Interest income	-	8
Interest expense, including $15,519 and $151,958 to related parties for the years ended December 31, 2017 and 2016, respectively	(102,225)	(586,346)
Foreign currency transaction gain	58,153	15,666
Net loss	(4,291,483)	(9,229,760)
Adjustment related to Series G 1.5% Convertible Preferred Stock:		
Dividends on Series G 1.5% Convertible Preferred Stock	-	(1,165)
Net loss attributable to common stockholders	$(4,291,483)	$(9,230,925)
Net loss per common share - basic and diluted	$(1.77)	$(4.95)
Weighted average common shares outstanding - basic and diluted	2,418,271	1,864,045

See accompanying notes to consolidated financial statements and

report of independent registered public accounting firm.

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RESPIRERX PHARMACEUTICALS INC.

AND SUBSIDIARY

CONSOLIDATED STATEMENT OF STOCKHOLDERS' DEFICIENCY

Years Ended December 31, 2017 and 2016

	Series B Convertible Preferred Stock		Series G 1.5% Convertible Preferred Stock		Common Stock		Additional Paid-in Capital	Accumulated Deficit	Total Stockholders Deficiency
	Shares	Amount	Shares	Amount	Shares	Par Value			
Balance, December 31, 2015	37,500	$21,703	258.6	$258,566	1,507,221	$1,507	$145,135,869	$(148,279,854)	$(2,862,209)
Sale of common stock units in private placement	-	-	-	-	173,287	173	494,812	-	494,985
Reclassification to non-permanent equity							(185,000)		(185,000)
Costs incurred in connection with sale of common stock units	-	-	-	-	-	-	(7,429)	-	(7,429)
Common stock issued in connection with convertible notes payable exchange transactions	-	-	-	-	101,508	102	577,227	-	577,329
Common stock issued in connection	-	-	-	-	108,594	109	529,285	-	529,394

with unit exchanges									
Common stock issued to service provider	-	-	-	-	16,453	16	96,234	-	96,250
Fair value of common stock options issued for compensation and fees	-	-	-	-	-	-	4,733,974	-	4,733,974
Fair value of common stock options issued to service provider in partial settlement of accounts payable	-	-	-	-	-	-	31,174	-	31,174
Fair value of common stock warrants issued as additional consideration in connection with loans from officers	-	-	-	-	-	-	140,939	-	140,939
Fair value of inducement cost to effect conversion of convertible notes payable into common stock	-	-	-	-	-	-	188,274	-	188,274
Dividends on Series G 1.5% Convertible Preferred Stock	-	-	1.1	1,165	-	-	-	(1,165)	-
Mandatory conversion of Series G 1.5% Convertible Preferred Stock	-	-	(259.7)	(259,731)	242,173	242	259,489	-	-
Cash payment in lieu of fractional shares resulting from reverse	-	-	-	-	(191)	(0)	(1,298)	-	(1,298)

stock split									
Net loss	-	-	-	-	-	-	-	(9,229,760)	(9,229,760)
Balance, December 31, 2016	37,500	$21,703	-	$-	2,149,045	$2,149	$151,993,550	$(157,510,779)	$(5,493,377)
Sale of common stock units in private placement					544,500	$544	$ 753, 956		754,500
Placement Agent fees associated with sale of common stock units in private placement							$(20,000)		$(20,000)
Common stock issued in connection with unit exchanges					371,716	$372	$(372)		-
Fair value of common stock options issued for compensation and fees							$4,509,976		$4,509,976
Reclassification of non-permanent equity							$185,000		$185,000
Net loss								$(4,291,483)	$(4,291,483)
Balance at December 21, 2017	37,500	$21,703	-	$-	3,065,261	$3,065	$157,422,110	$(161,802,262)	$(4,355,384)

See accompanying notes to consolidated financial statements and

report of independent registered public accounting firm.

RESPIRERX PHARMACEUTICALS INC.

AND SUBSIDIARY

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,	
	2017	2016
Cash flows from operating activities:		
Net loss	$(4,291,483)	$(9,229,760)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation expense	5,167	6,954
Amortization of debt discounts (including beneficial conversion feature) related to convertible notes payable	-	226,433
Write-off of unamortized debt discounts (including beneficial conversion feature) related to exchange of convertible notes payable for common stock	-	116,499
Fair value of inducement cost to effect exchange of convertible notes payable for common stock	-	188,274
Fair value of warrants issued as additional consideration in connection with loans from officers	-	140,939
Gain from settlement(s) -		
With service providers	-	(1,076)
Stock-based compensation and fees included in -		
General and administrative expenses	2,966,420	3,391,848
Research and development expenses	1,543,556	1,342,126
Foreign currency transaction gain	(58,153)	(15,666)
Changes in operating assets and liabilities:		
(Increase) decrease in -		
Advance on research contract	-	(48,912)
Prepaid expenses	26,772	(10,635)
Increase (decrease) in -		
Accounts payable and accrued expenses	476,449	1,228,816
Accrued compensation and related expenses	(1,465,259)	1,234,150
Accrued interest payable	99,522	101,326
Net cash used in operating activities	(697,009)	(1,328,684)
Cash flows from financing activities:		
Proceeds from sale of common stock units	754,500	494,985
Proceeds from warrant exchange transactions	-	762,240
Proceeds from issuance of notes payable to officers	-	155,200
Principal paid on other short-term notes payable	(64,629)	(39,602)

Cash payments in lieu of fractional common shares resulting from reverse stock split	-	(1,298)
Cash payments made for costs incurred in connection with the sale of common stock units	-	(4,000)
Net cash provided by financing activities	689,871	1,367,525
Cash and cash equivalents:		
Net increase (decrease)	(7,138)	38,841
Balance at beginning of period	92,040	53,199
Balance at end of period	$84,902	$92,040

(Continued)

RESPIRERX PHARMACEUTICALS INC.

AND SUBSIDIARY

CONSOLIDATED STATEMENTS OF CASH FLOWS

(Continued)

	Years Ended December 31,	
	2017	2016
Supplemental disclosures of cash flow information:		
Cash paid for -		
Interest	$2,608	$1,133
Income taxes	$-	$-
Non-cash financing activities:		
Dividends on Series G 1.5% Convertible Preferred Stock	$-	$1,165
Deferred financing costs charged to additional paid-in capital	$-	$3,429
Short-term note payable issued in connection with financing of directors and officers insurance policy	$59,857	$40,016
Short-term note payable issued in connection with financing of clinical trial and other office insurance policies	$9,307	$-
Stated value of Series G 1.5% Convertible Preferred Stock converted into common stock	$-	$259,731
Fair value of common stock issued to service provider	$-	$96,250
Fair value of common stock options issued to service providers	$-	$31,174
Convertible notes payable, including accrued interest of $40,983, extinguished in common stock exchange transactions	$-	$344,483
Accrual of fees payable to placement agent in connection with the sale common stock units	$20,000	$-
Fair value of common stock warrants issued to placement agent in connection with the sale of common stock units	$27,648	$-
Reclassification of non-permanent equity	$185,000	$-

See accompanying notes to consolidated financial statements and

report of independent registered public accounting firm.

RESPIRERX PHARMACEUTICALS INC.

AND SUBSIDIARY

THE NOTES IS THIS DRAFT HAVE BEEN COMPLETED THROUGH THE END OF NOTE 4 (NOTES)

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years Ended December 31, 2017 and 2016

1. Organization and Basis of Presentation

Organization

RespireRx Pharmaceuticals Inc. ("RespireRx") was formed in 1987 under the name Cortex Pharmaceuticals, Inc. to engage in the discovery, development and commercialization of innovative pharmaceuticals for the treatment of neurological and psychiatric disorders. On December 16, 2015, RespireRx filed a Certificate of Amendment to its Second Restated Certificate of Incorporation with the Secretary of State of the State of Delaware to amend its Second Restated Certificate of Incorporation to change its name from Cortex Pharmaceuticals, Inc. to RespireRx Pharmaceuticals Inc.

In August 2012, RespireRx acquired Pier Pharmaceuticals, Inc. ("Pier"), which is now its wholly-owned subsidiary.

Basis of Presentation

The consolidated financial statements are of RespireRx and its wholly-owned subsidiary, Pier (collectively referred to herein as the "Company," unless the context indicates otherwise), as of December 31, 2017 and for each of the years ended December 31, 2017 and 2016.

Reverse Stock Split

On August 16, 2016, at a special meeting of the stockholders of the Company, the stockholders approved an amendment to the Company's Second Restated Certificate of Incorporation (i) to effect, at the discretion of the Company's Board of Directors, a three hundred twenty five-to-one (325-to-1) reverse stock split of all of the outstanding shares of the Company's common stock, par value $0.001 per share, and (ii) to set the number of the Company's authorized shares of stock at 70,000,000 shares, consisting of 65,000,000 shares designated as common stock, par value $0.001 per share, and 5,000,000 shares designated as preferred stock, par value $0.001 per share. On September 1, 2016, the Company filed a Certificate of Amendment to the Company's Second Restated Certificate of Incorporation with the Secretary of State of the State of Delaware to effect the approved amendment.

Pursuant to the amendment, an aggregate of 191.068 fractional shares resulting from the reverse stock split were not issued, but were paid out in cash (without interest or deduction) in an amount equal to the number of shares exchanged into such fractional share multiplied by the average closing trading price of the Company's common stock on the OTCQB for the five trading days immediately before the Certificate of Amendment effecting the reverse stock split was filed with the Delaware Secretary of State ($6.7899 per share, on a post reverse stock split basis) for an aggregate of $1,298.

All share and per share amounts with respect to common stock presented herein have been retroactively restated to reflect the 325 to 1 reverse stock split as if it had been effected on the first day of the earliest period presented. Certain share amounts have been rounded to whole shares in the process of recording the effect of the reverse stock split.

2. Business

RespireRx is developing dronabinol, a synthetic derivative of a naturally occurring substance in the cannabis plant, otherwise known as Δ9-THC or Δ9-tetrahydrocannabinol, for the treatment of Obstructive Sleep Apnea ("OSA"), a serious respiratory disorder that impacts an estimated 30 million people in the United States. OSA has been linked to increased risk for hypertension, heart failure, depression, and diabetes, and has an annual economic cost of $162 billion according to the American Academy of Sleep Medicine. There are no approved drug treatments for OSA.

RespireRx holds the exclusive world-wide license to a family of patents for the use of cannabinoids, including dronabinol, in the treatment of sleep disordered breathing from the University of Illinois at Chicago ("UIC"). In addition, RespireRx has several extensions and pending applications that, if issued, will extend patent protection for over a decade. With approximately $5 million in funding from the National Heart, Lung and Blood Institute of the National Institutes of Health, UIC recently completed a Phase 2B multi-center, double-blind, placebo-controlled clinical trial of dronabinol in patients with OSA. Entitled **P**harmacotherapy of **A**pnea with **C**annabimimetic **E**nhancement ("PACE"), this study replicated an earlier Phase 2A RespireRx sponsored clinical trial and demonstrated statistically significant improvements in respiration, daytime sleepiness, and patient satisfaction after administration of dronabinol. The results from PACE were published in the journal Sleep Vol. 41. No. 1, 2018.

RespireRx believes that the most direct route to commercialization is to proceed directly to a Phase 3 pivotal trial using the currently available dronabinol formulation (2.5, 5 and 10 mg gel caps) and to then commercialize a RespireRx branded dronabinol capsule ("RBDC").

There are also numerous opportunities for reformulation of dronabinol to produce a second generation proprietary, branded product for the treatment of OSA with an improved profile. Therefore, simultaneous with the development of the RBDC, RespireRx plans to develop a proprietary dronabinol formulation to optimize the dose and duration of action for treating OSA.

RespireRx initiated its dronabinol program when it acquired 100% of the issued and outstanding equity securities of Pier effective August 10, 2012 pursuant to an Agreement and Plan of Merger. Pier was formed in June 2007 (under the name SteadySleep Rx Co.) as a clinical stage pharmaceutical company to develop a pharmacologic treatment for OSA and had been engaged in research and clinical development activities.

Prior to the merger, Pier conducted a 21 day, randomized, double-blind, placebo-controlled, dose escalation Phase 2 clinical study in 22 patients with OSA, in which dronabinol produced a statistically significant reduction in the Apnea-Hypopnea Index, the primary therapeutic end-point, and was observed to be safe and well tolerated.

Through the merger, RespireRx gained access to a 2007 Exclusive License Agreement (as amended, the "Old License") that Pier had entered into with the University of Illinois on October 10, 2007. The Old License covered certain patents and patent applications in the United States and other countries claiming the use of certain compounds referred to as cannabinoids, including dronabinol, for the treatment of sleep-related breathing disorders (including sleep apnea).

Dronabinol is a Schedule III, controlled generic drug with a relatively low abuse potential that is approved by the U.S. Food and Drug Administration (the "FDA") for the treatment of AIDS-related anorexia and chemotherapy-induced

emesis. The use of dronabinol for the treatment of OSA is a novel indication for an already approved drug and, as such, the Company believes that it would only require approval by the FDA of a 505(b)(2) new drug application, an efficient regulatory pathway.

The Old License was terminated effective March 21, 2013, due to the Company's failure to make a required payment. Subsequently, current management opened negotiations with the University of Illinois, and as a result, the Company entered into a new license agreement (the "2014 License Agreement") with the University of Illinois on June 27, 2014, the material terms of which were similar to the Old License.

Similar to the Old License, the 2014 License Agreement grants the Company, among other provisions, exclusive rights: (i) to practice certain patents and patent applications, as defined in the 2014 License Agreement, that are held by the University of Illinois; (ii) to identify, develop, make, have made, import, export, lease, sell, have sold or offer for sale any related licensed products; and (iii) to grant sub-licenses of the rights granted in the 2014 License Agreement, subject to the provisions of the 2014 License Agreement. The Company is required under the 2014 License Agreement, among other terms and conditions, to pay the University of Illinois a license fee, royalties, patent costs and certain milestone payments.

Since its formation in 1987, RespireRx has been engaged in the research and clinical development of a class of proprietary compounds known as ampakines, which act to enhance the actions of the excitatory neurotransmitter glutamate at AMPA glutamate receptors. Several ampakines, in both oral and injectable form, are being developed by the Company for the treatment of a variety of breathing disorders. In clinical studies, select ampakines have shown preliminary efficacy in central sleep apnea and in the control of respiratory depression produced by opioids, without altering their analgesic effects. In animal models of orphan disorders, such as Pompe Disease, spinal cord damage and perinatal respiratory distress, it has been demonstrated that certain ampakines improve breathing function. The Company's compounds belong to a new class of ampakines that do not display the undesirable side effects previously reported in animal models of earlier generations.

The Company owns patents and patent applications, or the rights thereto, for certain families of chemical compounds, including ampakines, which claim the chemical structures, their actions as ampakines and their use in the treatment of various disorders. Patents claiming a family of chemical structures, including CX1739 and CX1942, as well as their use in the treatment of various disorders extend through at least 2028. Additional patents claiming a family of chemical structures, including CX717, as well as their use in the treatment of various disorders expired in 2017 in the U.S. and will expire in 2018 internationally.

In 2011, RespireRx conducted a re-evaluation of its strategic focus and determined that clinical development in the area of respiratory disorders, particularly sleep apnea and drug-induced respiratory depression, provided the most cost-effective opportunities for potential rapid development and commercialization of RespireRx's compounds. Accordingly, RespireRx narrowed its clinical focus at that time and sidelined other avenues of scientific inquiry. This re-evaluation provided the impetus for RespireRx's acquisition of Pier in August 2012, as described above.

The Company has continued to implement this strategic focus, notwithstanding a change in management in March 2013, and has continued its efforts to obtain the capital necessary to fund the clinical activities. As a result of the Company's scientific discoveries and the acquisition of strategic, exclusive license agreements, management believes that the Company is now a leader in developing drugs for respiratory disorders, particularly sleep apneas and drug-induced respiratory depression which is a form of apnea.

On May 8, 2007, RespireRx entered into a license agreement, as subsequently amended, with the University of Alberta granting RespireRx exclusive rights to method of treatment patents held by the University of Alberta claiming the use of ampakines for the treatment of various respiratory disorders. These patents, along with RespireRx's own patents claiming chemical structures, comprise RespireRx's principal intellectual property supporting RespireRx's research and clinical development program in the use of ampakines for the treatment of respiratory disorders. RespireRx has completed pre-clinical studies indicating that several of its ampakines, including CX717, CX1739 and CX1942, were efficacious in treating drug induced respiratory depression caused by opioids or certain anesthetics without offsetting the analgesic effects of the opioids or the anesthetic effects of the anesthetics. In two clinical Phase 2 studies, one of which was published in a peer-reviewed journal, CX717, a predecessor compound to CX1739 and CX1942, antagonized the respiratory depression produced by fentanyl, a potent narcotic, without affecting the analgesia produced by this drug. In addition, RespireRx has conducted a Phase 2A clinical study in which patients with sleep apnea were administered CX1739, RespireRx's lead clinical compound. The results suggested that CX1739 might have use as a treatment for central sleep apnea ("CSA") and mixed sleep apnea, but not obstructive OSA.

Going Concern

The Company's consolidated financial statements have been presented on the basis that it is a going concern, which contemplates the realization of assets and satisfaction of liabilities in the normal course of business. The Company has

incurred net losses of $4,291,483 and $9,229,760 and had negative operating cash flows of $697,009 and $1,328,684 for the fiscal years ended December 31, 2017 and 2016, respectively. The Company also had a stockholders' deficiency of $4,355,384 at December 31, 2017, and expects to continue to incur net losses and negative operating cash flows for at least the next few years. As a result, management has concluded that there is substantial doubt about the Company's ability to continue as a going concern. In addition, the Company's independent registered public accounting firm, in its report on the Company's consolidated financial statements for the year ended December 31, 2017, has expressed substantial doubt about the Company's ability to continue as a going concern.

The Company is currently, and has for some time, been in significant financial distress. It has limited cash resources and current assets and has no ongoing source of sustainable revenue. Management is continuing to address various aspects of the Company's operations and obligations, including, without limitation, debt obligations, financing requirements, intellectual property, licensing agreements, legal and patent matters and regulatory compliance, and has continued to raise new debt and equity capital to fund the Company's business activities from both related and unrelated parties, as described at Notes 4 and 6.

The Company is continuing efforts to raise additional capital in order to pay its liabilities, fund its business activities and underwrite its research and development programs. The Company regularly evaluates various measures to satisfy the Company's liquidity needs, including the development of agreements with collaborative partners and, when necessary, the exchange or restructuring of the Company's outstanding securities. As a result of the Company's current financial situation, the Company has limited access to external sources of debt and equity financing, and has recently utilized short-term borrowings from its Chief Executive Officer and its Chief Scientific Officer to fund operations, although there can be no assurances that such borrowings will continue to be available. Accordingly, there can be no assurances that the Company will be able to secure additional financing in the amounts necessary to fund its operating and debt service requirements. If the Company is unable to access sufficient cash resources on a timely basis, the Company may be forced to reduce or suspend operations indefinitely, or to discontinue operations entirely and liquidate.

3. Summary of Significant Accounting Policies

Principles of Consolidation

The accompanying consolidated financial statements are prepared in accordance with United States generally accepted accounting principles ("GAAP") and include the financial statements of RespireRx and its wholly-owned subsidiary, Pier. Intercompany balances and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions. These estimates and assumptions affect the reported amounts of assets and liabilities, 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. Significant estimates include, among other things, accounting for potential liabilities, and the assumptions used in valuing stock-based compensation issued for services. Actual amounts may differ from those estimates.

Concentrations of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash and cash equivalents. The Company limits its exposure to credit risk by investing its cash with high quality financial institutions. The Company's cash balances may periodically exceed federally insured limits. The Company has not experienced a loss in such accounts to date.

Cash Equivalents

The Company considers all highly liquid short-term investments with maturities of less than three months when acquired to be cash equivalents.

Fair Value of Financial Instruments

The authoritative guidance with respect to fair value of financial instruments established a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three levels, and requires that assets and liabilities carried at fair value be classified and disclosed in one of three categories, as presented below. Disclosure as to transfers into and out of Levels 1 and 2, and activity in Level 3 fair value measurements, is also required.

Level 1. Observable inputs such as quoted prices in active markets for an identical asset or liability that the Company has the ability to access as of the measurement date. Financial assets and liabilities utilizing Level 1 inputs include active-exchange traded securities and exchange-based derivatives.

Level 2. Inputs, other than quoted prices included within Level 1, which are directly observable for the asset or liability or indirectly observable through corroboration with observable market data. Financial assets and liabilities utilizing Level 2 inputs include fixed income securities, non-exchange based derivatives, mutual funds, and fair-value hedges.

Level 3. Unobservable inputs in which there is little or no market data for the asset or liability which requires the reporting entity to develop its own assumptions. Financial assets and liabilities utilizing Level 3 inputs include infrequently-traded, non-exchange-based derivatives and commingled investment funds, and are measured using present value pricing models.

The Company determines the level in the fair value hierarchy within which each fair value measurement falls in its entirety, based on the lowest level input that is significant to the fair value measurement in its entirety. In determining the appropriate levels, the Company performs an analysis of the assets and liabilities at each reporting period end.

The carrying amount of financial instruments (consisting of cash, cash equivalents, advances on research grants and accounts payable and accrued expenses) is considered by the Company to be representative of the respective fair values of these instruments due to the short-term nature of those instruments. With respect to the note payable to SY Corporation and the convertible notes payable, management does not believe that the credit markets have materially changed for these types of borrowings since the original borrowing date.

Deferred Financing Costs

Costs incurred in connection with ongoing debt and equity financings, including legal fees, are deferred until the related financing is either completed or abandoned.

Costs related to abandoned debt or equity financings are charged to operations in the period of abandonment. Costs related to completed debt financings are presented as a direct deduction from the carrying amount of the related debt liability (see “Capitalized Financing Costs” below). Costs related to completed equity financings are charged directly to additional paid-in capital.

Capitalized Financing Costs

The Company presents debt issuance costs related to a debt liability in its consolidated balance sheet as a direct deduction from the carrying amount of that debt liability, consistent with the presentation for debt discounts.

Series G 1.5% Convertible Preferred Stock

The shares of Series G 1.5% Convertible Preferred Stock (“Series G Preferred Stock”) (including accrued dividends) issued in 2014 were mandatorily convertible into common stock at a fixed conversion rate on April 17, 2016 (if not converted earlier) and provided no right to receive a cash payment. There were no shares of Series G Preferred Stock outstanding at any time in 2017. There were $1,165 of accrued dividends in respect to the Series G Preferred Stock for the year ended December 31, 2016. All Series G Preferred Stock, including accrued dividends, that had not been earlier converted, was mandatorily converted to the Company’s common stock, par value $0.001 on April 17, 2016.

Convertible Notes Payable

Original Issuance of Notes and Warrants

The convertible notes sold to investors in 2014 and 2015, which aggregated a total of $579,500, had a fixed interest rate of 10% per annum and are convertible into common stock at a fixed price of $11.3750 per share. The convertible notes have no reset rights or other protections based on subsequent equity transactions, equity-linked transactions or other events. The warrants to purchase 50,945 shares of common stock issued in connection with the sale of the convertible notes were exercisable at a fixed price of $11.3750 per share, provided no right to receive a cash payment, and included no reset rights or other protections based on subsequent equity transactions, equity-linked transactions or other events. The Company determined that there were no embedded derivatives to be identified, bifurcated and valued in connection with this financing.

The maturity date of the notes was extended to September 15, 2016 and included the issuance of 27,936 additional warrants to purchase common stock, exercisable at $11.375 per share of common stock.

Note Exchange Agreements

During April and May 2016, the Company entered into Note Exchange Agreements with certain note holders, including one then non-officer/director affiliate, as described below, representing an aggregate of $303,500 of principal amount of the convertible notes (out of a total of $579,500 of original principal amount of the convertible notes payable). The Note Exchange Agreements were substantially similar and provided for the note holders to exchange their notes, original warrants and new warrants (collectively, the “Exchanged Securities”), plus cash, in exchange for shares of the Company’s common stock. In the aggregate, $344,483 of principal amount (which included accrued interest of $40,993) of the convertible notes, original warrants to purchase 26,681 shares of the Company’s common stock and New Warrants to purchase 14,259 shares of the Company’s common stock, plus an aggregate of $232,846 in cash, were exchanged for 101,508 shares of the Company’s common stock, with a total market value of $631,023 (average $6.2075 per share), which resulted in a credit to total stockholders’ deficiency of $577,329. All of the Exchanged Securities were cancelled as a result of the respective exchange transactions.

Among the executed Note Exchange Agreements, the Company entered into one Note Exchange Agreement with a then non-officer/director affiliate effective May 4, 2016 (the financial information with respect thereto is included in the summary paragraph presented above), pursuant to which this then affiliate exchanged $28,498 of principal amount (which included accrued interest of $3,498) of the convertible notes, original warrants to purchase 2,198 shares of the Company’s common stock and New Warrants to purchase 1,178 shares of the Company’s common stock, plus $19,200

in cash, in return for 8,386 shares of the Company's common stock.

In this transaction, the exchanging note holders agreed to exchange their convertible notes (including accrued interest) into common stock at a 50% discount to the conversion rate ($11.3750 per share) provided for by the terms of the convertible notes, if they also exchanged all of their warrants associated with the convertible notes, plus paid cash equal to a 50% discount to the exercise price ($11.3750 per share). For accounting purposes, the transactions have been treated as if (i) the participants had converted the convertible notes (which included accrued but unpaid interest of $40,993) at a conversion price reduced from $11.3750 to $5.6875 per share, and that such conversions in the aggregate resulted in the issuance of an aggregate of 60,568 shares of common stock, and (ii) the participants had exercised their original warrants to purchase an aggregate of 26,681 shares of common stock and the New Warrants to purchase an aggregate of 14,259 shares of common stock, all at an exercise price reduced from $11.3750 to $5.6875 per share, and that such exercise of the warrants generated an aggregate cash payment to the Company of $232,846 and resulted in the issuance of an aggregate of 40,940 shares of common stock. In connection with the exchange of the convertible notes, original warrants, New Warrants and the payment of cash, a total of 101,508 shares of common stock in the aggregate were issued. The closing market price of the Company's common stock during the period that these exchange transactions were entered into ranged from $5.8500 to $7.7675 per share.

The Company reviewed the guidance in ASC 470-20-40-13 through 17, Recognition of Expense Upon Conversion, and in ASC 470-20-40-26, Induced Conversions. Pursuant to this accounting guidance, for those convertible note holders accepting the Company's exchange offer, the Company evaluated the fair value of the incremental consideration paid to induce the convertible note holders to exchange their convertible notes for equity (i.e., 30,284 shares of common stock), based on the closing market price of the Company's common stock on the date of each transaction, and recorded a charge to operations of $188,274.

The Company evaluated the warrants exchanged in conjunction with the Note Exchange Agreements. The Company calculated the fair value of the warrants exchanged (consisting of the warrants issued in conjunction with the original issuance of the convertible notes) as if the warrants were modified immediately before the theoretical warrant modification and immediately after such warrant modification. As the fair value of the warrants immediately after the modifications was less than the fair value of the warrants immediately before the modifications (both amounts calculated pursuant to the Black-Scholes option-pricing model), the Company did not record any accounting entry with respect to the warrant exchange transactions.

The fair value of the warrants subject to the Note Exchange Agreements was estimated using the Black-Scholes option-pricing model utilizing the following assumptions:

	Before Warrant Modifications		After Warrant Modifications	
Exercise price per warrant	$ 11.3750		$ 5.6875	
Stock price	$ 5.8500 to $7.5400		$ 5.8500 to $7.5400	
Risk-free interest rate	0.23	%	0.23	%
Expected dividend yield	0	%	0	%
Expected volatility	201.59	%	201.59	%
Expected life	4.4 to 4.5 months		0 months	

2015 Unit Offering

Units sold to investors on August 28, 2015, September 28, 2015 and November 2, 2015 were comprised of one share of the Company's common stock and one common stock purchase warrant to purchase two additional shares of the Company's common stock. Units were sold for $6.83475 per unit and the warrants issued in connection with the units were exercisable at a fixed price $6.83475 per share of the Company's common stock. The warrants provided no right to receive a cash payment and included no reset rights or other protections based on subsequent equity transactions, equity-linked transactions or other events. The Company determined that there were no embedded derivatives to be identified, bifurcated and valued in connection with this unit financing. The aggregate gross proceeds of this unit

financing were $1,194,710.

The closing market prices of the Company's common stock on the transaction closing dates of August 28, 2015, September 28, 2015 and November 2, 2015 were $12.50, $8.1169 and $8.1169 respectively compared to the fixed unit price per unit and warrant exercise price per share of $6.83475.

Unit Exchange Agreements

During April and May 2016, the Company entered into Unit Exchange Agreements with certain warrant holders, including two affiliates, one of whom was Dr. Manuso, and the other of whom was then a non-officer/director affiliate, both as described below. The Unit Exchange Agreements were substantially similar, and provided for the warrant holders to exchange (i) existing warrants to purchase an aggregate of 217,188 shares of the Company's common stock (which were cancelled as a result of the respective exchange transactions), plus (ii) an aggregate of $529,394 in cash, in return for (i) an aggregate of 108,594 shares of the Company's common stock, and (ii) new warrants to purchase an aggregate of 108,594 shares of the Company's common stock. The new warrants have the same expiration date as the original warrants (September 30, 2020) and may be exercised for cash or on a cashless basis at $4.8750 per share.

Among the executed Unit Exchange Agreements, the Company entered into a Unit Exchange Agreement with Dr. Manuso effective April 6, 2016 (the financial information with respect thereto is included in the summary paragraph presented above), pursuant to which Dr. Manuso exchanged a warrant to purchase 73,156 shares of the Company's common stock that was originally issued to him in the Company's August 28, 2015 unit offering (which warrant was cancelled as a result of the exchange transaction), plus $178,317 in cash, in return for 36,578 shares of the Company's common stock and the issuance of a new warrant to purchase 36,578 shares of the Company's common stock. The new warrant has the same expiration date as the original warrant (September 30, 2020) and may be exercised for cash or on a cashless basis at $4.8750 per share. The closing market price of the Company's common stock on April 6, 2016 was $7.7675 per share.

Among the executed Unit Exchange Agreements, the Company also entered into Unit Exchange Agreements (which are included in the summary paragraph above) with a then non-officer/director affiliate (and his affiliate) effective May 4, 2016 (the financial information with respect thereto is included in the summary paragraph presented above), pursuant to which this then affiliate exchanged warrants to purchase 88,132 shares of the Company's common stock that were originally issued to the then affiliate in the Company's August 28, 2015 unit offering (which were cancelled as a result of the exchange transaction), plus $214,822 in cash, in return for 44,066 shares of the Company's common stock and the issuance of new warrants to purchase 44,066 shares of the Company's common stock. The new warrants have the same expiration date as the original warrants (September 30, 2020) and may be exercised for cash or on a cashless basis at $4.8750 per share. The closing market price of the Company's common stock on May 4, 2016 was $5.8500 per share.

In this transaction, exchanging warrant holders who received their warrants in any of the three closings of the Company's 2015 unit offering agreed to exchange their warrants associated with such financing, plus paid cash equal to a reduced exercise price per share ($4.8750 per share) for 50% of such warrants, with 50% of the warrants replaced with similar warrants with the same term at a reduced exercise price. For accounting purposes, the transactions have been treated as if (i) participants exercised one-half of the existing warrants entitling them to purchase an aggregate of 217,188 shares of the Company's common stock that were originally issued to them in the Company's unit offering, with closings on August 28, 2015, September 28, 2015 and November 2, 2015 (i.e., warrants to purchase 108,594 shares of common stock), at an exercise price reduced from $6.8348 to $4.8750 per share, and (ii) the other one-half of the original warrants were cancelled. The Unit Exchange Agreements also provided for the Company to issue new warrants to the participants to purchase an aggregate of 108,594 shares of common stock. The new warrants have the same expiration date as the original warrants (September 30, 2020) and may be exercised for cash or on a cashless basis at $4.8750 per share. For accounting purposes, the transaction was treated as if the warrant exercise price for all of the warrants was reduced from $6.8348 to $4.8750 per share, in exchange for which 50% of the warrants were exercised for cash at the reduced exercise price, and the remaining 50% of the warrants continued to remain outstanding through September 30, 2020 and gained a cashless exercise provision. The closing market price of the Company's common stock during the period that these exchange transactions were entered into ranged from $5.8500 to $7.7675 per share.

The Company evaluated the warrants exchanged in conjunction with the Unit Exchange Agreements. The Company calculated the fair value of the warrants exchanged as if the warrants were modified immediately before the theoretical

warrant modification and immediately after such warrant modification. As the fair value of the warrants immediately after the modifications was less than the fair value of the warrants immediately before the modifications (both amounts calculated pursuant to the Black-Scholes option-pricing model), the Company did not record any accounting entry with respect to the warrant exchange transactions.

The fair value of the warrants subject to the Unit Exchange Agreements was estimated using the Black-Scholes option-pricing model utilizing the following assumptions:

	Before Warrant Modifications		After Warrant Modifications	
Exercise price per warrant	$ 6.8348		$ 4.8750	
Stock price	$ 5.8500 to $7.7675		$ 5.8500 to $7.7675	
Risk-free interest rate	1.12	%	0.23 % and 1.12	%
Expected dividend yield	0	%	0	%
Expected volatility	201.59	%	201.59	%
Expected life	4.4 to 4.5 years		0 years to 4.5 years	

1st 2016 Unit Offering

Units were sold to investors from January 8, 2016 through June 30, 2016. These units were comprised of one share of the Company's common stock and one common stock purchase warrant to purchase two additional shares of the Company's common stock. Units were sold for $7.2085 per unit and the warrants issued in connection with the units were exercisable at a fixed price $7.93 per share of the Company's common stock. The warrants provided no right to receive a cash payment and included no reset rights or other protections based on subsequent equity transactions, equity-linked transactions or other events. The warrants contained a cashless exercise provision and certain blocker provisions preventing exercise during periods of time when the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock if such exercise were to occur. The Company determined that there were no embedded derivatives to be identified, bifurcated and valued in connection with this unit financing. The aggregate gross proceeds of this unit financing were $307,985.

The closing market prices of the Company's common stock on the transaction closing dates ranging from January 8, 2016 through June 30, 2016, ranged from a low of $3.4416 on February 9, 2016 to a high of $9.7403 on February 29, 2016.

2nd 2016 Unit Offering

On December 29, 2016 and December 30, 2016, the Company sold units to investors for aggregate gross proceeds of $185,000, comprised of one share of the Company's common stock and one common stock purchase warrant to purchase one share of the Company's common stock. Units were sold for $1.42 per unit and the warrants issued in connection with the units were exercisable through December 31, 2021 at a fixed price $1.562 per share of the Company's common stock. The warrants contained a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants were also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closes at 200% or more of the unit purchase price for any five (5) consecutive trading days. The investors were not affiliates of the Company. Investors received an unlimited number of piggy-back registration rights. The investors also received an unlimited number of exchange rights to exchange such investor's entire investment (and not less than the entire investment) into subsequent offerings of the Company until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017. The dollar amount used to determine the amount invested or exchanged into the subsequent financing was 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The Company evaluated whether the warrants or the exchange rights met criteria to be accounted for as a derivative in accordance with Accounting Standard Codification (ASC) 815 and determined that the derivative criteria were not met. Therefore, the Company determined no bifurcation and separate valuation was necessary and that the warrants and exchange right should be accounted for with the host instrument. The Company then looked to how the host instrument should be classified and determined that it could not, at that time, be classified as permanent equity as there was a potential that the Unit

investment amount could be exchanged for debt (convertible or otherwise) or for redeemable preferred stock. Since the exchange right expired within one year, the Company concluded that the Unit investment would be appropriately classified as a current liability. The closing market prices of the Company’s common stock on December 29, 2016 and December 30, 2016 were $2.85 and $2.80 respectively.

1st 2017 Unit Offering

On March 10, 2017 and March 28, 2017, the Company sold units to investors for aggregate gross proceeds of $350,000, with each unit consisting of one share of the Company's common stock and one common stock purchase warrant to purchase one share of the Company's common stock (the "1st 2017 Unit Offering"). Units were sold for $2.50 per unit and the warrants issued in connection with the units were exercisable through December 31, 2021 at a fixed price $2.75 per share of the Company's common stock. The warrants contained a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants were also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closes at 200% or more of the unit purchase price for any five (5) consecutive trading days. The investors were not affiliates of the Company. Investors received an unlimited number of piggy-back registration rights. Investors also received an unlimited number of exchange rights, which were options and not obligations, to exchange such investor's entire investment (and not less than the entire investment) into one or more subsequent equity financings (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified as stockholders' equity, and excluding any form of debt or convertible debt (each such financing a "Subsequent Equity Financing"). These exchange rights were effective until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017. The dollar amount used to determine the amount invested or exchanged into the subsequent financing was 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The exchange right did not permit the investors to exchange into a debt offering or into redeemable preferred stock, therefore, unlike the 2nd 2016 Unit Offering, the 2017 Unit Offering resulted in the issuance of permanent equity. The Company evaluated whether the warrants or the exchange rights met criteria to be accounted for as a derivative in accordance with Accounting Standard Codification Topic (ASC) 815 and determined that the derivative criteria were not met. Therefore, the Company determined no bifurcation and separate valuation was necessary and that the warrants and exchange right should be accounted for with the host instrument. The closing market prices of the Company's common stock on March 10, 2017 and March 28, 2017 were $4.05 and $3.80 respectively. In connection with this transaction, Aurora Capital LLC ("Aurora") served as a placement agent and earned $20,000 fees and 8,000 placement agent common stock warrants associated with the closing of 1st 2017 Unit Offering. The fees were unpaid as of December 31, 2017 and have been accrued in accounts payable and accrued expenses and charged against Additional paid-in capital as of March 31, 2017, June 30, 2017, September 30, 2017 and December 31, 2017. The placement agent common stock warrants were valued at $27,648 and were accounted for in Additional paid-in capital as of March 31, 2017 and remain valued at that amount as of December 31, 2017. For additional information see Note 6.

On July 26, 2017, the Company's Board approved an offering of securities conducted via private placement (the "2nd 2017 Unit Offering" discussed below) that, because of the terms of the 2nd 2017 Unit Offering as compared to the terms of the 2nd 2016 Unit offering and the 1st 2017 Unit Offering, resulted in an exchange of all of the units from the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering into equity securities of the Company in the 2nd 2017 Unit Offering by all of the investors in the 2nd 2016 Unit Offering and all of the investors in the 1st 2017 Unit Offering. Because all of the investors in the 2nd 2016 Unit Offering exchanged their units into the 2nd 2017 Unit Offering the current

non-permanent equity liability as of December 31, 2016 has been reclassified in 2017 as permanent equity capital. Because the 1st 2017 Unit Offering and the 2nd 2017 Unit Offering were both originally accounted for as equity, a reclassification similar to the one effected with respect to the 2nd 2016 Unit Offering was not required.

2nd 2017 Unit Offering

On August 29, 2017, September 27, 2017, September 28, 2017, October 5, 2017, October 25, 2017, November 29, 2017, December 13, 2017, December 21, 2017, December 22, 2017 and December 29, 2017 the Company sold units to investors in the 2nd 2017 unit offering for aggregate gross proceeds of $404,500, with each unit consisting of one share of the Company's common stock and one common stock purchase warrant to purchase one share of the Company's common stock. Units were sold for $1.00 per unit and the warrants issued in connection with the units are exercisable through September 29, 2022 at a fixed price $1.10 per share of the Company's common stock. The warrants contain a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants are also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closes at 250% or more of the unit purchase price for any five (5) consecutive trading days. Investors were non-affiliated purchasers. Investors also received an unlimited number of piggy-back registration rights. Investors received an unlimited number of exchange rights, which are options and not obligations, to exchange such investor's entire investment (and not less than the entire investment) into one or more subsequent equity financings (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified as stockholders' equity, and excluding any form of debt or convertible debt (each such financing a "Subsequent Equity Financing" as in the 1st 2017 Unit Offering). These exchange rights were effective until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017, and have therefore expired. The dollar amount used to determine the amount invested or exchanged into the subsequent financing would have been 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The exchange right did not permit the investors to exchange into a debt offering or into redeemable preferred stock, therefore, unlike the 2nd 2016 Unit Offering, the 2nd 2017 Unit Offering resulted in the issuance of permanent equity. All exchange rights have expired as of December 30, 2017. The Company evaluated whether the warrants or the exchange rights met criteria to be accounted for as a derivative in accordance with Accounting Standard Codification Topic (ASC) 815, and determined that the derivative criteria were not met. Therefore, the Company determined no bifurcation and separate valuation was necessary and that the warrants and exchange right should be accounted for with the host instrument. The closing market prices of the Company's common stock on August 29, 2017, September 27, 2017, September 28, 2017, October 5, 2017, October 25, 2017, November 29, 2017, December 13, 2017, December 21, 2017, December 22, 2017 and December 29, 2017 were $1.00, $1.40, $1.40, $1.50, $0.80, $1.05, $1.45, $1.51, $1.45 and $1.14, respectively. There was no placement agent and therefore no fees associated with the 2nd 2017 Unit Offering. For additional information see Note 6.

The terms of the 2nd 2017 Unit Offering, as compared to the terms of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering, resulted in an exchange of all of the units from each of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering into equity securities of the 2nd 2017 Unit Offering. Because the 1st 2017 Unit Offering and the 2nd 2017 Unit Offering were both originally accounted for as equity, a reclassification similar to the 2nd 2016 Unit Offering was not required.

Equipment

Equipment is recorded at cost and depreciated on a straight-line basis over their estimated useful lives, which range from three to five years.

Long-Term Prepaid Insurance

Long-term prepaid insurance represents the premium paid in March 2014 for directors and officers insurance tail coverage, which is being amortized on a straight-line basis over the policy period of six years. The amount amortizable in the ensuing twelve-month period is recorded as a current asset in the Company's consolidated balance sheet at each reporting date.

Impairment of Long-Lived Assets

The Company reviews its long-lived assets, including long-term prepaid insurance, for impairment whenever events or changes in circumstances indicate that the total amount of an asset may not be recoverable, but at least annually. An impairment loss is recognized when estimated future cash flows expected to result from the use of the asset and its eventual disposition is less than the asset's carrying amount. The Company has not deemed any long-lived assets as impaired at December 31, 2017.

Stock-Based Compensation

The Company periodically issues common stock and stock options to officers, directors, Scientific Advisory Board members and consultants for services rendered. Such issuances vest and expire according to terms established at the issuance date of each grant.

The Company accounts for stock-based payments to officers and directors by measuring the cost of services received in exchange for equity awards based on the grant date fair value of the awards, with the cost recognized as compensation expense on the straight-line basis in the Company's financial statements over the vesting period of the awards. The Company accounts for stock-based payments to Scientific Advisory Board members and consultants by determining the value of the stock compensation based upon the measurement date at either (a) the date at which a performance commitment is reached, or (b) at the date at which the necessary performance to earn the equity instruments is complete.

Stock grants, which are generally subject to time-based vesting, are measured at the grant date fair value and charged to operations ratably over the vesting period.

Stock options granted to members of the Company's Scientific Advisory Board and to outside consultants are revalued each reporting period until vested to determine the amount to be recorded as an expense in the respective period. As the stock options vest, they are valued on each vesting date and an adjustment is recorded for the difference between the value already recorded and the value on the date of vesting.

The fair value of stock options granted as stock-based compensation is determined utilizing the Black-Scholes option-pricing model, and is affected by several variables, the most significant of which are the life of the equity award, the exercise price of the stock option as compared to the fair market value of the common stock on the grant date, and the estimated volatility of the common stock over the term of the equity award. Estimated volatility is based on the historical volatility of the Company's common stock. The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant. The fair market value of common stock is determined by reference to the quoted market price of the Company's common stock.

Stock options and warrants issued to non-employees as compensation for services to be provided to the Company or in settlement of debt are accounted for based upon the fair value of the services provided or the estimated fair value of the stock option or warrant, whichever can be more clearly determined. Management uses the Black-Scholes option-pricing model to determine the fair value of the stock options and warrants issued by the Company. The Company recognizes this expense over the period in which the services are provided.

For stock options requiring an assessment of value during the year ended December 31, 2017, the fair value of each stock option award was estimated using the Black-Scholes option-pricing model using the following assumptions:

Risk-free interest rate	1.89% to 2.20	%
Expected dividend yield	0	%
Expected volatility	132.87% to 184.92	%
Expected life	4.55 to 5 years	

For stock options granted with a 10 year life, all of which vested immediately, the simple method of estimating the option life, which is the of the sum of the vesting period and the term of the option divided by 2 was used and resulted in the use of a 5 year estimated life when using the Black-Scholes option-pricing model.

For stock options requiring an assessment of value during the year ended December 31, 2016, the fair value of each stock option award was estimated using the Black-Scholes option-pricing model using the following assumptions:

Risk-free interest rate	0.87% to 1.93	%
Expected dividend yield	0	%
Expected volatility	173.87% to 202.51	%
Expected life	3.9 to 5 years	

The Company recognizes the fair value of stock-based compensation in general and administrative costs and in research and development costs, as appropriate, in the Company's consolidated statements of operations. The Company issues new shares of common stock to satisfy stock option and warrant exercises. There were no stock options exercised during the years ended December 31, 2017 and 2016.

Income Taxes

The Company accounts for income taxes under an asset and liability approach for financial accounting and reporting for income taxes. Accordingly, the Company recognizes deferred tax assets and liabilities for the expected impact of differences between the financial statements and the tax basis of assets and liabilities.

The Company records a valuation allowance to reduce its deferred tax assets to the amount that is more likely than not to be realized. In the event the Company was to determine that it would be able to realize its deferred tax assets in the future in excess of its recorded amount, an adjustment to the deferred tax assets would be credited to operations in the period such determination was made. Likewise, should the Company determine that it would not be able to realize all or part of its deferred tax assets in the future, an adjustment to the deferred tax assets would be charged to operations in the period such determination was made.

Pursuant to Internal Revenue Code Sections 382 and 383, use of the Company's net operating loss and credit carryforwards may be limited if a cumulative change in ownership of more than 50% occurs within any three-year period since the last ownership change. The Company may have had a change in control under these Sections. However, the Company does not anticipate performing a complete analysis of the limitation on the annual use of the net operating loss and tax credit carryforwards until the time that it anticipates it will be able to utilize these tax attributes.

As of December 31, 2017, the Company did not have any unrecognized tax benefits related to various federal and state income tax matters and does not anticipate any material amount of unrecognized tax benefits within the next 12 months.

The Company is subject to U.S. federal income taxes and income taxes of various state tax jurisdictions. As the Company's net operating losses have yet to be utilized, all previous tax years remain open to examination by Federal authorities and other jurisdictions in which the Company currently operates or has operated in the past.

The Company accounts for uncertainties in income tax law under a comprehensive model for the financial statement recognition, measurement, presentation and disclosure of uncertain tax positions taken or expected to be taken in income tax returns as prescribed by GAAP. The tax effects of a position are recognized only if it is "more-likely-than-not" to be sustained by the taxing authority as of the reporting date. If the tax position is not considered "more-likely-than-not" to be sustained, then no benefits of the position are recognized. As of December 31, 2017, the Company had not recorded any liability for uncertain tax positions. In subsequent periods, any interest and penalties related to uncertain tax positions will be recognized as a component of income tax expense.

Foreign Currency Transactions

The note payable to SY Corporation, which is denominated in a foreign currency (the South Korean Won), is translated into the Company's functional currency (the United States Dollar) at the exchange rate on the balance sheet date. The foreign currency exchange gain or loss resulting from translation is recognized in the related consolidated statements of operations.

Research Grants

The Company recognizes revenues from research grants as earned based on the percentage-of-completion method of accounting and issues invoices for contract amounts billed based on the terms of the grant agreement. Amounts recorded under research grants in excess of amounts earned are classified as unearned grant revenue liability in the Company's consolidated balance sheet. Grant receivable reflects contractual amounts due and payable under the grant agreement. Payments of grants receivable are based on progress reports provided to the grant provider by the Company.

Research and Development

Research and development costs include compensation paid to management directing the Company's research and development activities, and fees paid to consultants and outside service providers and organizations (including research institutes at universities), patent fees and costs, and other expenses relating to the acquisition, design, development and clinical testing of the Company's treatments and product candidates.

Research and development costs incurred by the Company under research grants are expensed as incurred over the life of the underlying contracts, unless the terms of the contract indicate that a different expensing schedule is more appropriate.

The Company reviews the status of its research and development contracts on a quarterly basis.

On May 6, 2016, the Company made an advance payment to Duke University with respect to the Phase 2A clinical trial of CX1739. At December 31, 2017 and 2016, a balance of $48,912 remained from the advance payment.

License Agreements

Obligations incurred with respect to mandatory payments provided for in license agreements are recognized ratably over the appropriate period, as specified in the underlying license agreement, and are recorded as liabilities in the Company's consolidated balance sheet, with a corresponding charge to research and development costs in the Company's consolidated statement of operations. Obligations incurred with respect to milestone payments provided for

in license agreements are recognized when it is probable that such milestone will be reached and are recorded as liabilities in the Company's consolidated balance sheet, with a corresponding charge to research and development costs in the Company's consolidated statement of operations. Payments of such liabilities are made in the ordinary course of business.

Patent Costs

Due to the significant uncertainty associated with the successful development of one or more commercially viable products based on the Company's research efforts and any related patent applications, all patent costs, including patent-related legal and filing fees, are expensed as incurred.

Comprehensive Income (Loss)

Components of comprehensive income or loss, including net income or loss, are reported in the financial statements in the period in which they are recognized. Comprehensive income or loss is defined as the change in equity during a period from transactions and other events and circumstances from non-owner sources. Net income (loss) and other comprehensive income (loss) are reported net of any related tax effect to arrive at comprehensive income (loss). The Company did not have any items of comprehensive income (loss) for the years ended December 31, 2017 and 2016.

Earnings per Share

The Company's computation of earnings per share ("EPS") includes basic and diluted EPS. Basic EPS is measured as the income (loss) attributable to common stockholders divided by the weighted average common shares outstanding for the period. Diluted EPS is similar to basic EPS but presents the dilutive effect on a per share basis of potential common shares (e.g., warrants and options) as if they had been converted at the beginning of the periods presented, or issuance date, if later. Potential common shares that have an anti-dilutive effect (i.e., those that increase income per share or decrease loss per share) are excluded from the calculation of diluted EPS.

Net income (loss) attributable to common stockholders consists of net income or loss, as adjusted for actual and deemed preferred stock dividends declared, amortized or accumulated.

Loss per common share is computed by dividing net loss by the weighted average number of shares of common stock outstanding during the respective periods. Basic and diluted loss per common share is the same for all periods presented because all warrants and stock options outstanding are anti-dilutive.

At December 31, 2017 and 2016, the Company excluded the outstanding securities summarized below, which entitle the holders thereof to acquire shares of common stock, from its calculation of earnings per share, as their effect would have been anti-dilutive.

	December 31,	
	2017	2016
Series B convertible preferred stock	11	11
Convertible notes payable	32,941	29,768
Common stock warrants	1,464,415	540,198
Common stock options	3,996,167	1,307,749
Total	5,493,534	1,877,726

Reclassifications

Certain comparative figures in 2016 have been reclassified to conform to the current year's presentation. These reclassifications were immaterial, both individually and in the aggregate.

Recent Accounting Pronouncements

In August 2017, the Financial Accounting Standards Board (the "FASB") issued Accounting Standards Update No. 2017-12 —Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities. The new standard is intended to improve and simplify accounting rules around hedge accounting. The new standard refines and expands hedge accounting for both financial (e.g., interest rate) and commodity risks. Its provisions create more transparency around how economic results are presented, both on the face of the financial statements and in the footnotes, for investors and analysts. The new standard takes effect for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018. Early adoption is permitted in any interim period or fiscal years before the effective date of the standard. The adoption of ASU 2017-12 is not expected to have any impact on the Company's financial statement presentation or disclosures.

In July 2017, the FASB issued Accounting Standards Update No. 2017-11 (ASU 2017-11), Earnings Per Share (Topic 260): Distinguishing Liabilities from Equity (Topic 480): Derivatives and Hedging (Topic 815). The relevant section for the Company is Tock 815 where it pertains to accounting for certain financial instruments with down round features. Until the issuance of this ASU, financial instruments with down round features required fair value measurement and subsequent changes in fair value were recognized in earnings. As a result of the ASU, financial instruments with down round features are no longer treated as a derivative liability measured at fair value. Instead, when the down round feature is triggered, the effect is treated as a dividend and as a reduction of income available to common shareholders in basic earnings per share. For public entities, the ASU is effective for fiscal years beginning after December 15, 2018. Early adoption is permitted including adoption in an interim period. The adoption of ASU 2017-11 is not expected to have any impact on the Company's financial statement presentation or disclosures.

In May 2017, the FASB issued ASU No. 2017-09, "Compensation – Stock Compensation (Topic 718)." The amendments in in this update provide guidance about which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting in Topic 718. An entity should account for the effects of a modification unless all the following are met: (i) the fair value (or calculated value or intrinsic value, if such an alternative measurement method is used) of the modified award is the same as the fair value (or calculated value or intrinsic value, if such an alternative measurement method is used) of the original award immediately before the original award is modified, (ii) the vesting conditions of the modified award are the same as the vesting conditions of the original award immediately before the original award is modified and (iii) the classification off the modified award as an equity instrument or a liability instrument is the same as the classification of the original award immediately before the original award is modified. The amendments in this update are effective for annual periods beginning after December 15, 2017 and for interim periods within those annual periods and are not expected to have any impact on the Company's financial statement presentation or disclosures.

In April 2016, the FASB issued ASU 2016-10, "Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing." The amendments in this update affect the guidance in Accounting Standards Update 2014-09, Revenue from Contracts with Customers (Topic 606), which we are required to apply for annual and interim periods beginning after December 15, 2017. Management's current analysis is that the new guidelines currently will not substantially impact our revenue recognition. The adoption of the ASU is not expected to have any impact on the Company's financial statement presentation or disclosure.

In March 2016, the FASB issued Accounting Standards Update No. 2016-09 (ASU 2016-09), Compensation – Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting. ASU 2016-09 requires, among other things, that all income tax effects of awards be recognized in the statement of operations when the awards vest or are settled. ASU 2016-09 also allows for an employer to repurchase more of an employee's shares than it can today for tax withholding purposes without triggering liability accounting and allows for a policy election to account for forfeitures as they occur. ASU 2016-09 is effective for fiscal years beginning after December 15, 2016 and therefore is effective for this annual period. The adoption of ASU 2016-09 has not had a significant impact on the Company's financial statement presentation or disclosures.

Management does not believe that any other recently issued, but not yet effective, authoritative guidance, if currently adopted, would have a material impact on the Company's financial statement presentation or disclosures.

4. Notes Payable

Convertible Notes Payable

The convertible notes sold to investors in 2014 and 2015, which aggregated a total of $579,500, had a fixed interest rate of 10% per annum and are convertible into common stock at a fixed price of $11.3750 per share. The convertible notes have no reset rights or other protections based on subsequent equity transactions, equity-linked transactions or other events. The warrants to purchase 50,945 shares of common stock issued in connection with the sale of the convertible notes were exercisable at a fixed price of $11.3750 per share, provided no right to receive a cash payment, and included no reset rights or other protections based on subsequent equity transactions, equity-linked transactions or other events. The Company determined that there were no embedded derivatives to be identified, bifurcated and valued in connection with this financing.

The maturity date of the notes was extended to September 15, 2016 and included the issuance of 27,936 additional warrants to purchase common stock, exercisable at $11.375 per share of common stock.

During the years ended December 31, 2017 and 2016, $0 and $129,857, respectively, was charged to interest expense from the amortization of debt discount related to the value attributed to the New Warrants and extension of the original Warrants. The carrying value of the Notes was further reduced by a discount for a beneficial conversion feature of $206,689. The value attributed to the beneficial conversion feature was amortized as additional interest expense over the extended term of the Notes. During the years ended December 31, 2017 and 2016, $0 and $45,186, respectively, was charged to interest expense from the amortization of debt discount related to the value attributed to the beneficial conversion feature.

During April and May 2016, the Company entered into Note Exchange Agreements with certain note holders representing an aggregate of $303,500 of principal amount of the Notes (out of a total of $579,500 of original principal amount of the Notes). Pursuant to the Note Exchange Agreements, an aggregate of $344,483, which included accrued interest of $40,983, of the Notes were exchanged (together with original warrants to purchase 26,681 shares of the Company’s common stock, New Warrants to purchase 14,259 shares of the Company’s common stock, and the payment of an aggregate of $232,846 in cash) into a total of 101,508 shares of the Company’s common stock. None of the Notes had previously been converted into shares of the Company’s common stock. For accounting purposes, for those convertible note holders accepting the Company’s exchange offer, the Company evaluated the fair value of the incremental consideration paid to induce the convertible note holders to exchange their convertible notes for equity (i.e., 30,284 shares of common stock), based on the closing market price of the Company’s common stock on the date of each transaction, and recorded a charge to operations of $188,274. Information with respect to the Black-Scholes variables used in connection with the evaluation of the fair value of the exchange consideration is provided at Note 3.

During year ended December 31, 2016, in connection with the Note Exchange Agreements, the Company wrote off and charged to interest expense the unamortized discount related to the value attributed to the New Warrants and the extension of the original Warrants of $66,811, and the unamortized discount related to the value attributed to the related beneficial conversion feature of $49,688.

On September 15, 2016, the remaining outstanding Notes previously issued by the Company on November 5, 2014, December 9, 2014, December 31, 2014, and February 2, 2015, matured and the principal and accrued interest under those remaining Notes became due and payable upon demand. At the September 15, 2016 maturity date, Notes totaling $329,261, which included accrued interest of $53,261, became due and payable upon demand. During October 2016, holders of four Notes issued formal notices of default, and as a result, those four Notes were deemed to be in default under the terms of the Notes and began to accrue interest at the default rate of 12% per annum from the default date in accordance with the terms of the Notes. As of December 31, 2017 such notes remained in default and totaled $91,028, including accrued interest of $25,028.

Additionally, on September 15, 2016, the remaining outstanding 13,137 New Warrants and 24,264 original Warrants (which had been previously extended) expired.

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The Notes consist of the following at December 31, 2017 and 2016:

	December 31, 2017	December 31, 2016
Principal amount of convertible notes payable	$276,000	$276,000
Add accrued interest payable	98,646	62,616
	$374,646	$338,616

As of December 31, 2017, the remaining outstanding Notes were convertible into 32,941 shares of the Company's common stock, including 8,677 shares attributable to accrued interest of $98,646 payable as of such date. As of December 31, 2016, the Notes were convertible into 29,768 shares of the Company's common stock, including 5,505 shares attributable to accrued interest of $62,616 payable as of such date.

Note Payable to SY Corporation Co., Ltd.

On June 25, 2012, the Company borrowed 465,000,000 Won (the currency of South Korea, equivalent to approximately $400,000 United States Dollars) from and executed a secured note payable to SY Corporation Co., Ltd., formerly known as Samyang Optics Co. Ltd. ("SY Corporation"), an approximately 20% common stockholder of the Company at that time. SY Corporation was a significant stockholder and a related party at the time of the transaction, but has not been a significant stockholder or related party of the Company subsequent to December 31, 2014. The note accrues simple interest at the rate of 12% per annum and had a maturity date of June 25, 2013. The Company has not made any payments on the promissory note. At June 30, 2013 and subsequently, the promissory note was outstanding and in default, although SY Corporation has not issued a notice of default or a demand for repayment. The Company believes that SY Corporation is in default of its obligations under its January 2012 license agreement, as amended, with the Company, but the Company has not yet issued a notice of default. The Company is continuing efforts towards a comprehensive resolution of the aforementioned matters involving SY Corporation.

The promissory note is secured by collateral that represents a lien on certain patents owned by the Company, including composition of matter patents for certain of the Company's high impact ampakine compounds and the low impact ampakine compounds CX2007 and CX2076, and other related compounds. The security interest does not extend to the Company's patents for its ampakine compounds CX1739 and CX1942, or to the patent for the use of ampakine compounds for the treatment of respiratory depression.

Note payable to SY Corporation consists of the following at December 31, 2017 and 2016:

	December 31, 2017	December 31, 2016
Principal amount of note payable	$399,774	$399,774
Accrued interest payable	267,335	219,362
Foreign currency transaction adjustment	(83,282)	(25,129)
	$583,827	$594,007

Interest expense with respect to this promissory note was $47,973 and $48,105 for years ended December 31, 2017 and 2016, respectively.

Advances and Notes Payable to Officers

On January 29, 2016, Dr. Arnold S. Lippa, the Company's Chief Scientific Officer and Chairman of the Board of Directors, advanced $52,600 to the Company for working capital purposes under a demand promissory note with interest at 10% per annum. On September 23, 2016, Dr. Lippa advanced $25,000 to the Company for working capital purposes under a second demand promissory note with interest at 10% per annum. The notes are secured by the assets of the Company. During the year ended December 31, 2017, $7,760 was charged to interest expense with respect to the notes. In connection with the loan, Dr. Lippa was issued fully vested warrants to purchase 15,464 shares of the Company's common stock, 10,309 of which have an exercise price of $5.1025 per share and 5,155 of which have an exercise price of $4.85 which were the closing prices of the Company's common stock on the respective dates of grant. The warrant expires on January 29, 2019 and September 23, 2019 respectively and may be exercised on a cashless basis. The aggregate grant date fair value of the warrants, as calculated pursuant to the Black-Scholes option-pricing model, was determined to be $70,577, and was charged to interest expense as additional consideration for the loan during the year ended December 31, 2016.

On February 2, 2016, Dr. James S. Manuso, the Company's Chief Executive Officer and Vice Chairman of the Board of Directors, advanced $52,600 to the Company for working capital purposes under a demand promissory note with interest at 10% per annum. On September 22, 2016, Dr. Manuso, advanced $25,000 to the Company for working capital purposes under a demand promissory note with interest at 10% per annum. The notes are secured by the assets of the Company. During the year ended December 31, 2017, $7,760 was charged to interest expense with respect to the notes. In connection with the loan, Dr. Manuso was issued fully vested warrants to purchase 13,092 shares of the Company's common stock, 8,092 of which have an exercise price of $6.5000 per share and 5,000 of which have an exercise price of $5.00, which were the closing market prices of the Company's common stock on the respective dates of grant. The warrants expire on February 2, 2019 and September 22, 2019, respectively, and may be exercised on a cashless basis. The aggregate grant date fair value of the warrants, as calculated pursuant to the Black-Scholes option pricing model, was determined to be $70,543, and was charged to interest expense as additional consideration for the loan during the year ended December 31, 2016.

Other Short-Term Notes Payable

Other short-term notes payable at December 31, 2017 and 2016 consisted of premium financing agreements with respect to various insurance policies. On March 14, 2017 and April 1, 2017 the Company entered in insurance premium financing agreements of $59,857 and $9,307, respectively, that are in respect to director and officer liability coverage, clinical trial coverage and office and other coverages. As of December 31, 2017 and 2016, the aggregate amounts of such short-term notes were $8,630 and $4,095 respectively.

5. Settlement and Payment Agreements

On December 9, 2017, the Company accepted offers from certain executive officers, a former executive officer, the independent members of the Board of Directors and two consultants ("Offerees") pursuant to which such Offerees offered to forgive all, or in one case, a portion of their accrued compensation and compensation related amounts owed to them and vendor accounts payable as of September 30, 2017. Also, on December 9, 2017, the Company granted non-qualified stock options ("NQSOs") to the Offerees. The NQSOs immediately vested, have a term of 10 years and have an exercise price of $1.45 per share, which was the closing price on the last trading day before the grant date (Friday, December 8, 2017). The NQSOs were valued using the Black-Scholes option pricing model utilizing the following assumptions: (i) stock price $1.45, (ii) exercise price $1.45, (iii) estimated term 5 years (utilizing the simple method to determine estimated when option terms exceed 5 years, which method is to sum the vesting period (in this case 0) and the term (in this case 10 years) and divide by 2), (iv) estimated volatility of 184.92%, (v) risk free rate 1.62% and (vi) dividend yield 0%. The resulting value was $1.396 per NQSO.

The table below summarizes the result of the forgiveness and NQSO grant transactions:

	Dollar amount forgiven	Number of NQSOs granted	Value of NQSOs granted	Gain
Executive Officers, former executive officer, independent members of the Board of Directors	$2,557,083	1,772,056	$2,475,561	$81,522
Consultants	$111,635	77,362	$108,076	$3,559
Total	$2,668,718	1,849,418	$2,583,637	$85,081

All of the amounts in the table above have been reflected in the Company's Consolidated Statement of Operations for the year ended December 31, 2017 as a reduction of general and administrative or research and development expenses, as appropriate. The amounts forgiven reduced accrued compensation and related expenses and, in the case of the consultants, accounts payable and accrued expenses on the Company's Consolidated Balance Sheet as of December 31, 2017.

On September 2, 2016, the Company issued a stock option to purchase 7,222 shares of its common stock in partial payment of consulting fees to one of its professional service providers. The stock option was fully vested on the date of grant and will expire on September 2, 2021. The exercise price of the stock option was established on the grant date at $4.50 per share, which was the closing market price of the Company's common stock on the date of grant. The aggregate grant date fair value of the stock option, calculated pursuant to the Black-Scholes option-pricing model, was determined to be $31,174. The issuance of the stock option resulted in a gain to the Company of $1,076 during the year ended December 31, 2016.

On June 27, 2016, the Company issued 16,453 of its common stock valued at $96,250 ($5.85 per share), which was the then closing market price of the Company's common stock, in payment of legal fees to one of its patent law firms.

The Company continues to explore ways to reduce its obligations and indebtedness, and might in the future enter into additional settlement and payment agreements.

6. Stockholders' Deficiency

Preferred Stock

The Company has authorized a total of 5,000,000 shares of preferred stock, par value $0.001 per share. As of December 31, 2017 and 2016, 1,250,000 shares were designated as 9% Cumulative Convertible Preferred Stock (non-voting, "9% Preferred Stock"); 37,500 shares were designated as Series B Convertible Preferred Stock (non-voting, "Series B Preferred Stock"); 205,000 shares were designated as Series A Junior Participating Preferred Stock (non-voting, "Series A Junior Participating Preferred Stock"); and 1,700 shares were designated as Series G 1.5% Convertible Preferred Stock. Accordingly, as of December 31, 2017, 3,505,800 shares of preferred stock were undesignated and may be issued with such rights and powers as the Board of Directors may designate.

There were no shares of 9% Preferred Stock or Series A Junior Participating Preferred Stock or Series G 1.5% Convertible Preferred Stock outstanding as of December 31, 2017 and 2016.

Series B Preferred Stock outstanding as of December 31, 2017 and 2016 consisted of 37,500 shares issued in a May 1991 private placement. Each share of Series B Preferred Stock is convertible into approximately 0.00030 shares of common stock at an effective conversion price of $2,208,375 per share of common stock, which is subject to adjustment under certain circumstances. As of December 31, 2017 and 2016, the shares of Series B Preferred Stock outstanding are convertible into 11 shares of common stock. The Company may redeem the Series B Preferred Stock for $25,001, equivalent to $0.6667 per share, an amount equal to its liquidation preference, at any time upon 30 days prior notice.

Series G 1.5% Convertible Preferred Stock

On April 17, 2016, the remaining 259.7 unconverted shares of Series G 1.5% Convertible Preferred Stock outstanding (including accrued but unpaid dividends) issued in 2014 were automatically and mandatorily converted into 242,173 newly issued shares of common stock at a conversion price of $1.0725 per share and provided no right to receive a cash payment. There were no shares of Series G Preferred Stock outstanding at any time in 2017. There were $1,165 of accrued dividends in respect to the Series G Preferred Stock for the year ended December 31, 2016.

Common Stock

On August 16, 2016, at a special meeting of the stockholders of the Company, the stockholders approved an amendment to the Company's Second Restated Certificate of Incorporation (i) to effect, at the discretion of the Company's Board of Directors, a three hundred twenty five-to-one (325-to-1) reverse stock split of all of the outstanding shares of the Company's common stock, par value $0.001 per share, and (ii) to set the number of the Company's authorized shares of stock at 70,000,000 shares, consisting of 65,000,000 shares designated as common stock, par value $0.001 per share, and 5,000,000 shares designated as preferred stock, par value $0.001 per share. On September 1, 2016, the Company filed a Certificate of Amendment to the Company's Second Restated Certificate of Incorporation with the Secretary of State of the State of Delaware to effect the approved amendment.

Pursuant to the amendment, an aggregate of 191.068 fractional shares resulting from the reverse stock split were not issued, but were to be paid out in cash (without interest or deduction) in an amount equal to the number of shares exchanged into such fractional share multiplied by the average closing trading price of the Company's common stock on the OTCQB for the five trading days immediately before the Certificate of Amendment effecting the reverse stock split was filed with the Delaware Secretary of State ($6.7899 per share, on a post reverse stock split basis) for an aggregate of $1,298.

2015 Unit Offering

On August 28, 2015, the Company entered into a Second Amended and Restated Common Stock and Warrant Purchase Agreement (the "Purchase Agreement") with various accredited investors (each, a "Purchaser", and together with purchasers in subsequent closings in the private placement, the "Purchasers"), pursuant to which the Company sold units for aggregate cash consideration of $721,180, with each unit consisting of (i) one share of the Company's common stock, representing an aggregate of 105,517 shares of common stock, and (ii) one warrant to purchase two additional shares of common stock, representing an aggregate of 211,034 warrants. This financing represented the initial closing of a private placement of up to $3,000,000. On September 28, 2015, the Company completed a second closing of the Purchase Agreement with various additional Purchasers, pursuant to which the Company sold units for aggregate cash consideration of $218,530, with each unit consisting of (i) one share of the Company's common stock, representing an aggregate of 31,973 shares of common stock, and (ii) one warrant to purchase two additional shares of common stock, representing an aggregate of 63,946 Warrants. On November 2, 2015, the Company completed a third closing of the Purchase Agreement with various Purchasers, pursuant to which the Company sold units for aggregate cash consideration of $255,000, with each unit consisting of (i) one share of the Company's common stock, representing an aggregate of 37,309 shares of common stock, and (ii) one warrant to purchase two additional shares of common stock, representing an aggregate of 74,618 warrants. This third closing brought the aggregate amount raised under this private placement as of November 2, 2015 to $1,194,710.

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The unit price in each closing of the private placement was $6.8348 (the “Per Unit Price”). The Warrants are exercisable through September 30, 2020 and may be exercised at a price of $6.8348 for each share of Common Stock to be acquired upon exercise. The Purchasers consisted of non-affiliated investors, other than Dr. James S. Manuso, the current President and Chief Executive Officer of the Company, who invested $250,000 in the initial closing of the private placement, and one other investor who invested $301,180 in the private placement and became an affiliate of the Company by virtue of his aggregate stock holdings in the Company. The Warrants do not contain any cashless exercise provisions or reset rights.

No registration rights were granted to any Purchaser in this private placement with respect to (i) the shares of common stock issued as part of the units, (ii) the warrants, or (iii) the shares of common stock issuable upon exercise of the warrants.

Placement agent fees, brokerage commissions, and similar payments were made in the form of cash and warrants to qualified referral sources in connection with certain sales of the shares of common stock and warrants, while other sales, including the sale to Dr. James S. Manuso, did not result in any fees or commissions. Accordingly, the amount of such fees, on a percentage basis, varies in each closing. The fees paid to such referral sources for the initial closing in cash totaled $47,118, or 6.5% of the aggregate amount paid for the units sold. The fees paid in warrants for the initial closing to such referral sources (the warrants paid to qualified referral sources are referred to herein as the “Placement Agent Warrants”) consist of warrants for 6,894 shares of common stock, or that number of shares equal to 6.5% of the number of shares of common stock issued as part of the units, but not the shares underlying the warrants. In connection with the second closing, fees paid to referral sources in cash totaled $18,603, or 8.5% of the aggregate amount paid for the units sold, and 2,722 Placement Agent Warrants were issued, or warrants for that number of shares equal to 8.5% of the number of shares of common stock issued as part of the units, but not the shares underlying the Warrants. In connection with the third closing, fees paid to referral sources in cash totaled $25,500, or 10% of the aggregate amount paid for the units sold, and 3,731 Placement Agent Warrants were issued, or warrants for that number of shares equal to 10% of the number of shares of common stock issued as part of the units, but not the shares underlying the Warrants. Placement Agent Warrants are exercisable until September 30, 2020 at the Per Unit Price. The Placement Agent Warrants have cashless exercise provisions. One of the placement agents that received Placement Agent Warrants is Aurora. Both Arnold S. Lippa and Jeff E. Margolis, officers and directors of the Company, have indirect ownership interests in Aurora through interests held in its members, and Jeff E. Margolis is also an officer of Aurora. As a result, both Arnold S. Lippa and Jeff E. Margolis, or entities in which they have interests, will receive a portion of the Placement Agent Warrants awarded in this private placement.

In addition to the above described placement agent fees, brokerage commissions, and similar payments that were made in the form of cash and warrants to qualified referral sources, the Company also paid $10,164 in cash to other professionals for services related to the three closings.

The shares of common stock and warrants were offered and sold without registration under the Securities Act in reliance on the exemptions provided by Section 4(a)(2) of the Securities Act as provided in Rule 506(b) of Regulation

D promulgated thereunder. None of the shares of common stock issued as part of the units, the warrants, the common stock issuable upon exercise of the warrants, the Placement Agent Warrants or the shares of common stock issuable upon exercise of the Placement Agent Warrants were registered under the Securities Act or any other applicable securities laws, and unless so registered, may not be offered or sold in the United States except pursuant to an exemption from the registration requirements of the Securities Act.

Unit Exchange Agreement

During April and May 2016, the Company entered into Unit Exchange Agreements with certain warrant holders who had acquired units in connection with the Second Amended and Restated Common Stock and Warrant Purchase Agreement on August 28, 2015, September 28, 2015 or November 2, 2015. The Unit Exchange Agreements provided for the warrant holders to exchange (i) existing warrants to purchase an aggregate of 217,187 shares of the Company's common stock, plus (ii) an aggregate of $529,394 in cash, in return for (i) an aggregate of 108,594 shares of the Company's common stock with a total market price of $728,859 (average $6.7275 per share), and (ii) new warrants to purchase an aggregate of 108,594 shares of the Company's common stock with an exercise price of $4.8750 per share, exercisable for cash or on a cashless basis through the original expiration date of September 30, 2020.

For accounting purposes, for those unit warrant holders accepting the Company's exchange offer, the Company evaluated the fair value of the incremental consideration paid to induce the unit warrant holders to exchange their original warrants for exchanged warrants and determined that the Company did not incur any cost with respect to the exchange transactions. Information with respect to the Black-Scholes variables used in connection with the evaluation of the fair value of the exchange consideration is provided at Note 3.

1st 2016 Unit Offering

On January 8, 2016, the Company initiated a new equity private placement, consisting of units of common stock and warrants, up to an aggregate of $2,500,000, with each unit consisting of (i) one share of common stock, and (ii) one warrant to purchase two additional shares of common stock. During the nine months ended September 30, 2016, the Company entered into purchase agreements with nine accredited and four non-accredited, non-affiliated investors, pursuant to which an aggregate of 43,003 shares of common stock and an aggregate of 86,006 warrants were sold, generating gross proceeds of $309,985.

Included in the gross proceeds of $309,985 received was $25,350 received on June 30, 2016 from the sale of 3,517 shares of common stock and an aggregate of 7,034 warrants to an unrelated entity with which the Company simultaneously entered into one-year agreement for investor relations services.

The unit price in the private placement closings was $7.2085. The warrants are exercisable at $7.9300, for each share of common stock to be acquired, and expire on February 28, 2021. The warrants have cashless exercise provisions and contain certain "blocker" provisions limiting the percentage of shares of the Company's common stock that the purchaser can beneficially own upon conversion to not more than 4.99% of the issued and outstanding shares immediately after giving effect to the warrant exercise.

In the case of an acquisition in which the Company is not the surviving entity, the holder of the warrant would receive from any surviving entity or successor to the Company, in exchange for the warrant, a new warrant from the surviving entity or successor to the Company, substantially in the form of the existing warrant and with an exercise price adjusted to reflect the nearest equivalent exercise price of common stock (or other applicable equity interest) of the surviving entity that would reflect the economic value of the warrant, but in the surviving entity.

No registration rights were granted to the purchasers in the private placement with respect to (i) the shares of common stock issued as part of the units, (ii) the warrants, or (iii) the shares of common stock issuable upon exercise of the warrants.

No placement agent fees, brokerage commissions, finder's fees or similar payments were made in the form of cash or warrants to qualified referral sources in connection with the sale of the shares of common stock and warrants. The Company paid $3,429 in cash to other professionals for services related to the seven closings.

2nd 2016 Unit Offering

On December 29, 2016, the Company entered into purchase agreements with certain accredited investors, pursuant to which, the Company sold units in a private placement for aggregate cash consideration of $125,000, with each unit consisting of (i) one share of common stock, and (ii) one warrant to purchase an additional share of common stock. On December 30, 2016, the Company sold additional units to additional investors for aggregate cash consideration of $60,000 in a second and final closing, bringing the total aggregate consideration paid in the private placement to $185,000 through December 31, 2016. On December 31, 2016, the private placement terminated pursuant to its terms. The price per unit in the initial closing of the private placement was $1.42. The warrants were exercisable until December 31, 2021 and would have been exercisable at 110% of the per unit price, or $1.562 per share of common stock. The warrants had a cashless exercise provision and certain "blocker" provisions limiting the percentage of shares of common stock of the Company that the purchaser would have been able to hold upon exercise. The warrants were also subject to a call by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closes at 200% or more of the unit purchase price for any five (5) consecutive trading days. The investors were not affiliates of the Company. In total, 130,284 shares of common stock were purchased in the private placement, together with warrants to purchase an additional 130,284 shares of Common Stock.

In addition, as set forth in the purchase agreements, each purchaser had the option, but not the obligation, to exchange the entire amount invested in the private placement (but not less than the entire amount), in such purchaser's sole discretion, into any subsequent offering of the Company until the earlier of (i) the completion of subsequent offerings by the Company aggregating at least $15 million of gross proceeds to the Company, or (ii) December 31, 2017. If exchanged, the amount to be invested in a subsequent offering would be 1.2 times the amount of the initial investment in the private placement, or 1.4 times the amount of the initial investment if the Company had entered into financing transactions pursuant to Sections 3(a)(9) or 3(a)(10) of the Securities Act of 1933, as amended, or other financing arrangements that had full-ratchet anti-dilution provisions (i) without a floor, or (ii) with an indeterminate and potentially infinite number of shares issuable pursuant to such provisions. If neither termination condition had been reached, and the Company had more than one subsequent offering, the purchaser could have elected to exchange into any subsequent offering, regardless of whether such purchaser has already exchanged into a subsequent offering; provided, however, that the amount invested in such subsequent offering would only and always be 1.2 (or 1.4, as applicable) times the amount of the initial investment.

In the case of an acquisition, as defined in the agreement, in which the Company was not the surviving entity, the holder of each warrant would receive from any surviving entity or successor to the Company, in exchange for such warrant, a new warrant from the surviving entity or successor to the Company, substantially in the form of the existing warrant and with an exercise price adjusted to reflect the nearest equivalent exercise price of common stock (or other applicable equity interest) of the surviving entity that would reflect the economic value of the warrant, but in the surviving entity.

Unlimited piggy-back registration rights had been granted with respect to the common stock, and the common stock underlying the warrants, unless such common stock was eligible to be sold without volume limits under an exemption from registration under any rule or regulation of the SEC that permitted the holder to sell securities of the Company to the public without registration.

The Company is obligated to pay placement agent fees, brokerage commissions, finder's fees or similar payments totaling up to $13,875 to an unaffiliated qualified referral source as well as warrants up to 7.5% of number of units sold in the private placement. The Company paid $4,000 in cash to other professionals for services related to the closings.

The shares of common stock and warrants were offered and sold without registration under the Securities Act in reliance on the exemptions provided by Section 4(a)(2) of the Securities Act as provided in Rule 506(b) of Regulation D promulgated thereunder. None of the shares of common stock issued as part of the units, the warrants, the common stock issuable upon exercise of the warrants or any warrants issued to a qualified referral source. have been registered under the Securities Act or any other applicable securities laws, and unless so registered, may not be offered or sold in the United States except pursuant to an exemption from the registration requirements of the Securities Act.

The Company evaluated whether the warrants or the exchange rights met criteria to be accounted for as a derivative in accordance with Accounting Standard Codification (ASC) 815 and determined that the derivative criteria were not met. Therefore, the Company determined no bifurcation and separate valuation was necessary and the warrants and exchange right should be accounted for with the host instrument. The Company then looked to how the host instrument should be classified and determined that it cannot be classified as permanent equity as there is a potential that the Unit investment amount could be exchanged for debt (convertible or otherwise) or for redeemable preferred stock. Since the exchange right expires within one year, the Company concluded that the Unit investment would be appropriately classified as a current liability as of December 31, 2016.

1st 2017 Unit Offering

On March 10, 2017 and March 28, 2017, the Company sold units to investors for aggregate gross proceeds of $350,000, with each unit consisting of one share of the Company's common stock and one common stock purchase warrant to purchase one share of the Company's common stock (the "1st 2017 Unit Offering"). Units were sold for $2.50 per unit and the warrants issued in connection with the units are exercisable through December 31, 2021 at a fixed price $2.75 per share of the Company's common stock. The warrants contained a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants were also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closed at 200% or more of the unit purchase price for any five (5) consecutive trading days. Investors were not affiliates of the Company. The investors received an unlimited number of piggy-back registration rights. Investors also received an unlimited number of exchange rights, which were options and not obligations, to exchange such investor's entire investment (and not less than the entire investment) into one or more subsequent equity financings (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified as stockholders' equity, and excluding any form of debt or convertible debt (each such financing a "Subsequent Equity Financing"). These exchange rights were effective until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017. The dollar amount used to determine the amount invested or exchanged into the subsequent financing would be 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The exchange right did not permit the investors to exchange into a debt offering or into redeemable preferred stock, therefore, unlike the 2nd 2016 Unit Offering, the 2017 Unit Offering resulted in the issuance of permanent equity. The Company evaluated whether the warrants or the exchange rights met criteria to be accounted for as a derivative in accordance with Accounting Standard Codification Topic (ASC) 815 and determined that the derivative criteria were not met. Therefore, the Company determined no bifurcation and separate valuation was necessary and that the warrants and exchange right should be accounted for with the host instrument. The closing market prices of the Company's common stock on March 10, 2017 and March 28, 2017 were $4.05 and $3.80 respectively. In connection with this transaction, Aurora Capital LLC ("Aurora") served as a placement agent and earned $20,000 fees and 8,000 placement agent common stock warrants associated with the closing of 1st 2017 Unit Offering. The fees were unpaid as of December 31, 2017 and have been accrued in accounts payable and accrued expenses and charged against Additional paid-in capital as of March 31, 2017, June 30, 2017, September 30, 2017 and December 31, 2017. The placement agent common stock warrants were valued at $27,648 and were accounted for in Additional paid-in capital as of March 31, 2017 and remain valued at that amount as of December 31, 2017.

On July 26, 2017, the Company's Board approved an offering of securities conducted via private placement (the "2nd 2017 Unit Offering" described below) that, because of the terms of the 2nd 2017 Unit Offering as compared to the terms of the 2nd 2016 Unit offering and the 1st 2017 Unit Offering, resulted in an exchange of all of the units from the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering into equity securities of the Company in the 2nd 2017 Unit Offering by all of the investors in the 2nd 2016 Unit Offering and all of the investors in the 1st 2017 Unit Offering. Because all of the investors in the 2nd 2016 Unit Offering exchanged their units into the 2nd 2017 Unit Offering the current non-permanent equity liability as of December 31, 2016 has been reclassified in 2017 as permanent equity capital.

Because the 1st 2017 Unit Offering and the 2nd 2017 Unit Offering were both originally accounted for as equity, a reclassification similar to the one effected with respect to the 2nd 2016 Unit Offering was not required.

2nd 2017 Unit Offering

On August 29, 2017, September 27, 2017, September 28, 2017, October 5, 2017, October 25, 2017, November 29, 2017, December 13, 2017, December 21, 2017, December 22, 2017 and December 29, 2017 the Company sold units in the 2nd 2017 Unit Offering to investors for aggregate gross proceeds of $404,500, with each unit consisting of one share of the Company's common stock and one common stock purchase warrant to purchase one share of the Company's common stock. Units were sold for $1.00 per unit and the warrants issued in connection with the units are exercisable through September 29, 2022 at a fixed price $1.10 per share of the Company's common stock. The warrants contain a cashless exercise provision and certain blocker provisions preventing exercise if the investor would beneficially own more than 4.99% of the Company's outstanding shares of common stock as a result of such exercise. The warrants are also subject to redemption by the Company at $0.001 per share upon ten (10) days written notice if the Company's common stock closes at 250% or more of the unit purchase price for any five (5) consecutive trading days. The investors were not affiliates of the Company. Investors received an unlimited number of piggy-back registration rights. Investors also received an unlimited number of exchange rights, which are options and not obligations, to exchange such investor's entire investment (and not less than the entire investment) into one or more subsequent equity financings (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified as stockholders' equity, and excluding any form of debt or convertible debt (each such financing a "Subsequent Equity Financing" as in the 1st 2017 Unit Offering). These exchange rights are effective until the earlier of: (i) the completion of any number of subsequent financings aggregating at least $15 million gross proceeds to the Company, or (ii) December 30, 2017 and have therefore expired. The dollar amount used to determine the amount invested or exchanged into the subsequent financing would have been 1.2 times the amount of the original investment. Under certain circumstances, the ratio might have been 1.4 instead of 1.2. The exchange right did not permit the investors to exchange into a debt offering or into redeemable preferred stock, therefore, unlike the 2nd 2016 Unit Offering, the 2nd 2017 Unit Offering resulted in the issuance of permanent equity. All exchange rights have expired as of December 30, 2017. The Company evaluated whether the warrants or the exchange rights met criteria to be accounted for as a derivative in accordance with Accounting Standard Codification Topic (ASC) 815 and determined that the derivative criteria were not met. Therefore, the Company determined no bifurcation and separate valuation was necessary and that the warrants and exchange right should be accounted for with the host instrument. The closing market prices of the Company's common stock on August 29, 2017, September 27, 2017, September 28, 2017, October 5, 2017, October 25, 2017, November 29, 2017, December 13, 2017, December 21, 2017, December 22, 2017 and December 29, 2017 were $1.00, $1.40, $1.40, $1.50, $0.80, $1.05, $1.45, $1.51, $1.45 and $1.14, respectively. There was no placement agent and therefore no fees associated with the 2nd 2017 Unit Offering.

The terms of the 2nd 2017 Unit Offering, as compared to the terms of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering, resulted in an exchange of all of the units from each of the 2nd 2016 Unit Offering and the 1st 2017 Unit Offering into equity securities of the 2nd 2017 Unit Offering. Because the 1st 2017 Unit Offering and the 2nd 2017 Unit Offering were both originally accounted for as equity, a reclassification similar to the 2nd 2016 Unit Offering was not required.

Information with respect to the issuance of common stock in connection with the settlement of debt obligations is provided at Note 5.

Common Stock Warrants

A summary of warrant activity for the year ended December 31, 2017 is presented below.

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in Years)
Warrants outstanding at December 31, 2016	540,198	$4.84842	3.93
Issued	1,194,500		
Reduction through transactions in conjunction with - Unit Exchange Agreements	(270,283)		
Warrants outstanding at December 31, 2017	1,464,415	$2.68146	4.88
Warrants exercisable at December 31, 2016	540,198	$4.84842	3.93
Warrants exercisable at December 31, 2017	1,464,415	$2.68146	4.88

The exercise prices of common stock warrants outstanding and exercisable are as follows at December 31, 2017:

Exercise Price	Warrants Outstanding (Shares)	Warrants Exercisable (Shares)	Expiration Date
$1.0000	916,217	916,217	September 20, 2022
$1.2870	41,002	41,002	April 17, 2019
$1.5620	130,284	130,284	December 31, 2021
$2.7500	8,000	8000	September 20, 2022
$4.8500	5,155	5,155	September 23, 2019
$4.8750	108,594	108,594	September 30, 2020
$5.0000	5,000	5,000	September 22, 2019
$5.1025	10,309	10,309	January 29, 2019
$6.5000	8,092	8,092	February 4, 2019
$6.8348	145,758	145,758	September 30, 2020
$7.9300	86,004	86,004	February 28, 2021
	1,464,415	1,464,415	

Based on a fair market value of $1.14 per share on December 31, 2017, the intrinsic value of exercisable in-the-money common stock warrants was $128,270 as of December 31, 2017.

A summary of warrant activity for the year ended December 31, 2016 is presented below.

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in Years)
Warrants outstanding at December 31, 2015	482,288	$7.10125	
Issued	244,845		
Note exchanges	(40,940)		
Unit exchanges	(108,594)		
Expired	(37,401)	-	
Warrants outstanding at December 31, 2016	540,198	$4.84842	3.93
Warrants exercisable at December 31, 2015	482,288	$7.10125	
Warrants exercisable at December 31, 2016	540,198	$4.84842	3.93

The exercise prices of common stock warrants outstanding and exercisable are as follows at December 31, 2016:

Exercise Price	Warrants Outstanding (Shares)	Warrants Exercisable (Shares)	Expiration Date
$1.2870	41,002	41,002	April 17, 2019
$1.5620	130,284	130,284	December 31, 2021
$4.8500	5,155	5,155	September 23, 2019
$4.8750	108,594	108,594	September 30, 2020
$5.0000	5,000	5,000	September 22, 2019
$5.1025	10,309	10,309	January 29, 2019
$6.5000	8,092	8,092	February 4, 2019
$6.8348	145,758	145,758	September 30, 2020
$7.9300	86,004	86,004	February 28, 2021
	540,198	540,198	

Based on a fair market value of $2.80 per share on December 31, 2016, the intrinsic value of exercisable in-the-money common stock warrants was $223,328 as of December 31, 2016.

Stock Options

On March 18, 2014, the stockholders of the Company holding a majority of the votes to be cast on the issue approved the adoption of the Company's 2014 Equity, Equity-Linked and Equity Derivative Incentive Plan (the "2014 Plan"), which had been previously adopted by the Board of Directors of the Company, subject to stockholder approval. The Plan permits the grant of options and restricted stock with respect to up to 325,025 shares of common stock, in addition to stock appreciation rights and phantom stock, to directors, officers, employees, consultants and other service providers of the Company.

On June 30, 2015, the Board of Directors adopted the 2015 Stock and Stock Option Plan (the "2015 Plan"). The 2015 Plan initially provided for, among other things, the issuance of either or any combination of restricted shares of common stock and non-qualified stock options to purchase up to 461,538 shares of the Company's common stock for periods up to ten years to management, members of the Board of Directors, consultants and advisors. The Company has not and does not intend to present the 2015 Plan to stockholders for approval. On August 18, 2015, the Board of Directors increased the number of shares that may be issued under the 2015 Plan to 769,231 shares of the Company's common stock. On March 31, 2016, the Board of Directors further increased the number of shares that may be issued under the 2015 Plan to 1,538,461 shares of the Company's common stock. On January 17, 2017, the Board of Directors further increased the number of shares that may be issued under the 2015 Plan to 3,038,461 shares of the Company's common stock. On December 9, 2017, the Board of Directors further increased the number of shares that

may be issued under the 2015 Plan to 6,985,260 shares of the Company's common stock.

On August 18, 2015, the Company entered into an employment agreement with Dr. James S. Manuso to be its new President and Chief Executive Officer. In connection therewith, and in addition to other provisions, the Board of Directors of the Company awarded Dr. Manuso stock options to purchase a total of 261,789 shares of common stock, of which options for 246,154 shares were granted pursuant to the Company's 2015 Plan and options for 15,635 shares were granted pursuant to the Company's 2014 Plan. The stock options vested 50% on August 18, 2015 (at issuance), 25% on February 18, 2016, and 25% on August 18, 2016, and will expire on August 18, 2025. The exercise price of the stock options was established on the grant date at $6.4025 per share, which is equal to the simple average of the most recent four full trading weeks, weekly Volume Weighted Average Prices ("VWAPs") of the Company's common stock price immediately preceding the date of grant as reported by the OTC Markets, as compared to the closing market price of the Company's common stock on August 18, 2015 of $7.0200 per share. The aggregate grant date fair value of these stock options calculated pursuant to the Black-Scholes option-pricing model was $1,786,707. During the years ended December 31, 2017 and 2016, the Company recorded charges to operations of $0 and $569,222, respectively, with respect to these stock options. Additional information with respect to other provisions of the employment agreement is provided at Note 9.

On August 18, 2015, the Company also entered into employment agreements with Dr. Arnold S. Lippa, its new Chief Scientific Officer, Robert N. Weingarten, its then Vice President and Chief Financial Officer, and Jeff E. Margolis, its Vice President, Treasurer and Secretary. Mr. Weingarten resigned from the Company in February 2017. In connection therewith, and in addition to other provisions, the Board of Directors of the Company awarded to each of those officers stock options to purchase a total of 30,769 shares of common stock pursuant to the Company's 2015 Plan. The stock options vested 25% on December 31, 2015, 25% on March 31, 2016, 25% on June 30, 2016, and 25% on September 30, 2016, and will expire on August 18, 2022. The exercise price of the stock options was established on the grant date at $6.4025 per share, which is equal to the simple average of the most recent four full trading weeks, weekly VWAPs of the Company's common stock price immediately preceding the date of grant as reported by the OTC Markets as compared to the closing market price of the Company's common stock on August 18, 2015 of $7.0200 per share. The aggregate grant date fair value of these stock options calculated pursuant to the Black-Scholes option-pricing model was $609,000. During the years ended December 31, 2017 and 2016, the Company recorded charges to operations of $0 and $407,493, respectively, with respect to these stock options. Additional information with respect to other provisions of the employment agreement is provided at Note 9.

Additionally, on August 18, 2015, the Board of Directors of the Company awarded stock options for 9,231 shares of common stock to each of seven other individuals who are members of management, the Company's Scientific Advisory Board, independent members of the Board of Directors, or outside service providers pursuant to the Company's 2015 Plan, representing stock options for a total of 64,617 shares of common stock. The stock options vested 25% on December 31, 2015, 25% on March 31, 2016, 25% on June 30, 2016, and 25% on September 30, 2016, and will expire on August 18, 2020 as to stock options for 27,693 shares of common stock and August 18, 2022 as to stock options for 36,924 shares of common stock. The exercise price of the stock options was established on the grant date at $6.4025 per share, which is equal to the simple average of the most recent four full trading weeks, weekly VWAPs of the Company's common stock price immediately preceding the date of grant as reported by the OTC Markets, as compared to the closing market price of the Company's common stock on August 18, 2015 of $7.0200 per share. The aggregate grant date fair value of these stock options calculated pursuant to the Black-Scholes option-pricing model was $430,800. During the years ended December 31, 2017 and 2016, the Company recorded charges to operations of $0 and $223,089, respectively, with respect to these stock options.

On December 11, 2015, the Company entered into a consulting agreement for investor relations services, which provided for the payment of a fee for such services through the granting of non-qualified stock options to purchase a total of 8,791 shares of common stock pursuant to the Company's 2015 Plan. The stock options vested in equal installments on the last day of each month during the term of the consulting agreement, ranging from December 11, 2015 through March 31, 2016, and will expire on December 11, 2020. The exercise price of the stock options was established on the grant date at $6.825 per share, which was the closing market price of the Company's common stock on the date of grant. The aggregate grant date fair value of these stock options calculated pursuant to the Black-Scholes option-pricing model was $58,286. During the years ended December 31, 2017 and 2016, the Company recorded charges to operations of $0 and $50,286, respectively, with respect to these stock options.

On March 31, 2016, the Board of Directors of the Company awarded stock options for a total of 523,075 shares of common stock in various quantities to twelve individuals who are members of management, the Company's Scientific Advisory Board, independent members of the Board of Directors, or outside service providers pursuant to the Company's 2015 Plan. The stock options vested 25% on each of March 31, 2016, June 30, 2016, September 30, 2016 and December 31, 2016, and will expire on March 31, 2021. The exercise price of the stock options was established on the grant date at $7.3775 per share, which was the closing market price of the Company's common stock on such date. The aggregate grant date fair value of these stock options, as calculated pursuant to the Black-Scholes option-pricing model, was $3,774,000. During the years ended December 31, 2017 and 2016, the Company recorded a charge to operations of $0 and $3,469,500 dollars, respectively, with respect to these stock options.

On September 12, 2016, the Company entered into an agreement for consulting services, which provided for the payment of a fee through the granting of a non-qualified stock option to purchase a total of 2,608 shares of common stock pursuant to the Company's 2015 Plan. The stock option was fully vested on the date of grant and will expire on September 12, 2021. The exercise price of the stock option was established on the grant date at $5.7500 per share, which was the closing market price of the Company's common stock on the date of grant. The aggregate grant date fair value of the stock option, calculated pursuant to the Black-Scholes option-pricing model, was $14,384, which was charged to operations on the date of grant.

On July 26, 2017, the Board of Directors of the Company awarded stock options for a total of 25,000 shares of common stock to one individual who is a member of management pursuant to the Company's 2015 Plan. The stock options vested 25% upon grant, 25% on September 30, 2017 and 50% on December 31, 2017. The exercise price of the options was established on the grant date at $2.00, which was above the closing market price of the Company's common stock on that date, which was $1.30. The aggregate grant date fair value of these stock options, as calculated pursuant to the Black Scholes option pricing model, was $27,225. During the twelve months ended December 31, 2017, the Company recorded a charge to operations of $27,225 with respect to these options.

On July 28, 2017, the Board of Directors of the Company awarded stock options for a total of 34,000 shares of common stock to two individuals who are consultants pursuant to the Company's 2015 Plan. With respect to one individual, the 9,000 options vested 33 1/3% upon grant, 33 1/3 % on August 31, 2017 and 33 1/3% on September 30, 2017. With respect to the other individual, the 25,000 options vested 20% on each of August 31, 2017, September 30, 2017, October 31, 2017, November 30, 2017 and December 31, 2017, thus all options had vested by December 31, 2017. The exercise price of the options was established on the grant date at $1.35, which was the closing market price of the Company's common stock on the date of the grant. The aggregate grant date fair value of these stock options, as calculated pursuant to the Black Scholes option pricing model, was $39,807. During the twelve months ended December 31, 2017, the Company recorded a charge to operations of $37,457 with respect to these stock options.

On December 9, 2017, the Board of Directors of the Company awarded stock options for a total of 1,772,055 shares of common stock to six executive officers, a former executive officer and two independent members of the Board of Directors pursuant to the Company's 2015 Plan. All of these options vested upon grant. The exercise price of the options was established on the grant date at $1.45 which was the closing price of the Company's common stock on the last trading date prior to the grant. The aggregate grant date fair market value of these stock options as calculated pursuant to the Black Scholes option pricing model was $2,475,561. The Company recorded a charge to operations of $2,475,561 with respect to these options. These options were granted on the same date that these individuals forgave $2,557,083 of accrued compensation and related expenses owed to them.

On December 9, 2017, the Board of Directors of the Company awarded stock options for a total of 77,363 shares of common stock to two consultants pursuant to the Company's 2015 Plan. All of these options vested upon grant. The exercise price of the options was established on the grant date at $1.45 which was the closing price of the Company's common stock on the last trading date prior to the grant. The aggregate grant date fair market value of these stock options as calculated pursuant to the Black Scholes option pricing model was $108,076. The Company recorded a charge to operations of $108,076 with respect to these options. These options were granted on the same date that these consultants forgave $111.635 of accounts payable owed to them.

On December 9, 2017, the Board of Directors of the Company awarded stock options for a total of 100,000 shares of common stock to one member of management as a bonus pursuant to the Company's 2015 Plan. These options vested upon grant. The exercise price of the options was established on the grant date at $1.45 which was the closing price of the Company's common stock on the last trading date prior to the grant. The aggregate grant date fair market value of these stock options as calculated pursuant to the Black Scholes option pricing model was $139,700. The Company recorded a charge to operations of $139,700 with respect to these options.

Information with respect to the issuance of common stock options in connection with the settlement of debt obligations and as payment for consulting services is provided at Note 5.

Information with respect to common stock awards issued to officers and directors as compensation is provided above under “Common Stock.”

Information with respect to the Black-Scholes variables used in connection with the evaluation of the fair value of stock-based compensation is provided at Note 3.

A summary of stock option activity for the year ended December 31, 2017 is presented below.

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in Years)
Options outstanding at December 31, 2016	1,307,749	$ 7.6515	5.31
Granted	2,688,418	1.8721	8.38
Expired	-	-	-
Forfeited	-	-	-
Options outstanding at December 31, 2017	3,996,167	$ 3.7634	7.38
Options exercisable at December 31, 2016	1,307,749	$ 7.6515	5.31
Options exercisable at December 31, 2017	3,996,167	$ 3.7634	7.38

There was no deferred compensation expense for the outstanding and unvested stock options at December 30, 2017.

The exercise prices of common stock options outstanding and exercisable were as follows at December 31, 2017:

Exercise Price	Options Outstanding (Shares)	Options Exercisable (Shares)	Expiration Date
$1.3500	34,000	34,000	July 28, 2022
$1.4500	1,849,418	1,849,418	December 9, 2027
$1.4500	100,000	100,000	December 9, 2027
$2.0000	285,000	285,000	June 30, 2022
$2.0000	25,000	25,000	July 26, 2022
$3.9000	395,000	395,000	January 17, 2022
$4.5000	7,222	7,222	September 2, 2021
$5.6875	89,686	89,686	June 30, 2020
$5.7500	2,608	2,608	September 12, 2021
$6.4025	27,692	27,692	August 18, 2020
$6.4025	129,231	129,231	August 18, 2022
$6.4025	261,789	261,789	August 18, 2025
$6.8250	8,791	8,791	December 11, 2020
$7.3775	523,077	523,077	March 31, 2021
$8.1250	169,231	169,231	June 30, 2022
$13.0000	7,385	7,385	March 13, 2019

$13.0000	3,846	3,846	April 14, 2019
$13.9750	3,385	3,385	March 14, 2024
$15.4700	7,755	7,755	April 8, 2020
$15.9250	2,462	2,462	February 28, 2024
$16.0500	46,154	46,154	July 17, 2019
$16.6400	1,538	1,538	January 29, 2020
$19.5000	9,487	9,487	July 17, 2022
$19.5000	6,410	6,410	August 10, 2022
	3,996,167	3,996,161	

Based on a fair market value of $1.14 per share on December 31, 2017, there were no exercisable in-the-money common stock options as of December 31, 2017.

A summary of stock option activity for the year ended December 31, 2016 is presented below.

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in Years)
Options outstanding at December 31, 2015	774,842	$ 7.8325	
Granted	532,907	7.3305	
Expired	-	-	
Forfeited	-	-	
Options outstanding at December 31, 2016	1,307,749	$ 7.6515	5.31
Options exercisable at December 31, 2015	519,662	$ 8.5150	
Options exercisable at December 31, 2016	1,307,749	$ 7.6515	5.31

The exercise prices of common stock options outstanding and exercisable were as follows at December 31, 2016:

Exercise Price	Options Outstanding (Shares)	Options Exercisable (Shares)	Expiration Date
$4.5000	7,222	7,222	September 2, 2021
$5.6875	89,686	89,686	June 30, 2020
$5.7500	2,608	2,608	September 12, 2021
$6.4025	27,692	6,923	August 18, 2020
$6.4025	129,231	32,308	August 18, 2022
$6.4025	261,789	130,894	August 18, 2025
$6.8250	8,791	2,198	December 11, 2020
$7.3775	523,077	523,077	March 31, 2021
$8.1250	169,231	169,231	June 30, 2022
$13.0000	7,385	7,385	March 13, 2019
$13.0000	3,846	3,846	April 14, 2019
$13.9750	3,385	3,385	March 14, 2024
$15.4700	7,755	7,755	April 8, 2020
$15.9250	2,462	2,462	February 28, 2024
$16.2500	46,154	46,154	July 17, 2019
$16.6400	1,538	1,538	January 29, 2020
$19.5000	9,487	9,487	July 17, 2022
$19.5000	6,410	6,410	August 10, 2022
	1,307,749	1,307,749	

Based on a fair market value of $2.8000 per share on December 30, 2016, the intrinsic value of exercisable in-the-money common stock options was $0 as of December 30, 2016.

For the years ended December 31, 2017 and 2016, stock-based compensation costs included in the consolidated statements of operations consisted of general and administrative expenses of $2,966,420 and $3,391,848, respectively, and research and development expenses of $1,543,556 and $1,342,126, respectively.

Pier Contingent Stock Consideration

In connection with the merger transaction with Pier effective August 10, 2012, RespireRx issued 179,747 newly issued shares of its common stock with an aggregate fair value of $3,271,402 ($18.2000 per share), based upon the closing price of RespireRx's common stock on August 10, 2012. The shares of common stock were distributed to stockholders, convertible note holders, warrant holders, option holders, and certain employees and vendors of Pier in satisfaction of their interests and claims. The common stock issued by RespireRx represented approximately 41% of the 443,205 common shares outstanding immediately following the closing of the transaction.

Pursuant to the terms of the transaction, RespireRx agreed to issue additional contingent consideration, consisting of up to 56,351 shares of common stock, to Pier's former security holders and certain other creditors and service providers (the "Pier Stock Recipients") that received RespireRx's common stock as part of the Pier transaction if certain of RespireRx's stock options and warrants outstanding immediately prior to the closing of the merger were subsequently exercised. In the event that such contingent shares were issued, the ownership percentage of the Pier Stock Recipients, following their receipt of such additional shares, could not exceed their ownership percentage as of the initial transaction date.

The stock options and warrants outstanding at June 30, 2012 were all out-of-the-money on August 10, 2012. During late July and early August 2012, shortly before completion of the merger, the Company issued options to officers and directors at that time to purchase a total of 22,651 shares of common stock exercisable for ten years at $19.5000 per share. By October 1, 2012, these options, as well as the options and warrants outstanding at June 30, 2012, were also out-of-the-money and continued to be out-of-the-money through December 31, 2017.

There were no stock options or warrants exercised subsequent to August 10, 2012 that triggered additional contingent consideration, and the only remaining stock options outstanding that could still trigger the additional contingent consideration remained generally and substantially out-of-the-money through December 31, 2017. As of December 31, 2017, due to the expirations and forfeitures of RespireRx stock options and warrants occurring since August 10, 2012, 6,497 contingent shares of common stock remained issuable under the Pier merger agreement.

The Company concluded that the issuance of any of the contingent shares to the Pier Stock Recipients was remote, as a result of the large spread between the exercise prices of these stock options and warrants as compared to the common stock trading range, the subsequent expiration or forfeiture of most of the options and warrants, the Company's distressed financial condition and capital requirements, and that these stock options and warrants have generally remained significantly out-of-the-money through December 31, 2017. Accordingly, the Company considered the fair value of the contingent consideration to be immaterial and therefore did not ascribe any value to such contingent consideration. If any such shares are ultimately issued to the former Pier stockholders, the Company will recognize the fair value of such shares as a charge to operations at that time.

Reserved and Unreserved Shares of Common Stock

At December 31, 2017, the Company had 65,000,000 shares of common stock authorized and 3,065,261 shares of common stock issued and outstanding. Furthermore, as of December 31, 2017, the Company had reserved an aggregate of 11 shares for issuance upon conversion of the Series B Preferred Stock; 1,464,415 shares for issuance upon exercise of warrants; 3,996,167 shares for issuance upon exercise of outstanding stock options; 63,236 shares to cover equity grants available for future issuance pursuant to the 2014 Plan; 3,059,812 shares to cover equity grants available for future issuance pursuant to the 2015 Plan; 32,941 shares for issuance upon conversion of the Convertible

Notes; and 6,497 shares issuable as contingent shares pursuant to the Pier merger. Accordingly, as of December 31, 2017, the Company had an aggregate of 8,952,423 shares of common stock reserved for issuance and 53,311,660 shares of common stock unreserved and available for future issuance. The Company expects to satisfy its future common stock commitments through the issuance of authorized but unissued shares of common stock.

7. Income Taxes

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's deferred tax assets as of December 31, 2017 and 2016 are summarized below.

	December 31,	
	2017	2016
Capitalized research and development costs	$183,000	$150,000
Research and development credits	3,017,000	3,239,000
Stock-based compensation	3,268,000	3,430,000
Stock options issued in connection with the payment of debt	199,000	289,000
Net operating loss carryforwards	25,569,000	37,745,000
Accrued compensation	135,000	794,000
Accrued interest due to related party	83,000	94,000
Other, net	10,000	14,000
Total deferred tax assets	32,824,000	45,755,000
Valuation allowance	(32,824,000)	(45,755,000)
Net deferred tax assets	$-	$-

In assessing the potential realization of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will be realized. The ultimate realization of deferred tax assets is dependent upon the Company attaining future taxable income during the periods in which those temporary differences become deductible. As of December 31, 2017 and 2016, management was unable to determine that it was more likely than not that the Company's deferred tax assets will be realized, and has therefore recorded an appropriate valuation allowance against deferred tax assets at such dates.

No federal tax provision has been provided for the years ended December 31, 2017 and 2016 due to the losses incurred during such periods. Reconciled below is the difference between the income tax rate computed by applying the U.S. federal statutory rate and the effective tax rate for the years ended December 31, 2017 and 2016.

	Years Ended December 31,	
	2017	2016
U. S. federal statutory tax rate	(35.0)%	(35.0)%
Forgiveness of indebtedness	(0.9)%	- %
Change in valuation allowance	(2.4)%	33.0 %

Amortization of warrant discounts	-	%	1.3	%
Fair value of note payable conversion discounts	-	%	0.7	%
Adjustment to deferred tax asset	38.8	%	-	%
Other	(0.5	)%	-	%
Effective tax rate	0.0	%	0.0	%

As of December 31, 2017, the Company had federal and state tax net operating loss carryforwards of approximately $88,492,000 and $98,854,000, respectively. The state tax net operating loss carryforward consists of $92,084,000 for California purposes and $6,770,000 for New Jersey purposes. The difference between the federal and state tax loss carryforwards was primarily attributable to the capitalization of research and development expenses for California franchise tax purposes. The federal and state net operating loss carryforwards will expire at various dates from 2018 through 2037. The Company also had federal and California research and development tax credit carryforwards that totaled approximately $1,872,000 and $1,146,000, respectively, at December 31, 2017. The federal research and development tax credit carryforwards will expire at various dates from 2018 through 2031. The California research and development tax credit carryforward does not expire and will carryforward indefinitely until utilized.

While the Company has not performed a formal analysis of the availability of its net operating loss carryforwards under Internal Revenue Code Sections 382 and 383, management expects that the Company’s ability to use its net operating loss carryforwards will be limited in future periods.

8. Related Party Transactions

Dr. Arnold S. Lippa and Jeff E. Margolis, officers and directors of the Company since March 22, 2013, have indirect ownership interests and managing memberships in Aurora Capital LLC (“Aurora”) through interests held in its members, and Jeff. E. Margolis is also an officer of Aurora. Aurora is a boutique investment banking firm specializing in the life sciences sector that is also a full service brokerage firm.

On March 31, 2013, the Company accrued $85,000 as reimbursement for legal fees incurred by Aurora in conjunction with the removal of the Company's prior Board of Directors on March 22, 2013, which amount has been included in accounts payable and accrued expenses at December 31, 2017 and 2016. On March 28, 2017, the Company recorded $20,000 of placement agent fees due to Aurora, which amount has been included in accounts payable and accrued expenses at December 31, 2017. On March 31, 2017, the Company issued 8,000 common stock purchase warrants to Aurora Capital LLC as an additional placement agent fee. Such warrants have an exercise price of $2.75 per share and are exercisable until December 31, 2021.

On June 30, 2015, the Board of Directors of the Company awarded, but did not pay, cash bonuses totaling $215,000, including an aggregate of $195,000 to certain of the Company's executive officers and an aggregate of $20,000 to the independent members of the Company's Board of Directors. The cash bonuses awarded to executive officers were as follows: Dr. Arnold S. Lippa - $75,000; Jeff E. Margolis - $60,000; and Robert N. Weingarten - $60,000. The cash bonuses awarded to the two independent members of the Company's Board of Directors were as follows: James E. Sapirstein - $10,000; and Kathryn MacFarlane - $10,000. The cash bonuses were awarded as partial compensation for services rendered by such persons from January 1, 2015 through June 30, 2015, and are included in accrued compensation and related expenses in the Company's consolidated balance sheet at December 31, 2017 and 2016.

On June 30, 2015, the Board of Directors also established cash compensation arrangements for certain of the Company's executive officers at the following monthly rates: Dr. Arnold S. Lippa - $12,500; Jeff E. Margolis - $10,000; and Robert N. Weingarten - $10,000. In addition, the Company established quarterly cash board fees for the two independent members of the Company's Board of Directors as follows: James E. Sapirstein - $5,000; and Kathryn MacFarlane - $5,000. This compensation was payable in arrears and commenced on July 1, 2015. These compensation arrangements have been extended through December 31, 2017. On August 18, 2015, the cash compensation arrangements for these executive officers were further revised as described below.

Both the cash bonuses and the cash monthly compensation were accrued and will not be paid until such time as the Board of Directors of the Company determines that sufficient capital has been raised by the Company or is otherwise available to fund the Company's operations on an ongoing basis.

Effective August 18, 2015, Company entered into employment agreements with Dr. Arnold S. Lippa, Robert N. Weingarten and Jeff E. Margolis, which superseded the compensation arrangements previously established for those officers on June 30, 2015, excluding the cash bonuses referred to above.

On February 17, 2017 Robert N. Weingarten resigned as a director and as the Company's Vice President and Chief Financial Officer, but remains a consultant to the Company.

Jeff E. Margolis' employment agreement was amended effective July 1, 2017. The employment agreement amendment called for payment in three installments in cash of the $60,000 bonus granted on June 30, 2015. A minimum of $15,000 was to be payable in cash as follows: (a) $15,000 payable in cash upon the next closing (after July 1, 2017) of any financing in excess of $100,000 (b) $15,000 payable by the end of the following month assuming cumulative closings (beginning with the closing that triggered (a)) in excess of $200,000 and (c) $30,000 payable in cash upon the next closing of any financing in excess of an additional $250,000. The conditions of (a), (b) and (c) above were met as of December 31, 2017, however Mr. Margolis has waived the Company's obligation to make any payments of the cash bonus until the Board of Directors of the Company determines that sufficient capital has been raised by the Company or is otherwise available to fund the Company's operations on an ongoing basis. Obligations through September 30, 2017 were forgiven by Mr. Margolis as described below.

Additional information with respect to these employment agreements entered into on August 18, 2015 is provided at Note 9.

On December 9, 2017, the Company accepted offers from Dr. Arnold S. Lippa, Dr. James S. Manuso, Jeff E. Margolis, James E. Sapirstein, Kathryn MacFarlane and Robert N. Weingarten (former Chief Financial Officer) pursuant to which such individuals would forgive accrued compensation and related accrued expenses as of September 30, 2017 in the following amounts: $807,497; $878,360; $560,876; $55,000; $55,000 and $200,350 respectively for a total of $2,557,083. On the same date, the Company granted to the same individuals, or designees of such individuals from the 2015 Plan, non-qualified stock options, exercisable for 10 years with an exercise price of $1.45 per share of common stock, among other terms and features as follows: 559,595; 608,704; 388,687; 38114; 38,114 and 138,842 respectively, for options exercisable into a total of 1,772,055 shares of common stock with a total value of $2,475,561.

During the years ended December 31, 2017 and 2016, the Company recorded charges to operations of $0 and $20,464, respectively, for consulting services rendered by an entity controlled by family members of Dr. Arnold S. Lippa.

A description of other transactions between the Company and Aurora is provided at Notes 4, 6 and 10.

A description of advances and notes payable to officers is provided at Note 4.

9. Commitments and Contingencies

Pending or Threatened Legal Actions and Claims

By letter dated November 11, 2014, a former director of the Company, who joined the Company’s Board of Directors on August 10, 2012 in conjunction with the Pier transaction and who resigned from the Company’s Board of Directors on September 28, 2012, asserted a claim for unpaid consulting compensation of $24,000. The Company has not received any further communications from the former director with respect to this matter.

By letter dated February 5, 2016, the Company received a demand from a law firm representing a professional services vendor of the Company alleging an amount due and owing for unpaid services rendered. On January 18, 2017, following an arbitration proceeding, an arbitrator awarded the vendor the full amount sought in arbitration of $146,082. Additionally, the arbitrator granted the vendor attorneys’ fees and costs of $47,937. All such amounts have been accrued at December 31, 2017.

By e-mail dated July 21, 2016, the Company received a demand from an investment banking consulting firm that represented the Company in 2012 in conjunction with the Pier transaction alleging that $225,000 is due and owing for unpaid investment banking services rendered. The Company has been in discussions with this firm regarding this matter.

The Company is periodically the subject of various pending and threatened legal actions and claims. In the opinion of management of the Company, adequate provision has been made in the Company's consolidated financial statements at December 31, 2017 and 2016 with respect to such matters, including, specifically, the matters noted above. The Company intends to vigorously defend itself if any of the matters described above results in the filing of a lawsuit or formal claim.

Significant Agreements and Contracts

Consulting Agreement

Richard Purcell was appointed as the Company's Senior Vice President of Research and Development effective October 15, 2014. Mr. Purcell provides his services to the Company on a month-to-month basis through his consulting firm, DNA Healthlink, Inc., through which the Company has contracted for his services, for a monthly cash fee of $12,500. Additional information with respect to shares of common stock issued to Mr. Purcell is provided at Note 6. Cash compensation expense pursuant to this agreement totaled $150,000 for the years ended December 31, 2017 and 2016, which is included in research and development expenses in the Company's consolidated statements of operations for such periods.

Employment Agreements

On August 18, 2015, the Company entered into an employment agreement with Dr. James S. Manuso, Ph.D., to be its new President and Chief Executive Officer. Pursuant to the agreement, which is for an initial term through September 30, 2018 (and which will be deemed to be automatically extended, upon the same terms and conditions, for successive periods of one year, unless either party provides written notice of its intention not to extend the term of the agreement at least 90 days prior to the applicable renewal date), Dr. Manuso received an annual base salary of $375,000. Dr. Manuso is also eligible to earn a performance-based annual bonus award of up to 50% of his base salary, based upon the achievement of annual performance goals established by the Board of Directors in consultation with the executive prior to the start of such fiscal year, or any amount at the discretion of the Board of Directors. Additionally, Dr. Manuso was granted stock options to acquire 261,789 shares of common stock of the Company and is eligible to receive additional awards under the Company's Plans in the discretion of the Board of Directors. Dr. Manuso is also entitled to receive, until such time as the Company establishes a group health plan for its employees, $1,200 per month, on a tax-equalized basis, as additional compensation to cover the cost of health coverage and up to $1,000 per month, on a tax-equalized basis, as additional compensation for a term life insurance policy and disability insurance policy. Dr. Manuso is also entitled to be reimbursed for business expenses. Additional information with respect to the stock options granted to Dr. Manuso is provided at Note 6. Cash compensation accrued pursuant to this agreement totaled $414,600 for the year ended December 31, 2017, and $421,350 for the year ended December 31, 2016. Such amounts were included in accrued compensation and related expenses in the Company's consolidated balance sheet at December 31, 2017 and 2016, respectively, and in general and administrative expenses in the Company's consolidated statement of operations for the years ended December 31, 2017 and 2016. On December 9, 2017, Dr. Manuso forgave $878,360 of accrued compensation and related expenses which was the amount owed by the Company as of September 30, 2017. Dr. Manuso does not receive any additional compensation for serving as Vice Chairman or a member of on the Board of Directors. Such amounts have not been paid to Dr. Manuso.

Dr. Manuso had also agreed to purchase newly issued securities of the Company in an amount of $250,000, which was accomplished by Dr. Manuso's participation in the first closing of the unit offering of common stock and warrants on August 28, 2015, as described at Note 6.

On August 18, 2015, concurrently with the hiring of Dr. James S. Manuso as the Company's new President and Chief Executive Officer, Dr. Arnold S. Lippa resigned as the Company's President and Chief Executive Officer. Dr. Lippa continues to serve as the Company's Executive Chairman and as a member of the Board of Directors. Also on August 18, 2015, Dr. Lippa was named Chief Scientific Officer of the Company, and the Company entered into an employment agreement with Dr. Lippa in that capacity. Pursuant to the agreement, which is for an initial term through September 30, 2018 (and which will be deemed to be automatically extended, upon the same terms and conditions, for successive periods of one year, unless either party provides written notice of its intention not to extend the term of the agreement at least 90 days prior to the applicable renewal date), Dr. Lippa received an annual base salary of $300,000. Dr. Lippa is also eligible to earn a performance-based annual bonus award of up to 50% of his base salary, based upon the achievement of annual performance goals established by the Board of Directors in consultation with the executive prior to the start of such fiscal year, or any amount at the discretion of the Board of Directors. Additionally, Dr. Lippa was granted stock options to acquire 30,769 shares of common stock of the Company and is eligible to receive

additional awards under the Company's Plans at the discretion of the Board of Directors. Dr. Lippa is also entitled to receive, until such time as the Company establishes a group health plan for its employees, $1,200 per month, on a tax-equalized basis, as additional compensation to cover the cost of health coverage and up to $1,000 per month, on a tax-equalized basis, as reimbursement for a term life insurance policy and disability insurance policy. Dr. Lippa is also entitled to be reimbursed for business expenses. Additional information with respect to the stock options granted to Dr. Lippa is provided at Note 6. Cash compensation accrued pursuant to this agreement totaled $339,600 and $339,800 for the years ended December 31, 2017 and 2016, respectively, which is included in accrued compensation and related expenses in the Company's consolidated balance sheet at December 31, 2017 and 2016, and in research and development expenses in the Company's consolidated statement of operations. Cash compensation accrued to Dr. Lippa for bonuses and under a prior superseded arrangement, while still serving as the Company's President and Chief Executive Officer, totaled $94,758 and is included in accrued compensation and related expenses in the Company's consolidated balance sheet at December 31, 2017 and 2016, and in general and administrative expenses in the Company's consolidated statement of operations. Such amounts have not been paid to Dr. Lippa. Dr. Lippa does not receive any additional compensation for serving as Executive Chairman and on the Board of Directors. On December 9, 2017, Dr. Lippa forgave $807,497 of accrued compensation and related expenses which was the amount owed by the Company as of September 30, 2017.

On August 18, 2015, the Company also entered into employment agreements with Jeff E. Margolis, in his continuing role as Vice President, Secretary and Treasurer, and Robert N. Weingarten, in his continuing role as then Vice President and Chief Financial Officer. Mr. Weingarten resigned from the Company in February 2017. Pursuant to the agreements, which are for initial terms through September 30, 2016 (and which will be deemed to be automatically extended upon the same terms and conditions, for successive periods of one year, unless either party provides written notice of its intention not to extend the term of the agreement at least 90 days prior to the applicable renewal date), Mr. Margolis and Mr. Weingarten each received an annual base salary of $195,000, and each is also eligible to receive performance-based annual bonus awards ranging from $65,000 to $125,000, based upon the achievement of annual performance goals established by the Board of Directors in consultation with the executive prior to the start of such fiscal year, or any amount at the discretion of the Board of Directors. Additionally, Mr. Margolis and Mr. Weingarten were each granted stock options to acquire 30,769 shares of common stock of the Company and both are eligible to receive additional awards under the Company's Plans at the discretion of the Board of Directors. Mr. Margolis and Mr. Weingarten are also each entitled to receive, until such time as the Company establishes a group health plan for its employees, $1,200 per month, on a tax-equalized basis, as additional compensation to cover the cost of health coverage and up to $1,000 per month, on a tax-equalized basis, as reimbursement for a term life insurance policy and disability insurance policy. Both Mr. Margolis and Mr. Weingarten are also each entitled to be reimbursed for business expenses. Additional information with respect to the stock options granted to Mr. Margolis and Mr. Weingarten is provided at Note 6. Cash compensation accrued pursuant to these agreements totaled $269,100 for Mr. Margolis and $28,524 from Mr. Weingarten for the year ended December 31, 2017 and $433,200 ($216,600 each) for the year ended December 31, 2016, which is included in accrued compensation and related expenses in the Company's consolidated balance sheet at December 31, 2017 and 2016, and in general and administrative expenses in the Company's consolidated statement of operations. On December 9, 2017, Mr. Margolis forgave $560,876 of accrued compensation and related expenses which was the amount owed by the Company as of September 30, 2017. On December 9, 2017, Mr. Weingarten forgave $200,350 which was 50% of the amount owed by the Company as of September 30, 2017. Cash compensation accrued to Mr. Margolis and Mr. Weingarten for bonuses and under prior superseded arrangements totaled $151,612 ($75,806 each) and is also included in accrued compensation and related expenses in the Company's consolidated balance sheet at September 30, 2016, and in general and administrative expenses in the Company's consolidated statement of operations. Such amounts have not been paid to Mr. Margolis or Mr. Weingarten. Mr. Margolis and Mr. Weingarten also continue to serve as Directors of the Company, but do not receive any additional compensation for serving on the Board of Directors.

The employment agreements between the Company and each of Dr. Manuso, Dr. Lippa, Mr. Margolis and Mr. Weingarten, respectively, provided that the payment obligations associated with the first year base salary were to accrue, but no payments were to be made, until at least $2,000,000 of net proceeds from any offering or financing of debt or equity, or a combination thereof, was received by the Company, at which time scheduled payments were to commence. As this financing milestone has not been achieved, Dr. Manuso, Dr. Lippa, Mr. Margolis and Mr. Weingarten (who are each also directors of the Company) have each agreed, effective as of August 11, 2016, to continue to defer the payment of such amounts indefinitely, until such time as the Board of Directors of the Company determines that sufficient capital has been raised by the Company or is otherwise available to fund the Company's operations on an ongoing basis.

On February 17, 2017 Robert N. Weingarten resigned as a director and as the Company's Vice President and Chief Financial Officer. He remains a consultant to the Company.

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Jeff E. Margolis' employment agreement was amended effective July 1, 2017. The employment agreement amendment called for payment in three installments in cash of the $60,000 bonus granted on June 30, 2015. A minimum of $15,000 was to be payable in cash as follows: (a) $15,000 payable in cash upon the next closing (after July 1, 2017) of any financing in excess of $100,000 (b) $15,000 payable by the end of the following month assuming cumulative closings (beginning with the closing that triggered (a)) in excess of $200,000 and (c) $30,000 payable in cash upon the next closing of any financing in excess of an additional $250,000. The conditions of (a), (b) and (c) above were met as of December 31, 2017, however Mr. Margolis has waived the Company's obligation to make any payments of the cash bonus until the Board of Directors of the Company determines that sufficient capital has been raised by the Company or is otherwise available to fund the Company's operations on an ongoing basis. Obligations through September 30, 2017 were forgiven by Mr. Margolis as described below.

On December 9, 2017, the Company accepted offers from Dr. Arnold S. Lippa, Dr. James S. Manuso, Jeff E. Margolis, James E. Sapirstein, Kathryn MacFarlane and Robert N. Weingarten (former Chief Financial Officer) pursuant to which such individuals would forgive accrued compensation and related accrued expenses as of September 30, 2017 in the following amounts: $807,497; $878,360; $560,876; $55,000; $55,000 and $200,350 respectively for a total of $2,557,083. On the same date, the Company granted to the same individuals, or designees of such individuals from the 2015 Plan, non-qualified stock options, exercisable for 10 years with an exercise price of $1.45 per share of common stock, among other terms and features as follows: 559,595; 608,704; 388,687; 38114; 38,114 and 138,842 respectively, for options exercisable into a total of 1,772,055 shares of common stock with a total value of $2,475,561.

University of California, Irvine License Agreements

The Company entered into a series of license agreements in 1993 and 1998 with the University of California, Irvine ("UCI") that granted the Company proprietary rights to certain chemical compounds that acted as ampakines and to their therapeutic uses. These agreements granted the Company, among other provisions, exclusive rights: (i) to practice certain patents and patent applications, as defined in the license agreement, that were then held by UCI; (ii) to identify, develop, make, have made, import, export, lease, sell, have sold or offer for sale any related licensed products; and (iii) to grant sub-licenses of the rights granted in the license agreements, subject to the provisions of the license agreements. The Company was required, among other terms and conditions, to pay UCI a license fee, royalties, patent costs and certain additional payments.

Under such license agreements, the Company was required to make minimum annual royalty payments of approximately $70,000. The Company was also required to spend a minimum of $250,000 per year to advance the ampakine compounds until the Company began to market an ampakine compound. The commercialization provisions in the agreements with UCI required the Company to file for regulatory approval of an ampakine compound before October 2012. In March 2011, UCI agreed to extend the required date for filing regulatory approval of an ampakine compound to October 2015. During December 2012, the Company informed UCI that it would be unable to make the annual payment due to a lack of funds. The Company believes that this notice, along with its subsequent failure to

make its minimum annual payment obligation, constituted a default and termination of the license agreements.

On April 15, 2013, the Company received a letter from UCI indicating that the license agreements between UCI and the Company had been terminated due to the Company's failure to make certain payments required to maintain the agreements. Since the patents covered in these license agreements had begun to expire and the therapeutic uses described in these patents were no longer germane to the Company's new focus on respiratory disorders, the loss of these license agreements is not expected to have a material impact on the Company's current drug development programs. In the opinion of management, the Company has made adequate provision for any liability relating to this matter in its consolidated financial statements at December 31, 2017 and 2016.

University of Alberta License Agreement

On May 8, 2007, the Company entered into a license agreement, as amended, with the University of Alberta granting the Company exclusive rights to practice patents held by the University of Alberta claiming the use of ampakines for the treatment of various respiratory disorders. The Company agreed to pay the University of Alberta a licensing fee and a patent issuance fee, which were paid, and prospective payments consisting of a royalty on net sales, sublicense fee payments, maintenance payments and milestone payments. The prospective maintenance payments commence on the enrollment of the first patient into the first Phase 2B clinical trial and increase upon the successful completion of the Phase 2B clinical trial. As the Company does not at this time anticipate scheduling a Phase 2B clinical trial in the near term, no maintenance payments to the University of Alberta are currently due and payable, nor are any maintenance payments expected to be due in the near future in connection with the license agreement.

Transactions with Biovail Laboratories International SRL

In March 2010, the Company entered into an asset purchase agreement with Biovail Laboratories International SRL ("Biovail"). Pursuant to the asset purchase agreement, Biovail acquired the Company's interests in CX717, CX1763, CX1942 and the injectable dosage form of CX1739, as well as certain of its other ampakine compounds and related intellectual property for use in the field of respiratory depression or vaso-occlusive crises associated with sickle cell disease. The agreement provided the Company with the right to receive milestone payments in an aggregate amount of up to $15,000,000 plus the reimbursement of certain related expenses, conditioned upon the occurrence of particular events relating to the clinical development of certain assets that Biovail acquired. None of these events occurred.

As part of the transaction, Biovail licensed back to the Company certain exclusive and irrevocable rights to some acquired ampakine compounds, other than CX717, an injectable dosage form of CX1739, CX1763 and CX1942, for use outside of the field of respiratory depression or vaso-occlusive crises associated with sickle cell disease. Accordingly, following the transaction with Biovail, the Company retained its rights to develop and commercialize the non-acquired ampakine compounds as a potential treatment for neurological diseases and psychiatric disorders. Additionally, the Company retained its rights to develop and commercialize the ampakine compounds as a potential treatment for sleep apnea disorders, including an oral dosage form of ampakine CX1739.

In September 2010, Biovail's parent corporation, Biovail Corporation, combined with Valeant Pharmaceuticals International in a merger transaction and the combined company was renamed "Valeant Pharmaceuticals International, Inc." ("Valeant"). Following the merger, Valeant and Biovail conducted a strategic and financial review of their product pipeline and, as a result, in November 2010, Biovail announced its intent to exit from the respiratory depression project acquired from the Company in March 2010.

Following that announcement, the Company entered into discussions with Biovail regarding the future of the respiratory depression project. In March 2011, the Company entered into a new agreement with Biovail to reacquire the ampakine compounds, patents and rights that Biovail had acquired from the Company in March 2010. The new agreement provided for potential future payments of up to $15,150,000 by the Company based upon the achievement of certain developments, including new drug application submissions and approval milestones. Biovail is also eligible to receive additional payments of up to $15,000,000 from the Company based upon the Company's net sales of an intravenous dosage form of the compounds for respiratory depression.

At any time following the completion of Phase 1 clinical studies and prior to the end of Phase 2A clinical studies, Biovail retains an option to co-develop and co-market intravenous dosage forms of an ampakine compound as a treatment for respiratory depression and vaso-occlusive crises associated with sickle cell disease. In such an event, the Company would be reimbursed for certain development expenses to date and Biovail would share in all such future development costs with the Company. If Biovail makes the co-marketing election, the Company would owe no further

milestone payments to Biovail and the Company would be eligible to receive a royalty on net sales of the compound by Biovail or its affiliates and licensees.

University of Illinois 2014 Exclusive License Agreement

On June 27, 2014, the Company entered into an Exclusive License Agreement (the "2014 License Agreement") with the University of Illinois, the material terms of which were similar to a License Agreement between the parties that had been previously terminated on March 21, 2013. The 2014 License Agreement became effective on September 18, 2014, upon the completion of certain conditions set forth in the 2014 License Agreement, including: (i) the payment by the Company of a $25,000 licensing fee, (ii) the payment by the Company of outstanding patent costs aggregating $15,840, and (iii) the assignment to the University of Illinois of rights the Company held in certain patent applications, all of which conditions were fulfilled.

The 2014 License Agreement granted the Company (i) exclusive rights to several issued and pending patents in numerous jurisdictions and (ii) the non-exclusive right to certain technical information that is generated by the University of Illinois in connection with certain clinical trials as specified in the 2014 License Agreement, all of which relate to the use of cannabinoids for the treatment of sleep related breathing disorders. The Company is developing dronabinol (Δ9-tetrahydrocannabinol), a cannabinoid, for the treatment of OSA, the most common form of sleep apnea.

The 2014 License Agreement provides for various commercialization and reporting requirements commencing on June 30, 2015 and also requires the Company to pay the University of Illinois a license fee, royalties, patent costs and certain milestone payments. The 2014 License Agreement provides for various royalty payments by the Company, including a royalty on net sales of 4%, payment on sub-licensee revenues of 12.5%, and a minimum annual royalty of $100,000 beginning in 2015, which is due and payable on December 31 of each year. The 2016 minimum annual royalty of $100,000 was paid as scheduled in December 2016, and the 2017 minimum annual royalty of $100,000 was paid as scheduled in December 2017. In the year after the first application for market approval is submitted to the FDA and until approval is obtained, the minimum annual royalty will increase to $150,000. In the year after the first market approval is obtained from the FDA and until the first sale of a product, the minimum annual royalty payable by the Company will increase to $200,000. In the year after the first commercial sale of a product, the minimum annual royalty will increase to $250,000.

The 2014 License Agreement also provides for certain one-time milestone payments by the Company. A payment of $75,000 is due within five days after any one of the following: (a) dosing of the first patient with a product in a Phase 2 human clinical study anywhere in the world that is not sponsored by the University of Illinois, (b) dosing of the first patient in a Phase 2 human clinical study anywhere in the world with a low dose of dronabinol, or (c) dosing of the first patient in a Phase 1 human clinical study anywhere in the world with a proprietary reformulation of dronabinol. A payment of $350,000 is due within five days after dosing of the first patient with a product in a Phase 3 human clinical trial anywhere in the world. A payment of $500,000 is due within five days after the first new drug application filing with the FDA or a foreign equivalent for a product. A payment of $1,000,000 is due within 12 months after the first commercial sale of a product.

During the years ended December 31, 2017 and 2016, the Company recorded a charge to operations of $100,000 and $100,000, respectively, with respect to its 2017 and 2016 minimum annual royalty obligation, which is included in research and development expenses in the Company’s consolidated statement of operations for the years ended December 31, 2017 and 2016.

Research Contract with the University of Alberta

On January 12, 2016, the Company entered into a Research Contract with the University of Alberta in order to test the efficacy of ampakines at a variety of dosage and formulation levels in the potential treatment of Pompe Disease, apnea

of prematurity and spinal cord injury, as well as to conduct certain electrophysiological studies to explore the ampakine mechanism of action for central respiratory depression. The Company agreed to pay the University of Alberta total consideration of approximately CAD$146,000 (approximately US$111,000), consisting of approximately CAD$85,000 (approximately US$65,000) of personnel funding in cash in four installments during 2016, to provide approximately CAD$21,000 (approximately US$16,000) in equipment, to pay patent costs of CAD$20,000 (approximately US$15,000), and to underwrite additional budgeted costs of CAD$20,000 (approximately US$15,000). As of December 31, 2017, the Company had recorded amounts payable in respect to this Research Contract of US$16,207 (CAD$21,222) which amount was paid in US dollars in January 2018. The conversion to US dollars above utilizes an exchange rate of approximately US$0.76 for every CAD$1.00.

The University of Alberta received matching funds through a grant from the Canadian Institutes of Health Research in support of this research. The Company retained the rights to research results and any patentable intellectual property generated by the research. Dr. John Greer, faculty member of the Department of Physiology, Perinatal Research Centre and Women & Children’s Health Research Institute at the University of Alberta collaborated on this research. The studies were completed in 2016.

National Institute of Drug Abuse Agreement

On January 19, 2016, the Company announced that that it has reached an agreement with the Medications Development Program of the National Institute of Drug Abuse ("NIDA") to conduct research on the Company's ampakine compounds CX717 and CX1739. The agreement was entered into as of October 19, 2015, and on January 14, 2016, the Company and NIDA approved the proposed protocols, allowing research activities to commence.

NIDA will evaluate the compounds using pharmacologic, pharmacokinetic and toxicologic protocols to determine the potential effectiveness of the ampakines for the treatment of drug abuse and addiction. Initial studies will focus on cocaine and methamphetamine addiction and abuse, and will be contracted to outside testing facilities and/or government laboratories, with all costs to be paid by NIDA. The Company will provide NIDA with supplies of CX717 and CX1739 and will work with the NIDA staff to refine the protocols and dosing parameters. The Company will retain all intellectual property, as well as proprietary and commercialization rights to these compounds.

Duke University Clinical Trial Agreement

On January 27, 2015, the Company entered into a Clinical Study and Research Agreement (the "Agreement") with Duke University to develop and conduct a protocol for a program of clinical study and research at a total cost of $50,579, which was completed in March 2015 and charged to research and development expenses during the three months ended March 31, 2015. On October 30, 2015, the Agreement was amended to provide for a Phase 2A clinical trial of CX1739 at a cost of $558,268. During March 2016, a Phase 2A clinical trial at Duke University School of Medicine was initiated, with the dosing portion of the clinical trial completed in June 2016 and the clinical trial formally completed on July 11, 2016. On July 28, 2016, the Agreement was further amended to reflect additional post-clinical trial costs of $120,059, increasing the total amount payable under the Agreement to $678,327. During the the twelve months ended December 31, 2017 and 2016, the Company charged $36,420 and $602,642, respectively, to research and development expenses with respect to work conducted pursuant to the amended Agreement.

Sharp Clinical Services, Inc. Agreement

The Company has various agreements with Sharp Clinical Services, Inc. to provide packaging, labeling, distribution and analytical services.

Covance Laboratories Inc. Agreement

On October 26, 2016, the Company entered into a twelve month agreement with Covance Laboratories Inc. to provide compound testing and storage services with respect to CX1739, CX1866 and CX1929 at a total budgeted cost of $35,958. This agreement was renewed in October 2017.

Summary of Principal Cash Obligations and Commitments

The following table sets forth the Company's principal cash obligations and commitments for the next five fiscal years as of December 31, 2017, aggregating $1,340,350.

		Payments Due By Year				
	Total	2018	2019	2020	2021	2022
Research and development contracts	$-	$-	$-	$-	$-	$-
Clinical trial agreements	-	-	-	-	-	-
License agreements	500,000	100,000	100,000	100,000	100,000	100,000
Digital media consulting agreement	20,000	20,000				
Employment and consulting agreements (1)	820,350	820,350	-	-	-	-
Total	$1,340,350	$940,350	$100,000	$100,000	$100,000	$100,000

(1) The payment of such amounts has been deferred indefinitely, as described above at "Employment Agreements".

10. Subsequent Events

On April 5, 2018, the Board of Directors approved and the Company granted a non-qualified stock option from the 2015 Plan to a vendor, in satisfaction of $124,025 of amounts owed to that vendor ("Vendor Option"). The Vendor Option is exercisable into 125,000 shares of common stock at $1.12 per share, which was the closing price of the Company's common stock on April 5, 2018 as reported by OTC Markets, vested upon grant and is exercisable for five years. The Vendor Option had an estimated value on April 5, 2018, based upon the Black-Scholes option valuation method of $1.081 per share of common stock, or $135,125. The assumptions used for the valuation of the Vendor Options included a stock price and exercise price of $1.12, an annual volatility of 186.07%, a risk-free rate equal to the yield on the five-year Treasury Note of 2.64% and a zero expected dividend yield.

On April 5, 2018, the Board of Directors approved and the Company granted a non-qualified stock option from the 2015 Plan to Robert N. Weingarten (the "Weingarten Option"), the Company's most recent former Chief Financial Officer who is also a former member of the Company's Board of Directors, which grant was in connection with Mr. Weingarten's agreement to forgive $200,350 of accrued compensation and related costs owed to him. The Weingarten Option is exercisable into 185,388 shares of common stock at $1.12 per share, which was the closing price of the Company's common stock on April 5, 2018 as reported by OTC Markets, vested upon grant and is exercisable for five years. The Weingarten Option had an estimated value on April 5, 2018, based upon the Black-Scholes option valuation method of $1.081 per share of common stock, or $200,404. The assumptions used for the valuation of the Weingarten Option included a stock price and exercise price of $1.12, an annual volatility of 186.07%, a risk-free rate equal to the yield on the five-year Treasury Note of 2.64% and a zero expected dividend yield.

On April 5, 2018, the Company agreed to issue one or more demand promissory notes, in exchange for borrowings up to a maximum principal amount of $100,000 in the aggregate to Arnold S. Lippa and James S. Manuso, the Company's Executive Chairman and Chief Scientific Officer and the Company's Vice Chairman and Chief Executive Officer respectively ("New Officer Notes"). The New Officer Notes bear simple interest at 10% per year. Demand for payment shall be available only after June 30, 2018. Until then, the principal amount of the New Officer Notes will mandatorily exchange into the first financing by the Company that results in accounting for the financing as an equity financing (consisting solely of convertible preferred stock or common stock or units containing preferred stock or common stock and warrants exercisable only into preferred stock or common stock) that would be considered as "permanent equity" under United States Generally Accepted Accounting Principles and the rules and regulations of the United States Securities and Exchange Commission, and therefore classified within stockholders' equity, but excluding any form of debt or convertible debt or preferred stock redeemable at the discretion of the holder. The principal amount of the New Officer Notes exchanged shall be included in determining if the minimum amount, if any, with respect to such offering is met. Accrued and unpaid interest may be exchanged into such offering, but is not mandatorily exchangeable and shall not be considered in determining if the minimum amount has been met. If no such offering has a first closing prior to June 30, 2018, a demand for payment of the New Officer Notes may be made individually by the holders of such notes.

On February 28, 2018, the Company entered into an exchange agreement with a holder of two outstanding 10% Convertible Notes, both of which notes were subject to notices of default and thus were accruing compounded interest at 12% per year commencing on the dates of the notices of default. The total amount of principal and accrued interest that was due and payable was $43,552. The notes were exchanged for 58,071 shares of the Company's common stock. The effective exchange rate was $0.75 per share of the Company's common stock. The closing price of the Company's common stock on February 28, 2018, was $1.90 as reported by the OTC Markets. On February 28, 2018, the Board of Directors authorized the offering of a similar exchange arrangement at the same effective exchange rate of $0.75 per share of the Company's common stock to all remaining holders of 10% Convertible Notes. As of December 31, 2017, the aggregate amount of principal and accrued interest of the 10% Convertible Notes that have not been exchanged was $331,924. Such notes will continue to accrue interest until exchanged, if exchanged. If such notes are not exchanged, they will continue to accrue interest until either paid or disposed of in some other manner. There can be no assurance that any of the additional holders of the remaining 10% Convertible Notes will exchange their notes.

RespireRx Pharmaceuticals Inc.

Annual Report on Form 10-K

Year Ended December 31, 2017

Exhibit Index

Exhibit Number	Description
2.1	Agreement and Plan of Merger, dated as of August 10, 2012, by and among Cortex Pharmaceuticals, Inc., Pier Acquisition Corp. and Pier Pharmaceuticals, Inc., incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed on August 16, 2012 (File no. 001-16467).
3.1	Second Restated Certificate of Incorporation dated May 19, 2010, incorporated by reference to the same numbered Exhibit to the Company's Current Report on Form 8-K filed May 24, 2010 (File no. 001-16467).
3.2	Certificate of Amendment of the (Second Restated) Certificate of Incorporation of Cortex Pharmaceuticals, Inc., incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K filed on April 18, 2014 (File no. 001-16467).
3.3	Second Certificate of Amendment of the (Second Restated) Certificate of Incorporation of Cortex Pharmaceuticals, Inc., incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed December 17, 2015 (File no. 001-16467).
3.4	Third Certificate of Amendment of the Second Restated Certificate of Incorporation of RespireRx Pharmaceuticals Inc., incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed September 1, 2016 (File no. 001-16467).
3.5	By-Laws of the Company, as adopted March 4, 1987, and amended on October 8, 1996, incorporated by reference to Exhibit 3.2 to the Company's Annual Report on Form 10-KSB filed October 15, 1996 (File no. 001-17951).
3.6	Certificate of Amendment of By-Laws of the Company, incorporated by reference to Exhibit 3.5 to the Company's Report on Form 8-K filed November 15, 2007. (File no. 001-16467)
3.7	Certificate of Designation, Preferences, Rights and Limitations of Series G 1.5% Convertible Preferred Stock, incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed on March 24, 2014 (File no. 001-16467).
4.1	Placement Agency Agreement, dated August 24, 2007, by and between Cortex Pharmaceuticals, Inc. and JMP Securities LLC and Rodman and Renshaw, LLC, Form of Subscription Agreement and Form of Common Stock Purchase Warrant issued by Cortex Pharmaceuticals, Inc., incorporated by reference to

	Exhibits 1.1, 1.2 and 4.1, respectively, to the Company's Report on Form 8-K filed August 27, 2007 (File no. 001-16467).
4.2	Placement Agency Agreement, dated April 13, 2009, by and between the Company and Rodman & Renshaw, LLC, Form of Securities Purchase Agreement and Form of Common Stock Purchase Warrant issued by the Company, incorporated by reference to Exhibits 1.1, 1.2 and 4.1, respectively, to the Company's Current Report on Form 8-K filed April 17, 2009 (File no. 001-16467).

10.1	Cortex Pharmaceuticals, Inc. 2006 Stock Incentive Plan, incorporated by reference to Exhibit 10.94 to the Company's Report on Form 8-K filed May 11, 2006 (File no. 001-16467).†
10.2	Form of Notice of Grant of Stock Options and Option Agreement under the Company's 2006 Stock Incentive Plan, incorporated by reference to Exhibit 10.96 to the Company's Quarterly Report on Form 10-Q filed August 8, 2006 (File no. 001-16467).†
10.3	Form of Incentive/Non-qualified Stock Option Agreement under the Company's 2006 Stock Incentive Plan, incorporated by reference to Exhibit 10.97 to the Company's Quarterly Report on Form 10-Q filed August 8, 2006 (File no. 001-16467).†
10.4	Amendment No. 1 to the Company's 2006 Stock Incentive Plan, dated May 9, 2007, incorporated by reference to Exhibit 10.101 to the Company's Current Report on Form 8-K filed May 15, 2007 (File no. 001-16467).†
10.5	Amendment No. 2 to the Company's 2006 Stock Incentive Plan, effective as of June 5, 2009, incorporated by reference Exhibit 10.115 to the Company's Quarterly Report on Form 10-Q filed August 14, 2009 (File no. 001-16467).†
10.6	Amendment No. 3 to the Company's 2006 Stock Incentive Plan, effective May 19, 2010, incorporated by reference to Exhibit 10.118 to the Company's Current Report on Form 8-K filed May 24, 2010 (File no. 001-16467).†
10.7	Patent License Agreement between the Company and the University of Alberta, dated as of May 9, 2007, incorporated by reference to Exhibit 10.105 to the Company's Annual Report on Form 10-K filed March 17, 2008 (File no. 001-16467). (Portions of this Exhibit are omitted and were filed separately with the Secretary of the Commission pursuant to the Company's application requesting confidential treatment under Rule 24b-2 under the Securities Exchange Act of 1934).
10.8	Securities Purchase Agreement, dated July 29, 2009, by and between the Company and the Investors, including a form of Registration Rights Agreement attached as Exhibit B thereto and a form of Common Stock Purchase Warrant attached as Exhibit C thereto, incorporated by reference to Exhibit 10.114 to the Company's Current Report on Form 8-K filed July 30, 2009 (File no. 001-16467).
10.9	Asset Purchase Agreement, dated March 15, 2011, by and between the Company and Biovail Laboratories International SRL, incorporated by reference to Exhibit 10.122 to the Company's Quarterly Report on Form 10-Q filed May 23, 2011 (File no. 001-16467). (Portions of this exhibit are omitted and were filed separately with the Secretary of the Commission pursuant to the Company's application requesting confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934).
10.10	Patent Assignment and Option and Amended and Restated Agreement, dated June 10, 2011, between the Company and Les Laboratoires Servier, incorporated by reference to Exhibit 10.125 to the Company's Quarterly Report on Form 10-Q filed August 18, 2011 (File no. 001-16467). (Portions of this exhibit are omitted and were filed separately with the Secretary of the Commission pursuant to the Company's application requesting confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934.

10.11	Securities Purchase Agreement, dated January 15, 2010, by and between the Company and Samyang Optics Co., Ltd., including a form of Convertible Promissory Note attached as Exhibit A thereto and a form of Common Stock Purchase Warrant attached as Exhibit B thereto, incorporated by reference to Exhibit 10.116 to the Company's Current Report on Form 8-K filed January 21, 2010 (File no. 001-16467).
10.12	Securities Purchase Agreement, dated October 20, 2011, by and between the Company and Samyang Value Partners Co., Ltd., including the Common Stock Purchase Warrant attached as Exhibit A thereto, incorporated by reference to Exhibit 10.127 to the Company's Annual Report on Form 10-K filed March 30, 2012 (File no. 001-16467).
10.13	Securities Purchase Agreement, dated June 25, 2012, by and between the Company and Samyang Optics Co., Ltd., including a form of Secured Promissory Note attached as Exhibit A thereto, a form of Common Stock Purchase Warrant attached as Exhibit B thereto, and a form of Patent Security Agreement attached as Exhibit C thereto, incorporated by reference to Exhibit 10.129 to the Company's Quarterly Report on Form 10-Q filed on August 16, 2012 (File no. 001-16467).
10.14	Form of Securities Purchase Agreement, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on March 24, 2014 (File no. 001-16467).
10.15†	Cortex Pharmaceuticals, Inc. 2014 Equity, Equity-Linked and Equity Derivative Incentive Plan, established March 14, 2014, incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on March 24, 2014 (File no. 001-16467).
10.16	Exclusive License Agreement, dated as of June 27, 2014, by and between the Board of Trustees of the University of Illinois, a body corporate and politic of the State of Illinois, and Cortex Pharmaceuticals, Inc., incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on July 1, 2014 (File no. 001-16467).
10.17	Standard Agreement for Submitting Compounds for Preclinical Pharmacological, Pharmacokinetic and Toxicological Evaluation, dated October 19, 2015, by and between the National Institute on Drug Abuse (hereinafter referred to as "NIDA"), a component of the National Institutes of Health (NIH); and Cortex Pharmaceuticals, incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on January 19, 2016 (File no. 001-16467).
10.18†	Form of Non-Statutory Stock Option Award Agreement, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on July 23, 2014 (File no. 001-16467).
10.19†	Form of Incentive Stock Option Award Agreement, incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on July 23, 2014 (File no. 001-16467).
10.20†	Form of Restricted Stock Award Agreement, incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on July 23, 2014 (File no. 001-16467).
10.21	Release Agreement, dated September 2, 2014, between the Company and the Institute for the Study of Aging Inc., incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on September 5, 2014 (File no. 001-16467).

10.22	Form of Convertible Note and Warrant Agreement, including a form of 10% Convertible Note due September 15, 2012 attached as Exhibit A thereto and a form of Warrant to Purchase Common Stock attached as Exhibit B thereto, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on November 12, 2014 (File no. 001-16467).
10.23	Demand Promissory Note, dated June 16, 2015, held by Arnold S. Lippa on behalf of the Company, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on June 19, 2015 (File no. 001-16467).
10.24	Form of Demand Promissory Note, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 3, 2016 (File no. 001-16467).
10.25	Form of Warrant to Purchase Common Stock, incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on February 3, 2016 (File no. 001-16467).

10.26	2015 Stock and Stock Option Plan, dated June 30, 2015, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on July 8, 2015 (File no. 001-16467).*
10.27	Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on April 6, 2016 (File no. 001-16467).
10.28	First Amendment of Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on January 23, 2017 (File no. 001-16467).
10.29	Form of Non-Statutory Stock Option Award Agreement, incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on July 8, 2015 (File no. 001-16467).
10.30	Employment Agreement, dated August 18, 2015, between the Company and James S. J. Manuso, incorporated by reference to Exhibit 10.2 to Form 8-K filed on August 19, 2015 (File no. 001-16467).*
10.31	Employment Agreement, dated August 18, 2015, between the Company and Arnold S. Lippa, incorporated by reference to Exhibit 10.3 to Form 8-K filed on August 19, 2015 (File no. 001-16467).*
10.32	Employment Agreement, dated August 18, 2015, between the Company and Robert N. Weingarten, incorporated by reference to Exhibit 10.4 to Form 8-K filed on August 19, 2015 (File no. 001-16467).*
10.33	Employment Agreement, dated August 18, 2015, between the Company and Jeff E. Margolis, incorporated by reference to Exhibit 10.5 to Form 8-K filed on August 19, 2015 (File no. 001-16467).*
10.34	Form of Second Amended and Restated Common Stock and Warrant Purchase Agreement, including a Form of Warrant to Purchase Common Stock attached as Exhibit A thereto, incorporated by reference to Exhibit 10.1 to Form 8-K filed on August 31, 2015 (File no. 001-16467).
10.35	Form of Common Stock and Warrant Purchase Agreement, including a form of Warrant to Purchase Common Stock attached as Exhibit A thereto, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on January 11, 2016 (File no. 001-16467).
10.36	Form of Common Stock and Warrant Purchase Agreement, including a form of Warrant to Purchase Common Stock attached as Exhibit A thereto, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on January 5, 2017 (File no. 001-16467).
10.37	Form of Common Stock and Warrant Purchase Agreement, including a form of Warrant to Purchase Common Stock attached as Exhibit A thereto, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on March 16, 2017 (File no. 001-16467).
10.38	Form of Exchange Agreement, including a Form of New Warrant attached as Exhibit A thereto, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on April 11, 2016 (File no. 001-16467).
10.39	

	Form of Exchange Agreement incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on April 11, 2016 (File no. 001-16467).
10.40	Form of Purchase Agreement (including a form of Warrant) incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed on January 5, 2017 (File no. 001-16467)
10.41	Form of Purchase Agreement (including a form of Warrant) incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed on April 3, 2017 (File no. 001-16467)
10.42	Amendment No. One of the Employment Agreement of Jeff E. Margolis, effective July 1, 2017, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 10-Q filed on November 20, 2017 (File no. 001-16467)
10.43	Form of Purchase Agreement (including a form of Warrant) incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed on August 30, 2017 (File no. 001-16467)
10.44	Form of Purchase Agreement (including a form of Warrant) incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed on October 3, 2017 (File no. 001-16467)
10.45	Second Amendment of the Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan incorporated by reference to Exhibit 10.3 of the Company's Current Report on Form 8-K filed on December 14, 2017 (File no. 001-16467)
21**	Subsidiaries of the Registrant.
23.1**	Consent of Haskell & White LLP, Independent Registered Public Accounting Firm.
24**	Power of Attorney (included as part of the signature page of this Annual Report on Form 10-K).
31.1**	Certification of Chief Executive Officer Pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934.
31.2**	Certification of Chief Financial Officer Pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934.
32**	Certification of Chief Executive Officer and Chief Financial Officer Pursuant to Rule 13a-14(b)/15d-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350.
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.

† Each of these Exhibits constitutes a management contract, compensatory plan or arrangement.
** Filed herewith.

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.

RESPIRERX PHARMACEUTICALS INC.

Date: April 17, 2017 By:*/s/ James S. Manuso, Ph.D.*
James S. Manuso, Ph.D.
President and Chief Executive Officer

We, the undersigned directors and officers of RespireRx Pharmaceuticals Inc., do hereby constitute and appoint each of James S.J. Manuso, Ph.D., Arnold S. Lippa, Ph.D., and Jeff E. Margolis as our true and lawful attorneys-in-fact and agents with power of substitution, to do any and all acts and things in our name and behalf in our capacities as directors and officers and to execute any and all instruments for us and in our names in the capacities indicated below, which said attorneys-in-fact and agents, or either of them, may deem necessary or advisable to enable said corporation to comply with the Securities and Exchange Act of 1934, as amended, and any rules, regulations and requirements of the Securities and Exchange Commission, in connection with this Annual Report on Form 10-K, including specifically but without limitation, power and authority to sign for us or any of us in our names in the capacities indicated below, any and all amendments hereto; and we do hereby ratify and confirm all that said attorney-in-fact and agent, shall do or cause to be done by virtue hereof.

In accordance with the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	**Title**	**Date**
/s/ James S. Manuso, Ph.D. James S. Manuso, Ph.D.	President, Chief Executive Officer, Director and Vice Chairman of the Board	April 17, 2018
/s/ Arnold S. Lippa, Ph.D. Arnold S. Lippa, Ph.D.	Chief Scientific Officer, Director and Executive Chairman of the Board	April 17, 2018
/s/ Jeff E. Margolis Jeff E. Margolis	Senior Vice President, Chief Financial Officer, Treasurer, Secretary, and Director	April 17, 2018
/s/ James E. Sapirstein James E. Sapirstein	Director	April 17, 2018

/s/ Kathryn MacFarlane Kathryn MacFarlane	Director	April 17, 2018

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