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

FORM 10-K

☒ **Annual Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**

For the fiscal year ended December 31, 2022

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:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
N/A	N/A	N/A

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 ☒

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 ☒

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 ☒ NO ☐

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

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

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

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements or the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

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

The aggregate market value of the voting stock held by non-affiliates as of June 30, 2022 was approximately $360,000 (based on the closing sale price of the common stock as reported by the OTC QB) on June 30, 2022.

As of April 14, 2023, there were 144,326,672 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. 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., referred to herein as our "2022 Annual Report" ("RespireRx" and together with RespireRx's wholly owned subsidiary, Pier Pharmaceuticals, Inc. ("Pier"), the "Company," "we," or "our," unless the context indicates otherwise) contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Company intends that such forward-looking statements be subject to the safe harbor created thereby. 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.

In some cases, forward-looking statements may be identified by words including "assumes," "could," "ongoing," "potential," "predicts," "projects," "should," "will," "would," "anticipates," "believes," "intends," "estimates," "expects," "plans," "contemplates," "targets," "continues," "budgets," "may," or the negative of these terms or other comparable terminology, although not all forward-looking statements contain these words, and such statements may include, but are not limited to, statements regarding (i) future research plans, expenditures and results, (ii) potential collaborative arrangements, (iii) the potential utility of the Company's products candidates, (iv) reorganization plans, and (v) the need for, and availability of, additional financing. Forward-looking statements are based on information available at the time the statements are made and involve known and unknown risks, uncertainties and other factors that may cause our results, levels of activity, performance or achievements to be materially different from the information expressed or implied by the forward-looking statements in this Offering Circular.

These factors include but are not limited to, regulatory policies or changes thereto, available cash, research and development results, issuance of patents, competition from other similar businesses, interest of third parties in collaborations with us, and market and general economic factors, and other risk factors disclosed herein.

You should read these risk factors and the other cautionary statements made in the Company's filings as being applicable to all related forward-looking statements wherever they appear in this Annual Report on Form 10-K. We cannot assure you that the forward-looking statements in this 2022 Annual Report will prove to be accurate and therefore prospective investors are encouraged not to place undue reliance on forward-looking statements. You should read this 2022 Annual Report completely. Other than as required by law, we undertake no obligation to update or revise these forward-looking statements, even though our situation may change in the future.

We caution investors not to place undue reliance on any forward-looking statement that speaks only as of the date made and to recognize that forward-looking statements are predictions of future results, which may not occur as anticipated. Actual results could differ materially from those anticipated in the forward-looking statements and from historical results, due to the risks and uncertainties described in this 2022 Annual Report, as well as others that we may consider immaterial or do not anticipate at this time. 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, regulatory and competitive conditions, collaborations with third parties, 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 we believe that the expectations reflected in our forward-looking statements are reasonable, we do not know whether our expectations will prove correct. Our expectations reflected in our forward-looking statements can be affected by inaccurate assumptions that we might make or by known or unknown risks and uncertainties, including those described in the 2021 Annual Report. These risks and uncertainties are not exclusive and further information concerning us and our business, including factors that potentially could materially affect our financial results or condition, may emerge from time to time.

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

Overview

The Company was incorporated in Delaware in 1987 as Cortex Pharmaceuticals, Inc. and changed its name to RespireRx Pharmaceuticals Inc. in 2015.

The mission of the Company is to develop innovative and revolutionary treatments to combat disorders caused by disruption of neuronal signaling. We are developing treatment options that address conditions affecting millions of people, but for which there are limited or poor treatment options, including obstructive sleep apnea ("OSA"), attention deficit hyperactivity disorder ("ADHD"), epilepsy, acute and chronic pain, including inflammatory and neuropathic pain, and recovery from spinal cord injury ("SCI"), which are conditions that affect millions of people, as well as certain orphan disorders such as GRIA. We are also considering developing treatment options for other conditions based on results of preclinical and clinical studies to date.

Our major challenge has been to raise substantial equity or equity-linked financing to support research and development plans for our cannabinoid and neuromodulator platforms, while minimizing the dilutive effect to pre-existing stockholders. At present, we believe that we are hindered primarily by our public corporate structure, our OTC Pink Markets listing, and low market capitalization as a result of our low stock price as well as the weakness of our balance sheet.

For this reason, the Company has effected an internal restructuring plan through which our two drug platforms have been reorganized into separate business units that may in the future, be organized into subsidiaries of RespireRx. We believe that by creating one or more subsidiaries, one of which was formed on January 11, 2023, to further the aims of ResolutionRx and EndeavourRx, it may be possible, through separate finance channels, to unlock the unrealized asset values of each and set up its programs for partnering or sale.

This restructuring plan is based upon our two research platforms: pharmaceutical cannabinoids and neuromodulators. The business unit focused on pharmaceutical cannabinoids is referred to as ResolutionRx and the business unit focused on neuromodulators is referred to as EndeavourRx. It is anticipated that the Company will use, at least initially, its management personnel to provide management, operational and oversight services to these two business units.

(i) ResolutionRx Ltd, a wholly-owned subsidiary of the Company as of January 11, 2023, will hold our pharmaceutical cannabinoids platform, and is developing compounds that target the body's endocannabinoid system, and in particular, the re-purposing of dronabinol, an endocannabinoid CB1 and CB2 receptor agonist, for the treatment of OSA. Dronabinol is already approved by the FDA for other indications.

(ii) EndeavourRx, our neuromodulators platform is made up of two programs: (a) our AMPAkines program, which is developing proprietary compounds that act as positive allosteric modulators ("PAMs") of AMPA-type glutamate receptors to promote neuronal function and (b) our GABAkines program, which is developing proprietary compounds that act as PAMs of $GABA_A$ receptors, and which was established pursuant to our entry into a patent license agreement (the "UWMRF Patent License Agreement") with the University of Wisconsin-Milwaukee Research Foundation, Inc., an affiliate of the University of Wisconsin-Milwaukee ("UWMRF").

Management has begun to organize our ResolutionRx and EndeavourRx business units into two independent subsidiaries: (i) a ResolutionRx subsidiary which has been formed, and into which we intend to contribute our pharmaceutical cannabinoid platform and its related tangible and intangible assets and certain of its liabilities and (ii) an EndeavourRx subsidiary, into which we would contribute our part or all of our neuromodulator platform, including either or both the AMPAkine and GABAkine programs and their related tangible and intangible assets and certain of their liabilities.

Management believes that there are advantages to separating these platforms formally into newly formed subsidiaries, including but not limited to optimizing their asset values through separate financing channels and making them more attractive for capital raising as well as for strategic transactions.

The Company is also engaged in business development efforts (licensing/sub-licensing, joint venture and other commercial structures) with a view to securing strategic partnerships that represent strategic and operational infrastructure additions, as well as cash and in-kind funding opportunities. These efforts have focused on, but have not been limited to, transacting with brand and generic pharmaceutical and biopharmaceutical companies as well as companies with potentially useful contract research, formulation or manufacturing capabilities, significant subject matter expertise and financial resources. No assurance can be given that any transaction will come to fruition and that if it does, that the terms will be favorable to the Company.

On January 11, 2023, the Company established ResolutionRx Ltd ("ResolutionRx") (Australian Company Number or ACN: 664 925 651), a new, currently wholly-owned, unlisted public company in Australia, as the first in a series of steps that include, but are not limited to financings, research and clinical development, manufacturing, regulatory and compliance, all for the purpose of developing compounds that target the body's endocannabinoid system, and in particular, the re-purposing of dronabinol, an endocannabinoid CB1 and CB2 receptor agonist, for the treatment of OSA. The Company will contribute via sub-license and license or other similar transaction structure, certain dronabinol assets and liabilities to ResolutionRx.

One of the main purposes for the creation of ResolutionRx was to allow it to participate in the Research and Development Tax Incentive ("R&DTI") funding from the Australian government. According to the Australia government website https://business.gov.au/grants-and-programs/research-and-development-tax-incentive, "The Research and Development Tax Incentive (R&D Tax Incentive or R&DTI) helps companies innovate and grow by offsetting some of the costs of eligible research and development (R&D)." The R&DTI is the sum of the R&D company's corporate tax rate and an incentive rate, subject to certain limitations. In the case of ResolutionRx, the R&DTI is expected to be comprised of a corporate tax rate of 25% plus the incentive rate of 18.5% for a total of 43.5% and would represent an annual refund after the filing of ResolutionRx's annual tax return as of 30th June of each year. Subject to an application and a successful overseas finding from the Australian government, certain overseas R&D expenditures are qualified for the R&DTI.

On January 27, 2023, ResolutionRx and Radium Capital ("Radium") entered into a Letter of Intent ("LOI") and Term Sheet ("Term Sheet") to enter into a series of loan agreements, which in the United States may be considered to be analogous to a line of credit designed to finance research and development efforts prior to receipt of R&DTI, in order to unlock research and development tax credits available in Australia to companies like ResolutionRx. We believe that the LOI and Term Sheet create a means of realizing the R&DTI funds well in advance of the annual cash receipt from the Australian government and, as such, create a very valuable non-dilutive means of supporting our R&D efforts towards the commercialization of dronabinol for the treatment of OSA.

Under the LOI and Term Sheet, Radium has agreed to make advances to ResolutionRx pursuant to a predefined set of definitive documents, during the course of the R&D process (each advance is a separate secured loan, but the terms of the loans remain the same for each advance), allowing ResolutionRx to access capital throughout the R&D timeline rather than waiting until the annual tax return is filed in Australia on a 30th June fiscal/tax year end in Australia. Radium will advance up to 80% of the anticipated refund upon request of ResolutionRx (less than 80% is at the discretion of ResolutionRx), subject to appropriate documentation including, but not limited to: (i) Radium's completion of satisfactory due diligence and investment committee approval, (ii) confirmation that the client company is entitled to receive the refundable R&D tax offset, (iii) a review by client company's R&D advisor (accountant) chosen from a list of acceptable advisors provided by Radium and receipt by Radium of a "comfort" letter from the review, (iv) receipt of details of the R&D expenditure and refundable R&D Tax Offset (including incurred eligible R&D expenditures, estimated R&D Tax Offset and estimated Overseas Expenditure), and (v) receipt by Radium of a letter from the client company's tax advisor (accountant) confirming all company tax obligations are up to date. The annual interest rate on the loans as of February 23, 2023 for new clients is 16%. The loans will be secured by a first ranking charge (in the United States, it would be thought of as a first lien) over the R&D tax refund and a Featherweight Security Agreement, which is a form of security agreement, which in this case, would give Radium, in a situation of Administration under the Australian Corporation Act 2021 or other laws, rules and regulations, the right to control the tax and tax refund process. The loans are repaid by assigning the refund to directly to Radium.

On February 27, 2023, ResolutionRx entered into a services agreement ("Services Agreement") for preclinical and clinical research and other related services with iNGENu CRO Pty Ltd ("iNGENu"), a contract research organization ("CRO") with headquarters in Melbourne, Australia. iNGENu is a bespoke contract research organization focused on cannabinoid and psychedelic clinical research. Under the Services Agreement, iNGENu will act as a full-service CRO in support of ResolutionRx's research and development ("R&D") program, which is developing a proprietary formulation of dronabinol for the treatment of obstructive sleep apnea and anorexia. iNGENu will be responsible for conducting laboratory experiments to determine a final optimum dronabinol formulation, scaling up and manufacturing the chosen formulation for clinical use, preparing and submitting regulatory documents and designing and conducting clinical trials, including pharmacokinetic/pharmacodynamic, safety and pivotal efficacy studies.

Under the Services Agreement, ResolutionRx will be required to make a US$50,000 deposit with iNGENu within 30 days of the rendering of the first invoice by iNGENu. The deposit is to be applied to the final research and development budget of approximately US$16.5 million, which has now been agreed and which deposit shall be credited against the first invoice. The funding of this deposit and the commencement of the preclinical and clinical services is contingent upon successful capital raising efforts which are currently underway. The successful completion of these efforts to raise sufficient capital to fund this deposit and our other immediate obligations cannot be assured.

These agreements with Radium and iNGENu are the first steps in a series of transactions some of which have been completed, some of which are in process and others which are anticipated to be completed in the near future, of which no assurance can be provided:

Completed

- Formation of ResolutionRx as an Australian subsidiary of RespireRx, and all that was required in the formation process, including, among other things, the establishment of a board of directors, the appointment of officers and the engagement of accountants, as well as the opening of both Australian dollar and US dollar bank accounts.
- Entry into the Services Agreement with iNGENu.
- Entry into a letter of intent and term sheet with Radium Capital ("Radium") for a series of debt financings of the R&DTI.
- Engagement of Australian counsel.

In Process

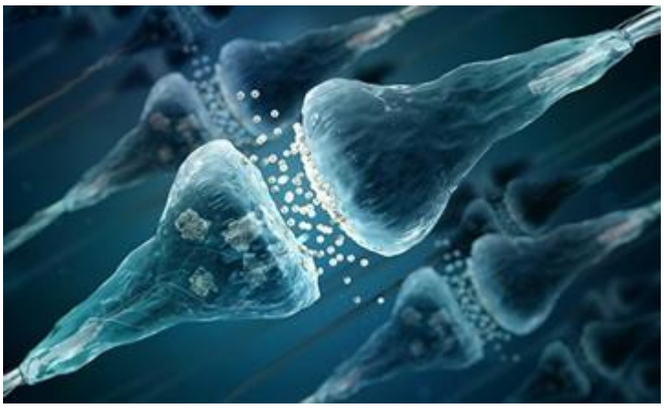
- Sub-licensing and licensing or otherwise making available certain dronabinol assets by RespireRx to ResolutionRx.
- ResolutionRx's payment of the iNGENu deposit.
- Obtaining an independent valuation report of the assets contributed to ResolutionRx.
- Complete term sheet negotiations with a US based private equity firm for the financing of 25% of agreed research and development expenses incurred with iNGENu.
- Due diligence with one or more Australian fund-raising agents or advisors to raise additional unlisted finance in Australia, the completion of which cannot be assured, to support the balance of the anticipated R&D expenditures as well as non-R&D expenses, overhead and working capital (see above).

Anticipated

- ResolutionRx's commencement of research and development activities in Australia, with iNGENu as the CRO, including, but not limited to initial manufacturing and bench testing of at least one new formulation of dronabinol, scale up of manufacturing for clinical grade materials for the new formulation for the anticipated initial pharmacokinetic/pharmacodynamic study and regulatory matters.
- Hiring of a limited number of ResolutionRx employees and/or consultants in Australia.
- ResolutionRx's engagement of independent auditors.
- ResolutionRx's formal engagement of placement agent for a contemplated offering in Australia, the completion of which cannot be assured (see above).
- ResolutionRx's formal application for registration for the R&DTI.
- R&DTI financings with Radium.
- Filing in Australia for Overseas Finding(s) to enable access to the R&DTI for qualified research and development activities taking place outside of Australia.
- Early preparation for a ResolutionRx initial public offering in Australia, and possibly other international markets at an appropriate future date.

Neurotransmission

RespireRx is developing drugs to modify neurotransmission and create advanced treatments for disorders with high unmet needs. Neurotransmission is the basic process in the brain by which specialized nerve cells called neurons communicate information with each other.



As illustrated in this figure, during neurotransmission, neurons release chemicals called neurotransmitters which attach to receptors, very specific protein structures residing on adjacent neurons. This enables neurons to communicate with one another by either increasing or decreasing the excitability of the neuron receiving the communication. For example, glutamate is the primary excitatory neurotransmitter in the brain, while gamma-amino-butyric acid ("GABA") is the primary inhibitory neurotransmitter. Neurons also contain receptors for anandamide (AEA) and 2-arachidonoylglycerol (2-AG), the brain's own natural cannabinoid (endocannabinoid) neurotransmitters.

ResolutionRx Ltd – Pharmaceutical Cannabinoids

Background

The term cannabinoid refers to pharmacologically active substances originally found within the cannabis plant that led to the discovery of the body's own cannabinoids, termed endocannabinoids. Endocannabinoids are endogenous neurotransmitters located throughout the brain and peripheral nervous system that are used by certain nerve cells to convey information from cell to cell. The two major endocannabinoids that have been identified are anandamide (AEA) and 2-arachidonoylglycerol (2-AG), which are secreted and act upon CB1 and CB2 endocannabinoid receptors, thereby influencing a variety of physiological functions, including respiration, appetite, convulsions and potentially others.

Due to the liberalization of state laws regulating the use and sales of cannabis over the last 5 years, a major industry has grown around its commercialization. However, while cannabis use has been legalized in certain states, it still is not legal under federal statutes and regulations. The medical use in the US of any pharmacological agent must be approved by the US Food and Drug Administration ("FDA") and, to date, the FDA has not recognized or approved the cannabis plant as medicine nor is it federally legal to sell products that contain cannabinoids as drugs or dietary supplements without its approval.

Worldwide clinical research efforts have established the cannabinoid class of compounds as *bona fide* pharmaceutical products, or "pharmaceutical cannabinoids," which are being developed and commercialized according to FDA regulatory and industry guidelines. Scientific research and commercial development to date has focused primarily on two major cannabinoids, dronabinol and cannabidiol ("CBD"). This research and development effort began in 1985 when dronabinol, a directly acting agonist on CB1 and CB2 receptors, was approved by the FDA as Marinol® for the treatment of AIDS-related anorexia and later for the treatment of chemotherapy-induced nausea and vomiting. Marinol®, as well as generic dronabinol, is available in 2.5 mg, 5 mg, and 10 mg capsules, with a maximum labelled dosage of 20 mg/day for the AIDS indication, or 15 mg/m^2 per dose for chemotherapy-induced nausea and vomiting.

This regulatory breakthrough subsequently led to the 2018 FDA approval of Epidiolex®, a proprietary oral solution of CBD sold by GW Pharmaceuticals plc ("GW Pharma") for the treatment of certain rare, treatment-resistant forms of epilepsy. Nabiximol®, an oromucosal spray containing Δ-9-THC and CBD, was approved under the tradename Sativex® by applicable regulatory authorities in 29 countries outside the United States and is marketed and distributed by GW Pharmaceuticals plc ("GW") (On May 5, 2021, GW and Jazz Pharmaceuticals plc ("Jazz") announced the completion of Jazz's acquisition of GW).

The commercialization of these pharmaceutical cannabinoids has opened the door to an expanding market sector. As part of our effort to capitalize upon this opportunity, the Company has implemented an internal restructuring plan by forming ResolutionRx as an Australian subsidiary focused on the pharmaceutical cannabinoid market. ResolutionRx's initial primary focus has been and will continue to be the re-purposing of dronabinol using new proprietary formulations and therapeutic indications. Because dronabinol already is an approved drug, ResolutionRx intends to use publicly available information, particularly safety data, in support of a 505(b)(2) New Drug Application ("NDA"), generally a more rapid route to FDA approval than a standard 505(b)(1) NDA.

Obstructive Sleep Apnea (OSA)

OSA involves a decrease or complete halt in airflow despite an ongoing effort to breathe during sleep. When the muscles relax during sleep, soft tissue in the back of the throat collapses and obstructs the upper airway. ResolutionRx is developing dronabinol for the treatment of OSA, a serious sleep-related breathing disorder that impacts more than 95 million people in the United States, Australia, Germany and the United Kingdom. It has been linked to increased risk for hypertension, heart failure, depression, and diabetes, with an annual economic cost in the United States alone of $162 billion according to the AASM (American Academy of Sleep Medicine). There are no approved drug treatments for OSA and all current treatment options have serious drawbacks. We believe that a new drug therapy that is effective in reducing the medical and economic burden of OSA would have major benefits for the treatment of this costly disease indication.

OSA remains significantly under-recognized, as only 20% of cases in the United States according to the AASM and 20% of cases globally have been properly diagnosed. About 24 percent of adult men and 9 percent of adult women are believed to have the breathing symptoms of OSA with or without daytime sleepiness. OSA significantly impacts the lives of sufferers who do not get enough sleep; their quality of sleep is deteriorated such that daily function is compromised and limited. OSA is associated with decreased quality of life, significant functional impairment, and increased risk of road traffic accidents, especially in professions like road and rail transportation and shipping.

Continuous Positive Airway Pressure (“CPAP”) is the most common treatment for OSA. CPAP devices work by blowing pressurized air into the nose (or mouth and nose), which keeps the pharyngeal airway open. Patients must use the device whenever they sleep. Reduction of the apnea-hypopnea index (“AHI”) is the standard objective measure of therapeutic response in OSA. Apnea is the cessation of breathing for 10 seconds or more and hypopnea is a reduction in breathing. AHI is the sum of apnea and hypopnea events per hour. In the sleep laboratory, CPAP is highly effective at reducing AHI. However, the device is cumbersome and difficult for many patients to tolerate. Most studies describe that 25-50% of patients refuse to initiate or completely discontinue CPAP use within the first several months and that most patients who continue to use the device do so only intermittently.

Oral devices may be an option for patients who cannot tolerate CPAP. Several dental devices are available. The cost of these devices tends to be high and side effects associated with them include night-time pain, dry lips, tooth discomfort, and excessive salivation.

Patients with clinically significant OSA who cannot be treated adequately with CPAP or oral devices may elect to undergo surgery, the most common form of which involves the removal of excess tissue in the throat to make the airway wider. Patients who undergo surgery for the treatment of OSA risk complications. Surgery is often unsuccessful, and at present, no method exists to reliably predict therapeutic outcome from surgery.

In 2014, another surgical option first became available based on upper airway stimulation. This was later followed by a second-generation medical device cleared by the FDA in 2017. It is a combination of an implantable nerve stimulator and an external remote controlled by the patient. The implanted device stimulates the hypoglossal nerve, which controls the tongue. The device is turned on at night and off in the morning by the patient with the remote.

The Company’s Research Efforts Regarding the Treatment of OSA with Cannabinoids

Prior to the formation of ResolutionRx, the Company conducted a 21-day, randomized, double-blind, placebo-controlled, dose escalation Phase 2A clinical study in 22 patients with OSA, in which FDA approved and commercially available dronabinol produced a statistically significant reduction in AHI, the primary therapeutic end-point, and was observed to be safe and well tolerated, with the frequency of side effects no different from placebo. This clinical trial provided data supporting the submission of patent applications claiming unique dosage strengths, blood levels and controlled release formulations optimized for use in the treatment of OSA.

With approximately $5 million in funding from the National Heart, Lung and Blood Institute of the National Institutes of Health ("NIH"), Dr. David Carley of the University of Illinois at Chicago ("UIC"), along with his colleagues at UIC and Northwestern University, completed a Phase 2B multi-center, double-blind, placebo-controlled clinical trial of FDA approved and commercially available dronabinol in patients with OSA. This study, named "Pharmacotherapy of Apnea with Cannabimimetic Enhancement" ("PACE") replicated our earlier Phase 2A study. The authors published in the January 2018 issue of the journal SLEEP and reported that, in a dose-dependent fashion, treatment with 2.5 mg and 10 mg of dronabinol once per day at night significantly reduced, compared to placebo, AHI during sleep in 56 evaluable patients with moderate to severe OSA who completed the study. Additionally, treatment with 10 mg of dronabinol significantly improved daytime sleepiness as measured by the Epworth Sleepiness Scale and achieved the greatest overall patient satisfaction. As in our previous Phase 2A study, dronabinol was observed to be safe and well tolerated, with the frequency of side effects no different from placebo. The Company did not manage this clinical trial, which was funded entirely by the National Heart, Lung and Blood Institute of NIH.

The Opportunity to Improve Dronabinol Formulations

A major factor limiting the use of dronabinol for other indications stems from its current formulation as a soft gelatin capsule that suffers from several major deficiencies:

First, dronabinol is not water soluble and exhibits poor and erratic absorption. The market-dominant commercial gel cap formulation of dronabinol is currently formulated as a sesame oil-based liquid within a soft gelatin capsule. The absorption of dronabinol after oral administration is poor and highly variable with some patients achieving very high levels and others achieving very low levels. This erratic absorption may be responsible for the variable therapeutic responses observed in dronabinol clinical trials. Syndros®, on the other hand, is formulated as a dronabinol solution in dehydrated alcohol, polyethylene glycol and other materials and exhibits its own challenges and deficiencies, including but not limited to it being classified as a Schedule II drug by the U.S. Drug Enforcement Administration (the "DEA") as compared to the capsule formulation that is classified as a Schedule III drug. Syndros® is no longer being marketed.

Second, dronabinol is rapidly and extensively (approximately 80%) metabolized upon first pass through the liver, resulting in low blood levels. Additionally, dronabinol has a relatively short half-life (approximately 3 – 4 hours) and, in its present formulation, is not optimally suited for therapeutic indications requiring controlled and sustained blood levels.

Third, in order to achieve sustained, therapeutic blood levels, we have found it necessary to use higher doses of dronabinol in our OSA clinical trials. For example, over an 8-hour period, the 2.5 mg and 10 mg doses produced therapeutically equivalent effects during the first 4 hours, but only the 10 mg dose produced therapeutic effects during the second 4 hours. Unfortunately, the 10 mg dose can produce a higher occurrence of side effects than the 2.5 mg dose (as described in the Marinol® package insert). We are currently developing new formulations that would achieve the blood levels produced by the lower doses for a sustained time period, resulting in the desired therapeutic effect(s) while minimizing undesirable side effects.

In order to circumvent these problems, we have designated certain important properties around which we have created a number of lipid nanoparticle (LNP) formulations of dronabinol, three (3) of which (i) display appropriate water solubility and dissolution to improve absorption, (ii) nanoparticle size and resistance to stomach acid conditions in order to reduce first pass liver metabolism and achieve higher and longer blood levels, as well as (iii) stability and ease of manufacturing to support commercial scale. Under the terms of the Services Agreement, iNGENu is preparing to test these formulations in human pharmacokinetic (PK) and pharmacodynamic (PD) studies. We believe that the development of a novel, proprietary formulation of dronabinol would not require significantly longer time to market entry compared to what would be required if we were to use the currently available soft gel capsule technology.

The Company's Cannabinoid Intellectual Property Rights

On June 27, 2014, RespireRx entered into an exclusive license agreement (the "2014 License Agreement") with the University of Illinois at Chicago ("UIC") that replaced a 2007 license agreement with Pier that had been terminated. The 2014 License Agreement was first amended on August 2, 2017.

RespireRx and the Board of Trustees of University of Illinois agreed to a second amendment ("Second Amendment") to the 2014 License Agreement, as amended. The Second Amendment is effective as of December 15, 2022.

The parties entered into the Second Amendment in order to add new definitions for and payment obligations related to Deferred Compensation Annual Net Sales Payments and Deferred Compensation Annual Minimum Payment(s) with an extension of the term of the License in consideration for modifying financial terms and timelines.

Summarizing the above: (i) the definition of Product now includes any product or process that would have been enforceable under the Patent after the Patent Rights have expired, (ii) Deferred Compensation Annual Net Sales Payments means those payment obligations calculated on Net Sales as set forth in Schedule 2, as amended, but which only become due and payable after the expiration of the Patent Rights and shall not be due and payable while any of the Patent Rights have not yet expired and (iii) Deferred Compensation Minimum Payment(s) means those annual payment obligations set forth in Schedule 2 as amended, which shall only become due and payable after the expiration of the Patent Rights and shall not be due and payable while any of the Patent Rights have not yet expired.

The logic behind extending certain financial obligations is based in part on the filing by the Company of a new patent application that was considered for, but not incorporated into the License. In lieu of incorporating the new patent into the License, the parties agreed to the new definitions described in (ii) and (iii) above but limited to eight (8) years after the Patent Rights have expired. Therefore, the new patent is not part of the definition of Patent Rights but the amendment does provide the potential for a similar economic benefit to the Licensor as if the new patent were assigned to the Licensor and became part of the License.

A number of additional changes, deletions and additions were made to various sections of the License.

Selected portions of Schedule 2 that were amended are summarized below:

- Elimination of the $100,000 annual payments due by the Company to the Licensor from December 31, 2021 and later. That means that the unpaid amount of $100,000 for the calendar year 2021 is no longer due and payable and that no payment for 2022 is due and payable
- Addition of 4% royalty with respect to Net Sales by Licensee or Sublicensee as Deferred Compensation Annual Net Sales Payments
- The $150,000 amount that would have been due upon application for regulatory approval has now been eliminated, and instead replaced with a $350,000 amount due the first year with a market approval from the US FDA or a foreign equivalent and every year thereafter, until first commercial sale of a Product.
- The $250,000 annual minimum amount that would have been due the first year of commercial sale of a Product and every year thereafter is now $400,00. The annual minimum amounts may be satisfied in part or in whole with royalty payments.

- The original $75,000 milestone payment that was originally due upon the dosing of a 1st patient with a Product in a Phase II study not sponsored by the Licensor or the dosing of a 1st patient in a Phase II study with a low dose reformulation of dronbaninol, has been amended to a $10,000 payment due after the dosing of the 1st patient with a Product in a Phase II study anywhere in the world
- The $350,000 milestone payment that would have due upon dosing of the 1st patient with a Product in a Phase III study is now two payments totaling $500,000, $150,000 of which is due upon the dosing of a 1st patient in a Phase III study anywhere in the world and $350,000 due upon the earlier of enrolling 80% of the patients with a Product in the Phase III study or one year after the initiation of the Phase III study or the termination of the Phase III study
- The $500,000 and $1,000,000 milestones due after the first NDA and within twelve months of commercial sale respectively remain unchanged
- Royalty stacking provisions remain unchanged.

RespireRx is in the process of transferring to ResolutionRx exclusive worldwide rights to issued and pending patents claiming cannabinoid compositions and methods for treating cannabinoid-sensitive disorders, including sleep apnea, pain, glaucoma, muscular spasticity, anorexia and other conditions. In January 2021, we filed a provisional patent application further disclosing novel dosages, controlled release compositions and methods of use for cannabinoids, and in January 2021, a provisional patent application further disclosing novel dosage and controlled release compositions and methods of use for cannabinoids, alone or in combination, including with cannabinoid and non-cannabinoid molecules. Specific claims describe low dosage strengths and controlled release formulations for attaining a therapeutic window of cannabinoid blood levels that produce the desired therapeutic effect(s) for a controlled period of time, while minimizing undesirable side effects. In January 2022, we filed a provisional patent application describing novel lipid based formulation technology (LFT) that may be used to improve the solubility and bioavailability of poorly soluble drugs, particularly cannabinoids such as dronabinol. Certain original patents were filed by RespireRx and are now included in the 2014 License Agreement. See Note 9. Commitments and Contingencies—*University of Illinois 2014 Exclusive License Agreement* in the notes to our consolidated financial statements as of December 31, 2022. While no assurances can be provided that the claims in our patent applications will be allowed in whole or in part, or that the patents will ultimately issue, we believe that these new filings, if allowed, will provide market protections through January 2042.

Data from our Phase 2 clinical trials has allowed us to design new proprietary formulations of dronabinol, disclosed in our patent filings and optimized for the treatment of not only OSA, but also other indications. If successful in our development efforts, we believe that a proprietary formulation of dronabinol, based on our recently filed provisional patent applications for LFT and pending patents for low-dose and extended release dronabinol, could lead to a highly marketable commercial formulation of dronabinol for use not only in the treatment of OSA but also other indications, including anorexia. We also believe that such novel, proprietary formulations of dronabinol would extend market exclusivity, increase market value and be more interesting to certain potential strategic partners.

Proposed Regulatory Approach for Dronabinol in the United States

In conjunction with its management and consultants, the ResolutionRx intends to file a new US NDA under Section 505(b)(2) of the Federal Food, Drug and Cosmetic Act (as amended, the "FDCA" and such NDA a "505(b)(2) NDA"), claiming the efficacy and safety of our proposed proprietary dronabinol formulation in the treatment of OSA. We believe the use of dronabinol for the treatment of OSA is a novel indication for an already approved drug, making it eligible for a 505(b)(2) NDA, as opposed to the submission and approval of a full 505(b)(1) NDA.

The 505(b)(2) NDA was created by the Hatch-Waxman Act, as amended (the "Hatch-Waxman Act"), which amended the FDCA to help avoid unnecessary duplication of studies already performed on a previously approved drug. As amended, the FDCA gives the FDA express permission to rely on data not developed by the NDA applicant. Accordingly, a 505(b)(2) NDA must contain full safety and effectiveness reports but allows at least some of the information required for NDA approval, such as safety and efficacy information about the active ingredient, to come from studies not conducted by or for the applicant. This can result in a less expensive and faster route to approval, compared with a traditional development path, such as 505(b)(1), while still allowing for the creation of new, differentiated products. The 505(b)(2) NDA regulatory path offers the applicant market protections, such as market exclusivity, under the Hatch-Waxman Act and the rules promulgated thereunder. Other, international regulatory routes are available to pursue proprietary formulations of dronabinol and would provide further market protections. For example, in Europe, a regulatory approval route similar to the 505(b)(2) pathway is the hybrid procedure based on Article 10 of Directive 2001/83/EC.

We have worked with regulatory consultants who will assist with FDA filings and regulatory strategy. If we can secure sufficient financing, of which no assurance can be provided, we anticipate requesting a pre-Investigational New Drug application ("pre-IND") meeting with the FDA. This meeting also could create the type of dialogue with the FDA that is normally communicated at an end-of-Phase 2 meeting. The FDA responses to this meeting will be incorporated into an Investigational New Drug Application ("IND").

ResolutionRx intends to pursue a similar strategy in other worldwide territories where similar regulatory opportunities are believed to exist.

When the PK/PD study is completed, we anticipate conducting, in parallel with a Phase 3 clinical study, two standard Phase 1 clinical studies to determine potential abuse liability and next day driving ability. When a Phase 3 study is required for a 505(b)(2), usually only one study with fewer patients is necessary versus the two, large scale, confirmatory studies generally required for the standard 505(b)(1) NDA. While no assurance can be provided, with an extensive safety database tracking chronic, long-term use of Marinol® and generics, we believe that the FDA should not have major safety concerns with dronabinol in the treatment of OSA.

The Company has worked with the investigators who conducted the Phase 2B clinical trial and our Clinical Advisory Panel to design a draft Phase 3 protocol summary that, based on the experience and results from the Phase 2A and Phase 2B trials, we believe will provide sufficient data for FDA approval of a RespireRx dronabinol controlled release formulation for OSA. The current version of the protocol is designed as a 90-day randomized, blinded, placebo-controlled study of dronabinol in the treatment of OSA. Depending on feedback from the FDA, the Company estimates that the Phase 3 trial would require between 120 and 300 patients at 15 to 20 sites, and take 18 to 24 months to complete, at a cost of between $10 million and $14 million.

We believe our rights under the Purisys Agreement would help facilitate regulatory approval. Under the Purisys Agreement, Purisys has agreed, at no cost to us, to (i) provide all of the API estimated to be needed for the clinical development process, three validation batches for NDA filings and adequate supply for the initial inventory stocking for the wholesale and retail channels, subject to certain limitations, (ii) maintain or file valid DMFs with the FDA or any other regulatory authority and provide the Company with access or a right of reference letter entitling the Company to make continuing reference to the DMFs during the term of the agreement in connection with any regulatory filings made with the FDA by the Company, (iii) participate on a development committee, and (iv) make available its regulatory consultants, collaborate with any regulatory consulting firms engaged by the Company and participate in all FDA or DEA meetings as appropriate and as related to the API.

In consideration for these supplies and services, the Company has agreed to (i) purchase exclusively from Purisys, during the commercialization phase, all API for these products at a pre-determined price subject to certain producer price adjustments and (ii) allow Purisys's participation in the economic success of the commercialized products up to the earlier of the achievement of a maximum dollar amount or the expiration of a period of time.

Large Commercial Opportunity

As a serious public health issue, the important need for diagnosing and ultimately treating OSA has recently been highlighted by the FDA clearance of several sleep apnea home test kits that are now third party reimbursed. Further highlighting this need, CVS Health Corporation (NYSE: CVS) announced the implementation of a program to diagnose and treat OSA initially within its own in-store, walk-in MinuteClinics. It is possible that, in the near future, individuals will be able to diagnose sleep apnea using smart watches. We expect the number of people diagnosed with sleep apnea and eligible for treatment to increase dramatically. We believe that the combination of more efficient and patient friendly diagnostic procedures and, ultimately, pharmaceutical treatments such as those we are developing will encourage more patients to seek diagnosis and treatment. There are an estimated between 29.4 and 54.1 million people in the United States (American Association of Sleep Medicine and Lancet Respiratory Medicine, respectively). There are currently no drugs approved for the treatment of OSA.

EndeavourRx – Neuromodulators

Background

As described above, during the neurotransmission process, neurons release neurotransmitters that attach to specific receptors residing on adjacent neurons, enabling them to communicate with one another and produce excitatory or inhibitory effects. For example, glutamate is the primary excitatory neurotransmitter in the brain and GABA is the primary inhibitory neurotransmitter. While the neurotransmitter attachment site on each of these receptors does not change, the receptor protein subunit structures can vary so that the receptors can produce a variety of effects. With the AMPA glutamate receptor, the binding of glutamate or an artificial agonist to its attachment site causes a change in the structure of the AMPA receptor resulting in an influx of cations and an increased excitability. Likewise, in the case of the $GABA_A$ receptor, the binding of GABA or an artificial agonist to its attachment site causes a change in the structure of the $GABA_A$ receptor ion channel and increases the flow of chloride ions (negatively charged anion) into the cell, resulting in decreased excitability.

Neurotransmitter receptor proteins also may contain auxiliary "allosteric" binding sites, which are located adjacent to the agonist binding sites at which neurotransmitters act. Unlike neurotransmitters, neuromodulators are drugs that act at these allosteric binding sites rather than directly at the agonist binding site. They can act either as PAMs, which enhance, or as negative allosteric modulators ("NAMs"), which reduce, the actions of neurotransmitters at their primary receptor sites. Neuromodulators have no intrinsic activity of their own. We have coined the terms "AMPAkines" and "GABAkines" to refer to drugs that act as PAMs at the AMPA and $GABA_A$ receptors, respectively. By enhancing the effects of neurotransmitters without altering the normal pattern of neuronal activity, neuromodulators offer the possibility of developing "kinder and gentler" neuropharmacological drugs effective in certain neurological and neuropsychiatric disorders, with greater pharmacological specificity and reduced side effects.

Proposed Regulatory Approach for AMPAkines and GABAkines

In conjunction with its management and consultants, the Company intends to initially perform appropriate and required preclinical studies with its GABAkines and file INDs to commence clinical trials with one or more of those drug candidates and either amend existing INDs or file new INDs for its AMPAkines in order to conduct additional clinical trials with those drug candidates. If such studies safely show statistically significant improvement in appropriate clinical endpoints they would likely result in the filing of one or more NDAs for the AMPAkine(s) under Section 505(b)(1) of the Federal Food, Drug and Cosmetic Act as amended, the traditional regulatory path for new chemical entities (NCEs). The NDAs for the GABAkine drug product candidates, also would be filed as 505(b)(1) NDAs.

As part of our effort to capitalize upon a possible market opportunity with respect to neuromodulators, the Company has implemented an internal restructuring plan, by which EndeavourRx became a stand-alone business unit focused on the neuromodulator market. EndeavourRx comprises our AMPAkine program and our GABAkine program.

AMPAkines

The Company is developing a class of proprietary compounds known as AMPAkines, which are PAMs of the AMPA glutamate receptor. AMPAkines are small molecule compounds that enhance the excitatory actions of glutamate at the AMPA receptor complex, which mediates most excitatory transmission in the central nervous system ("CNS"). Through an extensive translational research effort from the cellular level through Phase 2 clinical trials, we have developed a family of AMPAkines, including CX717, CX1739 and CX1942 that may have clinical application in the treatment of CNS-driven neurobehavioral and cognitive disorders, spinal cord injury ("SCI"), neurological diseases, and certain orphan indications. CX717 and CX1739, our lead clinical compounds, have successfully completed multiple Phase 1 safety trials with no drug-associated serious adverse events. Both compounds have also completed Phase 2 efficacy trials demonstrating target engagement, by antagonizing the process of opioid-induced respiratory depression ("OIRD"). CX717 has successfully completed a Phase 2 trial demonstrating the ability to significantly reduce the symptoms of adult ADHD. In an early Phase 2 study, CX1739 improved breathing in patients with central sleep apnea. In addition, preclinical studies have highlighted the potential ability of these AMPAkines to improve motor function in animals with SCI. Subject to raising sufficient financing (of which no assurance can be provided), we believe that we will be able to initiate a human Phase 2 study with CX1739 in patients with SCI and a human Phase 2 study in patients with ADHD using either CX1739 or CX717.

AMPAkines as Treatment for ADHD

ADHD is a relatively common neurobehavioral disorder. Currently available treatments for ADHD include amphetamine-type stimulants and non-stimulant agents targeting monoaminergic neurotransmitter systems in the brain. However, these neurotransmitter systems are not restricted to the brain and are widely found throughout the body. Thus, while these agents can be effective in ameliorating ADHD symptoms, they also can produce adverse cardiovascular effects, such as increased heart rate and blood pressure. Existing treatments also affect eating habits and can reduce weight gain and growth in children and have been associated with suicidal ideation in adolescents and adults. In addition, approved stimulant treatments are DEA classified as controlled substances and present logistical issues for distribution and protection from diversion. Approved non-stimulant treatments, such as atomoxetine (Strattera® and its generic equivalents), can take four to eight weeks to become effective and undesirable side effects also have been observed.

Various investigators have generated data supporting the concept that alterations in AMPA receptor function might underlie the production of some of the symptoms of ADHD. In rodent and primate models of cognition, AMPAkines have been demonstrated to reduce inattention and impulsivity, two of the cardinal symptoms of ADHD. Furthermore, AMPAkines do not stimulate spontaneous locomotor activity in either mice or rats, unlike the stimulants presently used for the treatment of ADHD, nor do they increase the stimulation produced by amphetamine or cocaine. These preclinical considerations prompted us to conduct a randomized, double-blind, placebo controlled, two period crossover study to assess the efficacy and safety of CX717 in adults with ADHD.

In a repeated measures analysis, a statistically significant treatment effect on the ADHD Rating Scale ("ADHD-RS"), the primary outcome measure, was observed after a three-week administration of CX717, at a dose of 800 mg BID. Differences between this dose of CX717 and placebo were observed as early as week one of treatment and continued throughout the remainder of the study. The low dose of CX717, 200 mg BID, did not differ from placebo. In general, results from both the ADHD-RS hyperactivity and inattentiveness subscales, which were secondary efficacy variables, paralleled the results of the total score. CX717 was considered safe and well tolerated.

Based on these clinical results, we believe that AMPAkines such as CX717 or CX1739 might represent a breakthrough opportunity to develop a non-stimulating therapeutic for ADHD with the rapidity of onset normally seen with stimulants.

AMPAkines as Treatment for SCI

AMPAkines also may have potential utility in the treatment and management of SCI to enhance motor functions and improve the quality of life for SCI patients. An estimated 17,000 new cases of SCI occur each year in the United States, most a result of automobile accidents. Currently, there are roughly 282,000 people living in the United States with spinal cord injuries, which often produce impaired motor function.

SCI can profoundly impair neural plasticity leading to significant morbidity and mortality in human accident victims. Plasticity is a fundamental property of the nervous system that enables continuous alteration of neural pathways and synapses in response to experience or injury. A large body of literature exists regarding the ability of AMPAkines to stimulate neural plasticity, possibly due to an enhanced synthesis and secretion of various growth factors.

We have been working with Dr. David Fuller at the University of Florida, a long-time collaborator who has funding from NIH, to evaluate the use of AMPAkines CX1739 and CX717 for the treatment of compromised motor function in models of SCI. Using rodents that have received spinal hemi-sections, the AMPAkines were observed to increase motor nerve activity bilaterally. The effect on the hemisected side was greater than that measured on the intact side, with the recovery approximating that seen on the intact side prior to administration of AMPAkine. The doses of AMPAkines active in SCI were comparable to those demonstrating antagonism of OIRD, indicating target engagement of the AMPA receptors.

A published paper by Dr Fuller entitled "Ampakines stimulate diaphragm activity after spinal cord injury" (http://doi.org/10.1089/neu.2021.0301) describes research conducted in awake freely moving rats as late as two weeks after having previously undergone unilateral spinal hemi-transection at the C2 spinal level. For the first time, low dose administration of either CX1739 or CX717 was shown to improve not only motor nerve and muscle activity recorded electrophysiologically from the lesioned side, but to significantly improve actual motor functioning and breathing, even under challenging conditions. The importance of these findings is described in the article by pointing out that the majority of the approximately 500,000 annual SCI cases reported globally involve injuries to the cervical spinal cord and, in severe cases, require the use of mechanical ventilation or direct diaphragm pacing to sustain ventilation. Also, in confirmation of previously reported results in anesthetized animals, the AMPAkines improved, in awake freely moving animals, the motor facilitation produced by an episode of acute intermittent hypoxia ("AIH"), a treatment currently used in the rehabilitation of SCI patients.

These animal models of motor nerve function following SCI support proof of concept for a new treatment paradigm using AMPAkines to improve motor functions in patients with SCI. With additional funding granted by NIH to Dr. Fuller, the Company is continuing its collaborative preclinical research with him, while it is planning a clinical trial program focused on developing AMPAkines for the restoration of certain motor functions in patients with SCI. The Company is working with researchers at highly regarded clinical sites to finalize a Phase 2 clinical trial protocol. We believe that a clinical study could be initiated within several months of raising sufficient financing (of which no assurance can be provided).

AMPAkines as Treatment for GRIA Disorders

On April 5, 2023, RespireRx announced it had entered into a material transfer agreement with University College London (UCL) as part of a collaborative research effort involving Dr. Ian Coombs and Prof. Mark Farrant, founding members of the GRIA Scientific Advisory Board of the CureGRIN Foundation ("CureGRIN") and from the UCL Department of Neuroscience, Physiology, and Pharmacology. The UCL group, which also includes Prof, Stuart Cull-Candy F.R.S., has been awarded funding from CureGRIN, and will be working with the RespireRx research team to study the possibility of using CX1739, RespireRx's lead clinical AMPAkine, for the treatment of a major class of GRIA disorders.

GRIA Disorder refers to a family of rare genetic diseases caused by mutations in the AMPA glutamate receptor genes that cause either a loss or gain in the functioning of these receptors, which are the site of action of RespireRx's AMPAkines and which play an important role in learning and memory as well as other critical biological functions. Dr. Coombs's work seeks to characterize the genetic variants underlying the diverse behavioral and cognitive symptoms in children with GRIA Disorder and use this knowledge to create a diagnostic method to determine on a molecular level which patients have a decline or gain in the functioning of these receptors and use this diagnostic to choose what drugs to use to restore normal function.

It is very important to characterize the properties of AMPA receptor variants which underly the diverse symptoms displayed by children with GRIA Disorder in order to better determine which drugs could act as potential treatments. Evidence suggests that the majority of these disease-associated variants produce underactive AMPA receptors so it may be possible to study CX1739, the AMPAkine that boosts AMPA receptor function, to determine on a molecular level its potential as a precision therapy for children with GRIA Disorder, for whom no truly effective treatment presently exists.

It is the ultimate intention of this collaboration to test CX1739 in patients with specific variants that we demonstrate produce a decline in function of the AMPA receptor. Positive therapeutic effects with RespireRx's AMPAkines already have been reported in animal mutations modelling related disorders such as Pompe that also suffer from declines in AMPA receptor functioning.

The RespireRx team that will collaborate with Dr. Coombs, Prof. Farrant and Prof. Cull-Candy includes Drs. Jeffrey M. Witkin and Rok Cerne, both of whom are RespireRx Research Fellows in addition to their academic affiliations at The University of Wisconsin-Milwaukee, Ascension St. Vincent Hospital and Indiana University/Purdue University, respectively. The team has extensive expertise and are well known for their work in drug discovery and development, including novel analgesic, anxiolytic, anti-epileptic and anti-depressant drugs.*GABAkines*

The GABAkine program was established pursuant to the UWMRF Patent License Agreement. At present, the program is focused on developing novel GABAkines with certain $GABA_A$ receptor subtype selectivity. We believe that there is a considerable degree of receptor subtype heterogeneity, making subtype selectivity of our compounds a desirable attribute.

Under the UWMRF Patent License Agreement, the Company has an exclusive license to commercialize GABAkine products based on UWMRF's rights in certain patents and patent applications, and a non-exclusive license to commercialize products based on UWMRF's rights in certain technology that is not the subject of the patents or patent applications. This relates to our GABAkines program.For a more detailed description of the UWMRF Patent License Agreement, see our Current Report on Form 8-K, filed with the SEC on August 4, 2020, including, but not limited to Exhibit 99.1 and Exhibit 99.4 Certain payments under the UWMRF Patent License Agreement have not been paid by the Company. The Company is in ongoing discussions with UWMRF regarding when the Company may be able to commence making payments. The Company has not received a notification of default either during the fiscal year ended December 31, 2022 or in any subsequent periods. All amounts due under the UWMRF Patent License Agreement are reflected in the Company's consolidated financial statements as of December 31, 2022 in accounts payable and accrued expenses.

Benzodiazepines ("BDZs"), such as Valium® (diazepam), Librium® (chlordiazepoxide) and Xanax® (alprazolam) were the first major class of drugs reported to act as $GABA_A$ PAMs, by binding at a site distinct from the binding site for GABA. These drugs produce a wide range of pharmacological properties, including anxiety reduction, sedation, hypnosis, anti-convulsant, muscle relaxation, respiratory depression, cognitive impairment, as well as tolerance, abuse and withdrawal. For this reason, it was not surprising that BDZs were observed to act as $GABA_A$ PAMs indiscriminately across all $GABA_A$ receptor subtypes. Following the identification of BDZ binding sites on $GABA_A$ receptors, Dr. Arnold Lippa, our Interim President, Interim Chief Executive Officer, Chief Scientific Officer and Executive Chairman of our Board of Directors, described CL218,872, the first non-BDZ to demonstrate that these receptors were heterogeneous by binding selectively to a subtype of $GABA_A$ receptor. This demonstration of receptor heterogeneity led to the hypothesis that the various pharmacological actions of the BDZs might be separable depending on the receptor subtype involved. In animal testing, CL218,872 provided the proof of principle that such a separation could be achieved by displaying anti-anxiety and anti-convulsant properties in the absence of sedation, amnesia and muscular incoordination. Using ocinaplon, an analog of CL218,872 with similar receptor subtype selectivity, Dr. Lippa's team reported in the Proceedings of the National Academy of Science the results of a Phase 2 clinical trial in anxious patients that ocinaplon significantly reduced symptoms of anxiety in the absence of sedation. These findings gave impetus to the search for novel therapeutic drugs for neurological and psychiatric illnesses that display improvements in efficacy and reductions in side effects.

Over the last several years, a group of scientists led by Dr. James Cook of the University of Wisconsin and Dr. Jeffrey Witkin affiliated with the Indiana University School of Medicine, both of whom have been engaged as Senior Research Fellows at RespireRx, synthesized and tested a broad series of novel drugs that display $GABA_A$ receptor subtype selectivity and pharmacological specificity. Certain of these chemical compounds are the subject of the UWMRF Patent License Agreement.

Of these compounds, we have identified KRM-II-81 as a clinical lead. KRM-II-81 is the most advanced and druggable of a series of compounds that display certain receptor subtype selectivity and pharmacological specificity. In studies using cell cultures, brain tissues and whole animals, KRM-II-81 acts as a $GABA_A$ PAM at selective $GABA_A$ receptor subtypes that we feel are intimately involved in neuronal processes underlying epilepsy, pain, anxiety and certain other indications. KRM-II-81 has demonstrated highly desirable properties in animal models of these and other potential therapeutic indications, in the absence of or with greatly reduced liability to produce sedation, motor incoordination, cognitive impairments, respiratory depression, tolerance, abuse and withdrawal seizures, all side effects associated with BDZs. We currently are focused on the potential treatment of epilepsy and pain. Several articles describing the results of these studies have been published in highly regarded peer reviewed journals, including two review articles and a book chapter detailing the anti-epileptic and analgesic properties of KRM II-81 and its importance in the overall field of GABAkines.

The Company also has developed a series of back-up compounds to KRM-II-81.

Epilepsy and Existing Treatments

Epilepsy is a chronic and highly prevalent neurological disorder that affects millions of people world-wide and has serious consequences for the life of the affected individual. A first-line approach to the control of epilepsy is through the administration of anticonvulsant drugs. Repeated, uncontrolled seizures due to drug resistance and the side effects arising from seizure medications have a negative effect on the developing brain and can lead to brain cell loss and severe impairment of neurocognitive function. The continued occurrence of seizure activity also increases the probability of subsequent epileptic events through sensitization mechanisms called seizure kindling. Seizures that are unresponsive to anti-epileptic treatments are life-disrupting and life-threatening with broad health, life, and economic consequences.

Like many diseases, epilepsy is still remarkably underserved by currently available medicines. Pharmaco-resistance to anticonvulsant therapy continues to be one of the key obstacles to the treatment of epilepsy. Although many anticonvulsant drugs are approved to decrease seizure probability, seizures frequently are not fully controlled and patients are generally maintained daily on multiple antiepileptic drugs with the hope of enhancing the probability of seizure control. Despite this polypharmacy approach, as many as 60% to 70% of patients continue to have seizures. As a result of the lack of seizure control, pharmaco-resistant epilepsy patients, including young children, sometimes require and elect to have invasive therapeutic procedures such as surgical resection of targeted brain tissue.

Despite the availability of a host of marketed drugs of different mechanistic classes, the lack of seizure control in patients is the primary factor driving the need for improved antiepileptic drugs, as emphasized by researchers and patient advocacy communities. Increasing inhibitory tone in the CNS through enhancement of GABAergic inhibition is a proven mechanism for seizure control. However, GABAergic medications also exhibit liabilities that limit their antiepileptic potential. Tolerance develops to GABAergic drugs such as BDZs, limiting their use in a chronic setting. These drugs can produce cognitive impairment, somnolence, sedation, tolerance and withdrawal seizures that create dosing limitations such that they are generally used only for acute convulsive episodes.

GABAkines as Treatments for Epilepsy

KRM-II-81 has demonstrated efficacy in multiple rodent models and measures of antiepileptic drug efficacy *in vivo*. This includes nine acute seizure provocation models in mice and rats, four seizure sensitization models in rats and mice, two models of chronic epilepsy, and three models specifically testing pharmaco-resistant antiepileptic drug efficacy. Because it appears to have a substantially reduced side effect liability, it might be possible to use higher, more effective doses than standard of care medications. Predictions of superior efficacy of KRM-II-81 over standard of care anti-epileptics comes from the efficacy of this compound across a broad range of animal models of epilepsy. Importantly, KRM-II-81 has been shown to be effective in models assessing pharmaco-resistant epilepsy. Under these conditions, KRM-II-81 is efficacious in cases where standard of care medicines do not work.

In the absence of seizure control by anti-epileptics, surgical resection of affected brain tissue is one potential alternative to help with the control of seizures. In the process of this surgery, epileptic brain tissue can become available for research into epileptic mechanisms and the identification of novel antiepileptic drugs. In peer reviewed articles by Dr. Witkin and his colleagues, the anticonvulsant action of KRM-II-81 has been confirmed by microelectrode recordings from slices obtained from freshly excised cortex tissue from epileptic patients where *in situ* application of KRM-II-81 suppressed epileptiform electrical activity. These very important translational data lend considerable support and impetus to the further development of KRM-II-81 for the treatment of epilepsy.

GABAkines as Treatments for Pain

It is impossible not to be aware of the crisis that the opioid epidemic has created in the treatment of pain. While there is no question as to their efficacy, the clinical use of opioids is severely limited due to the rapid development of tolerance, dependence and the production of OIRD, the major cause of opioid-induced lethality. Research programs are underway nationwide to discover and develop new non-opioid drugs that are effective analgesics without the tolerance and abuse liability ascribed to opioids. Pain is especially difficult to treat due to its complex nature with a variety of different etiologies. For example, chronic pain may be produced by injury, surgery, neuropathy, the inflammation produced by arthritis or by certain drugs such as cancer chemotherapeutics. For these reasons, better management and control of chronic pain continues to be a serious need in medical practice.

Data from both preclinical and clinical studies are consistent with the idea that GABAergic neurotransmission is an important regulatory mechanism for the control of pain. Gabapentin (Neurontin®) and pregabalin (Lyrica®), two commonly used drugs for the treatment of neuropathic pain, are believed to produce their analgesic effects by enhancing GABAergic neurotransmission. However, although they have received FDA approval, the clinical results have not been overwhelming. In a published review of 37 clinical trials with a total of 5,914 patients experiencing neuropathic pain there was no difference in the percentage of patients experiencing pain reduction of greater than 50% when comparing Gabapentin® to placebo. The most common side effects produced by Gabapentin® were sedation, dizziness and problems walking. It is uncertain whether greater efficacy was not observed because of poor intrinsic pharmacological efficacy or insufficient dosages due to dose limiting side effects.

An alternate approach to enhancing GABAergic neurotransmission is the use of $GABA_A$ PAMs. This approach has been under-utilized because of the general lack of efficacy of the BDZ PAMs. However, a strong case for the potential value of subtype selective $GABA_A$ PAMs for the treatment of pain can be made. First, $GABA_A$ receptor regulated pathways are integral to pain processing with α2/3 containing $GABA_A$ receptor subtypes present on nerve pathways modulating pain sensation and perception. Second, we believe that the analgesic properties of BDZs may be masked by concurrent activation of other $GABA_A$ receptor subtypes that mediate the side effects. Diazepam has been reported to produce maximal analgesia in rodents if the side effects are attenuated by $GABA_A$ subtype genetic manipulation. Third, in recently published review articles describing KRM-II-81 and predecessor GABAkines that selectively amplify $GABA_A$ receptor subtype signaling, Drs. Witkin, Cook and colleagues reported that these GABAkines displayed a high degree of analgesic activity in a broad range of preclinical studies. In cellular studies, KRM-II-81 preferentially bound to specific subtypes of $GABA_A$ receptors and boosted the ability of GABA to inhibit pain sensory neurons in the spinal dorsal root ganglia. In intact animal models of acute and chronic pain, the analgesic efficacy of KRM-II-81 was comparable to or greater than commonly used analgesics. At the same time, KRM-II-81 did not display side effects such as sedation and motor impairment.

Equally important, at multiples of the therapeutic doses, KRM-II-81 did not produce tolerance, dependence, respiratory depression or behavioral changes indicative of abuse liability, which are produced by opioid narcotics and are at the heart of the opioid epidemic. Sub-chronic dosing for 22 days with KRM-II-81 and the structural analogue, MP-III-80, demonstrated enduring analgesic efficacy without tolerance development. In contrast, tolerance developed to the analgesic effects of Gabapentin®. At a dose that produces maximal analgesic effect in an inflammatory chronic pain model, KRM-II-81 does not substitute for the BDZ midazolam in a drug discrimination assay, suggesting a reduced abuse liability. Furthermore, KRM-II-81 did not produce the respiratory depression observed with alprazolam, a major problem with BDZs leading to emergency room visits and overdose. We believe that the ability to attenuate both acute and chronic pain combined with a greatly reduced side effect profile, a lack of tolerance and a reduced abuse potential makes KRM-II-81 a promising clinical lead and a potentially breakthrough advance in pain therapeutics.

Drs. Witkin and Cerne have conducted pharmacology, metabolism, pharmacokinetic and animal safety studies, all for the benefit of the Company and to be included in future FDA filings. Dr. Cook has begun scaling up chemical synthesis of KRM II-81 in order to provide sufficient active pharmaceutical ingredient (API) to begin IND enabling preclinical studies, which we plan to initiate this year pending financing, of which no assurance can be provided. In addition, substituted analogues of KRM II-81 have been made, particularly a soluble analogue that displays a similar pharmacological profile as KRM II-81. Several articles describing the results of these studies have been published in highly regarded peer reviewed journals, including two review articles and a book chapter detailing the anti-epileptic and analgesic properties of KRM II-81 and its importance in the overall field of GABAkines. Five additional articles describe the pharmacological activity of novel structural analogs of KRM-II-81 and document the preclinical effects and tolerability of these structural analogs. In established rat models predicting efficacy in essential tremor and in tremor associated with Parkinson's Disease, MP-III-024 was an effective anti-tremor compound. Also described are three novel structural analogs with sufficient blood and brain levels after oral administration to produce a pharmacological response and a deuterated derivative of KRM-II-81 that produced long-lived anticonvulsant activity after oral administration. Also described was the synthesis of a water soluble, hydrochloride salt of KRM-II-81, another important analog in this series with the added potential of intravenous delivery. The compounds described in these articles were efficacious as anticonvulsants and the most characterized of these, KPP-III-34, displayed robust activity in more advanced anti-seizure models. All compounds were effective without producing sedative effects.

Corporate and Product Development Plans

As discussed above, in order to facilitate our business activities and product development, we have organized our drug platforms into two separate business units, one of which was recently incorporated as an Australian subsidiary and the other that currently operates as a division. ResolutionRx Ltd is focused on pharmaceutical cannabinoids and EndeavourRx is focused on neuromodulators. Below is a description of the Company's product development plans within these business units.

ResolutionRx – Dronabinol program

In conjunction with a sub-contractor, the Company has prepared several new proprietary formulations of dronabinol with the anticipated properties described in our patent applications, of which three have been selected for further testing for pharmacokinetic ("PK") and pharmacodynamic ("PD") studies. Assuming sufficient additional financing is available for ResolutionRx, of which no assurance can be provided, and that the results of the PK and PD testing indicate that further development is warranted, ResolutionRx intends to utilize its Services Agreement with iNGENu in order for them to act as regulatory consultants, stock clinical supply, package and distribute the clinical supply to clinical trial sites, schedule a pre-investigational new drug application ("pre-IND") meeting with the FDA, file an IND and then conduct a Phase 3 human pivotal clinical trial.

The Company's 2014 License Agreement, as amended and the Purisys Agreement will need to be sub-licensed or transferred or otherwise made available to ResolutionRx as will rights to certain patents and patent applications that are not part of the 2014 License Agreement, as amended. See "*—University of Illinois 2014 Exclusive License Agreement*" and "*—Noramco Inc./Purisys, LLC - Dronabinol Development and Supply Agreement*" in Note 9. Commitments and Contingencies in the notes to consolidated financial statements as of December 31, 2022. Initially, ResolutionRx's primary focus will be on re-purposing dronabinol for the treatment of OSA; we believe that our broad enabling patents and our 2019, 2021 and 2022 patent applications for proprietary formulation technology may provide a framework for expanding into the larger burgeoning pharmaceutical cannabinoid industry. We believe that by converting this division to a subsidiary, it may be possible, through separate finance channels and potential strategic transactions, some of which are described above, to unlock the unrealized asset value not only of the cannabinoid platform, but separately, our neuromodulator platform as well.

EndeavourRx – AMPAkines program

For the AMPAkines program within our EndeavourRx neuromodulators business unit, the Company plans, assuming financing is available and of which no assurance can be provided, to assess the purity of our existing drug supplies, obtain clinical supply material, engage regulatory consultants and a CRO to finalize a clinical trial protocol for our intended Phase 2 clinical studies and amend our existing IND. These tasks are critical for applying to the FDA for permission to initiate the intended Phase 2 clinical trials.

Assuming sufficient additional financing is available, of which no assurance can be provided, the Company would continue to focus on SCI, and in particular, a Phase 2A efficacy study, as we believe it would be the most efficient expenditure of our resources, yield an actionable result in the shortest period of time and would initiate additional clinical trials in patients with ADHD.

EndeavourRx – GABAkines program

For the GABAkines program, the Company plans, assuming such financing is available, of which no assurance can be provided, to scale up manufacturing of KRM-II-81 in order to conduct pre-IND enabling studies. Assuming sufficient additional financing is available, of which no assurance can be provided, the Company would conduct a full preclinical program in anticipation of filing an IND to commence human clinical trials for safety and efficacy in patients with treatment resistant epilepsy and those requiring non-opioid treatments for pain.

In connection with the organization and development of the ResolutionRx as a subsidiary and EndeavourRx as a business unit, we have executed upon and are planning certain corporate and development actions as summarized herein. All of these, including those below, are subject to raising additional financing and/or entering into strategic relationships, of which no assurance can be given.

Employee/Consultant Infrastructure Build-out

It is anticipated that the Company will continue to use, at least initially, its management personnel to provide management, operational and oversight services to ResolutionRx and EndeavourRx, while we build out a limited employee infrastructure for ResolutionRx in Australia. In order to broaden our operational expertise, we are planning to hire a number of highly qualified individuals, either as employees or consultants and, in tandem, increase our administrative support function.

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 expect that competition in this field will continue to intensify.

Regulatory Requirements for Drug Market Approval

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.

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 bioequivalence 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.

The recent COVID-19 pandemic has made it very difficult to recruit subjects and patients and to conduct clinical trials in general and it is unclear how long these challenges will last. Given the public health emergency during the winter and spring of 2020 which continued into 2022, the FDA issued guidance to be implemented without the normal prior public comment period as the FDA had concluded that public participation would not be feasible or appropriate. From 2020 to 2022, the FDA issued 84 new guidance documents. Guidance is not legally enforceable, but the FDA recommends the following of its guidance.

See "Risk Factors—*Risks related to our business*—We may not be able to successfully develop and commercialize our product candidates and technologies."

Manufacturing

On September 4, 2018, RespireRx entered into a dronabinol Development and Supply Agreement with Noramco Inc., one of the world's major dronabinol manufacturers, which Noramco subsequently assigned to its subsidiary, Purisys LLC. Under the terms of the Purisys Agreement, Noramco agreed to (i) provide all of the active pharmaceutical ingredient ("API") estimated to be needed for the clinical development process for both the first- and second-generation products (each a "Product" and collectively, the "Products"), three validation batches for New Drug Application ("NDA") filing(s) and adequate supply for the initial inventory stocking for the wholesale and retail channels, subject to certain limitations, (ii) maintain or file valid drug master files ("DMFs") with the FDA or any other regulatory authority and provide the Company with access or a right of reference letter entitling the Company to make continuing reference to the DMFs during the term of the agreement in connection with any regulatory filings made with the FDA by the Company, (iii) participate on a development committee, and (iv) make available its regulatory consultants, collaborate with any regulatory consulting firms engaged by the Company and participate in all FDA or Drug Enforcement Agency ("DEA") meetings as appropriate and as related to the API. We now refer to the second-generation product as our proprietary formulation or proprietary product and have de-emphasized the first-generation product.

In consideration for these supplies and services, the Company has agreed to purchase exclusively from Noramco during the commercialization phase all API for its Products (as defined in the Development and Supply Agreement) at a pre-determined price subject to certain producer price adjustments and agreed to Noramco's participation in the economic success of the commercialized Product or Products up to the earlier of the achievement of a maximum dollar amount or the expiration of a period of time.

On January 11, 2023, RespireRx formed ResolutionRx in Australia. On February 27, 2023, ResolutionRx entered into a Services Agreement with iNGENu, a bespoke contract research organization with a focus on cannabinoids and psychedelics. Among a number of other functions, iNGENu will be coordinating, sub-contracting and overseeing the manufacture of our Δ-9-THC pre-clinical and clinical product supply.

See "Risk Factors—Risks related to our business—*We may not be able to successfully develop and commercialize our product candidates 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 may not be able to successfully develop and commercialize our product candidates and technologies*."

Employees

As of December 31, 2022 the Company employed two people on a full-time basis. We have four officers, two of whom are part-time outside consultants. The Company also engages other contractors who provide substantial services to the Company.

Technology Rights

University of Illinois License Agreement

See ***ResolutionRx – Pharmaceutical Cannabinoids*** – *The Company's Cannabinoid Intellectual Property Rights* above and see Note 9. Commitments and Contingencies—*University of Illinois 2014 Exclusive License Agreement* in the notes to our consolidated financial statements as of December 31, 2022 for more information on the 2014 License Agreement.

UWMRF Patent License Agreement

See ***EndeavourRx – Neuromodulators*** – *GABAkines* above and see Note 9. Commitments and Contingencies—*UWMRF Patent License Agreement* in the notes to our consolidated financial statements as of December 31, 2022 for more information on the UWMRF Patent License Agreement.

Properties

As of December 31, 2022, 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.

Legal Proceedings

We are periodically subject to various pending and threatened legal actions and claims. See Note 9. Commitments and Contingencies – *Pending or Threatened Legal Actions and Claims* in the notes to our consolidated financial statements for the year ended December 31, 2022 for additional information regarding these matters.

The legal proceedings discussed in this report could result in adverse judgments, settlements, fines, injunctions, restitutions or other relief that could require significant expenditures or have other effects on our business. Management believes, based on current knowledge and after consultation with counsel, that the outcome of such actions will not have a material adverse effect on our consolidated financial condition. The outcome of litigation and other legal proceedings is inherently uncertain, and it is possible that one or more of the matters currently pending or threatened could have an adverse effect on our liquidity, financial condition or results of operations for any particular period.

Item 1A. Risk Factors

In addition to the other matters set forth in this 2022 Annual Report, our continuing operations and the price of our common stock are subject to the following risks:

Risks related to our business

We and our independent registered public accounting firm have expressed substantial doubt about our ability to continue as a going concern.

The Company has incurred net losses of $2,102,720 and $3,144,840 for the years ended December 31, 2022 and December 31, 2021, respectively, as well as negative operating cash flows of $143,905 and $956,172 for fiscal years ended December 31, 2022 and December 31, 2021, respectively. The Company also had a stockholders' deficiency of $11,880,320 at December 31, 2022 and expects to continue to incur net losses and negative operating cash flows for at least the next few years. We have eleven similar convertible notes outstanding, with $1,087,278 maturity amounts of plus accrued interest of $133,017 as of December 31, 2022 that have matured and which must be paid or converted. To date no notices of default have been received. The Company will seek to have maturity dates extended in order to avoid a default on such convertible notes, which the Company has achieved in the past, but with respect to which, the Company can provide no assurance. The Company has also not met its payment obligations to the UWM Research Foundation ("UWMRF") of the University of Wisconsin-Milwaukee but has not received a notice of default and is in regular communication with the UWMRF regarding the establishment of a payment schedule. In the past, the Company has been successful in having license payment due dates extended and then meeting the payment obligations on such extended dates or further extended dates. There can be no assurance that the Company will remain successful in those efforts. As a result, in its audit opinion issued in connection with our consolidated financial statements as of December 31, 2022 and 2021, 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 and our independent registered public accounting firm has identified material weaknesses in our financial reporting process.

At December 31, 2022, management and our independent registered public accounting firm identified material weaknesses in our internal control over financial reporting. There can be no assurance that we will be able to successfully implement plans to remediate the material weaknesses in our financial reporting process. Our failure to successfully implement such plans to remediate these material weaknesses could cause us to fail to meet our reporting obligations, to produce timely and reliable financial information, and to effectively prevent fraud. Additionally, such failure, or other weaknesses that we may experience in our financial reporting process or other internal controls, could cause investors to lose confidence in our reported financial information, which could have a negative impact on our financial condition and stock price.

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, 2022, we have generated only minimal operating revenues, primarily from grants for research and development. For the fiscal year ended December 31, 2022, our net loss was $2,102,720 and as of December 31, 2022, we had an accumulated deficit of $176,057,856. 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 require additional cash resources for basic operations and 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, 2022, we estimated that our existing cash resources will not be sufficient to meet our requirements for 2023. 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, from the master services agreement intended to be entered into between us and ResolutionRx in Australia, 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:

- Our ability, or our currently wholly-owned subsidiary ResolutionRx's ability to raise equity or debt capital or from ResolutionRx, or our ability to obtain in-kind services which may be more difficult during the ongoing COVID-19 pandemic;
- the results of our clinical trials;
- the time and costs involved in obtaining regulatory approvals;
- the costs associated with the implementation of a corporate restructure;
- the costs of setting up and operating our own marketing and sales organization;
- the ability to obtain funding under contractual and licensing agreements;
- the ongoing obligations to make contractual licensed patent maintenance fees, milestone payments and royalty payments;
- the costs involved in filing, prosecuting, maintaining 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.

Common Stock reserve requirements may restrict our ability to raise capital and continue to operate our business.

Common Stock reserve requirements may restrict our ability to raise capital and continue to operate our business. The Company is authorized to issue up to 2 billion (2,000,000,000) shares of Common Stock under its Certificate of Incorporation. As of December 31, 2022, there were 125,544,276 shares of Common Stock issued and outstanding and the Company reserved an aggregate of 1,083,901,432 shares of its authorized and unissued Common Stock with respect to convertible notes, convertible Series B Preferred Stock, warrants, options granted not yet exercised and shares available for issuance its equity plans, not including of incremental contractual reserves in excess of the calculated number of conversion shares and warrant shares. If we breach the contractual reserve requirements, associated with our convertible notes, we will be in default of such contractual obligations, although we have not received any default notices, which may have material adverse consequences which may make it more difficult to raise additional necessary capital to operate our business. To date, we have not received any default notices,

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 our acquisition of Pier, we gained access to a pre-existing relationship between Pier and the University of Illinois at Chicago (the "UIC"). Effective in September 2014, the Company entered into a license agreement with the UIC (the "UIC License Agreement"), which gave the Company certain exclusive rights with respect to certain patents and patent applications in the United States and other countries claiming the use of dronabinol and other cannabinoids for the treatment of sleep-related breathing disorders, including sleep apnea. The UIC License Agreement obligates the Company to comply with various development and reporting requirements and to make various royalty payments, potential one-time and annual royalty payments, potential deferred compensation annual net sales payments, potential deferred compensation minimum payments and as well as payments upon the achievement of certain development milestones. See Note 9. Commitments and Contingencies, Significant Agreements and Contracts

In addition, the Company and the University of Wisconsin-Milwaukee Research Foundation, Inc., an affiliate of the University of Wisconsin-Milwaukee ("UWMRF") executed the UWMRF Patent License Agreement effective August 1, 2020 pursuant to which RespireRx licensed the intellectual property identified therein, including with respect to GABAkines. In consideration for the licenses granted, the Company is required to pay to UWMRF patent filing and prosecution costs, annual license maintenance fees, one-time milestone payments, and annual royalties.

Certain payments under the UWMRF Patent License Agreement have not been paid by the Company. The Company has not received a notification of default either during the fiscal year ended December 31, 2022 or in any subsequent periods. All amounts due under the UWMRF Patent License Agreement are reflected in the Company's consolidated financial statements as of December 31, 2022 in accounts payable and accrued expenses.

If we are unable to comply with the terms of these licenses, such as required payments thereunder, these licenses might be terminated and we would lose access to the licensed technologies or applications, which would have a material adverse effect on the Company's ability to conduct research and development and operate.

We may not be able to successfully develop and commercialize our product candidates and technologies.

The development of our product candidates is subject to risks 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 product candidates are in a development spectrum that runs from preclinical to Phase 2 clinical trials, but we do not have any currently active trials. Assuming these trials are initiated, which will require additional financing, we are planning for additional preclinical studies and Phase 1, Phase 2A, Phase 2B and Phase 3 clinical trials, we do not have any currently active trials. Accordingly, we will require significant additional funding for research, development and clinical testing of our product candidates, which may not be available on favorable terms or at all.

Additionally, our success, at least in part, is dependent upon the strength of our intellectual property, including, but not limited to licensed and owned patents, patent applications, continuations-in-part, provisional patent applications, know-how, trade secrets and other forms of intellectual property. The issuance of patents with relevant claims is subject to varying degrees of uncertainty. Our ability to defend our intellectual property or challenge third party intellectual property infringement claims is expensive, time consuming and uncertain. If our patent applications do not issue with relevant claims or if we cannot defend our patents, or, as appropriate, challenge interfering patents or actions of third parties, or otherwise maintain our intellectual property, our business and operations will be adversely affected.

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. We cannot be certain that we will be able to successfully complete any of our research and development activities. One of our product candidates is based, at least in part, on the development of one or more new formulations and the repurposing of an approved drug, the development of which is inherently risky while others of our product candidates have never been approved for marketing by any regulatory bodies and are subject to substantial research and development risks. Concerns about the safety and efficacy of our product candidates could limit our future success.

Even if we do complete our research and development activities, we may not be able to successfully market any of the product candidates or be able to obtain the necessary regulatory approvals or assure that healthcare providers and payors will accept our product candidates. We also face the risk that any or all of our product candidates will not work as intended or that they will be unsafe, or that, even if they do work and are safe, that our product candidates 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 have announced and commenced a restructuring plan to facilitate the financing of our business initiatives. We may not achieve some or all of the expected benefits of our restructuring plan and the restructuring may adversely affect our business.

We have incorporated one newly formed subsidiary in Australia to develop the pharmaceutical cannabinoids platform and plan to do the same with respect to one or more of our other platforms, with the goals, among others, of improving our ability to finance those platforms and attract potential strategic partners. There can be no assurance that these goals or any of our intended goals will be achieved, and the restructuring may adversely affect our business.

We have not voluntarily implemented various corporate governance measures, in the absence of which stockholders may have more limited protections against interested director transactions, conflicts of interests and similar matters.

We have not adopted any corporate governance measures since our securities are not yet listed on a national securities exchange and we are not required to do so. We have not adopted corporate governance measures such as separate audit or other independent committees of our Board as we presently have only one independent director. For example, in the absence of audit, nominating and compensation committees comprised of at least a majority of independent directors, decisions concerning matters such as compensation packages to our senior officers and recommendations for director nominees may be made by a majority of directors who have an interest in the outcome of the matters being decided. You should bear in mind our current lack of corporate governance measures in formulating investment decisions.

The novel coronavirus (COVID-19) pandemic and the risk of future pandemics may negatively impact our ability to successfully develop and commercialize our product candidates and technologies and may ultimately affect our business, financial condition and results of operations.

Although the COVID-19 pandemic seems to be diminishing in the United States, new variants may arise and the impact in many foreign countries is still severe. Vaccination rates in the United States have still not achieved the desired levels believed to be necessary to diminish the chance of a resurgence. The COVID-19 pandemic has highlighted that the U.S. and the rest of the world is at risk of future pandemics by variants or completely different infectious agents. As described in more detail below, the global pandemic may adversely affect our business in many ways.

Such pandemics, as they occur, will create significant uncertainty and economic disruption.

The COVID-19 pandemic and government responses thereto have made it very difficult to recruit clinical trial subjects and patients and to conduct clinical trials in general. Although somewhat less than in the height of the pandemic prior to vaccine availability, we expect the life sciences industry and clinical trial activity to continue to face challenges arising from the possibility of quarantines, site closures, travel limitations, interruptions to the supply chain for investigational products and other. These challenges may lead to difficulties in meeting protocol-specified procedures. Further, in response to the public health emergency, the FDA issued guidance in March and July 2020 that was updated on January 27, 2021, emphasizing that safety of trial participants is critically important. Decisions to continue or discontinue individual patients or the trial are expected to be made by trial sponsors in consultation with clinical investors and Institutional Review Boards, which may lead to the implementation of additional protocols such as COVID-19 screening procedures, resulting in potential delays and additional costs. The risks, strategic and operational challenges and costs of conducting such trials as a result of the global pandemic have exacerbated an already challenging clinical trial process, which may negatively impact our ability to plan or conduct trials if we secure sufficient financing to enable us to pursue such activity.

The extent to which COVID-19 or any pandemic ultimately impacts our operations will depend on a number of factors, many of which will be outside of our control. In addition to the disruptions adversely impacting our business and financial results, they may also have the effect of heightening many of the other risks described in these risk factors, including risks relating to our ability to begin to generate revenue, to generate positive cash flow, our relationships with third parties, and many other factors. We will attempt to minimize these impacts, but there can be no assurance that we will be successful in doing so.

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 companies and other strategic partners to participate with us in the development of major indications for the cannabinoids and neuromodulator compounds. These agreements would potentially provide us with additional funds or in-kind services 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.

If our third-party manufacturers' facilities do not follow established current good manufacturing guidelines and 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 or other country's or geographic region'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. 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 adversely 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 or GABAkine 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 comparable or superior to those we are developing.

The pharmaceutical industry is characterized by intensive research efforts, rapidly advancing technologies, intense competition and a strong emphasis on proprietary therapeutics. Our competitors include a number of 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 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 expect that competition in this field will continue to intensify.

Some of our patents and patent applications do not cover the entire world, thus limiting the potential exclusive commercialization of our products to those countries in which we have intellectual property protection. We are aware of at least two companies that may be developing a product or products similar to one of our prospective products for our proposed indication in countries where we do not currently have intellectual property protection. Such company or companies may choose to compete with us in countries where we do have intellectual property protection and cause us to expend resources defending our intellectual property. At some point, we may experience competition from non-drug products such as medical cannabis or dietary supplements and similar products containing cannabis-derived molecules that may attempt to make unsubstantiated or unapproved claims from national regulatory bodies, such as the FDA. Since our target markets are very large, there is a great deal of economic incentive for others to enter and compete in those markets. We must compete with other companies with respect to their research and development efforts and for capital and other forms of funding. An inability to compete would have a material adverse impact on our business operations.

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 were highly dependent on Arnold S. Lippa, Ph.D., Interim CEO and Interim President, who is also our Chief Scientific Officer and Executive Chairman, and Jeff E. Margolis, our Senior Vice President, Chief Financial Officer, Treasurer and Secretary. 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.

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 is volatile and our common stock could decline in value.

Our Common Stock is currently quoted for public trading on the OTC Pink Markets. The trading price of our Common Stock has been subject to wide fluctuations and may fluctuate in response to a number of factors, many of which will be beyond our control.

The market price of securities of life sciences companies in general has been very unpredictable. Broad market and industry factors may adversely affect the market price of our Common Stock, regardless of our operating performance. In the past, following periods of volatility in the market price of a company's securities, securities class-action litigation has often been instituted. Such litigation, if instituted, could result in substantial costs for us and a diversion of management's attention and resources.

The range of sales prices of our common stock, for the fiscal year ended December 31, 2022 and as adjusted for the reverse stock-split effected on January 5, 2021, for the fiscal year ended December 31, 2021, as quoted on the OTC Markets, was $0.019 and $0.0023 and $0.068 to $0. 0.011, respectively. The following factors, in addition to factors that affect the market generally and the OTC Pink Markets specifically, 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;
- legal developments regarding cannabinoids and cannabis products 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, healthcare regulations and standard of care requirements.

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 shares 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 December 31, 2022, we had 125,544,276 shares of our common stock outstanding.

If all warrants and options outstanding as of December 31, 2022, were exercised prior to their respective expiration dates, up to 419,683,183 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.

As of December 31, 2022, there were remaining outstanding convertible notes totaling $1,258,315 inclusive of accrued interest. Of that amount, $1,200,658 was convertible into 641,341,808 shares of Common Stock and $57,657 was convertible into an indeterminate number of shares of Common Stock as such notes may convert, at the option of each note holder, acting separately and independently of the other note holders, into the next exempt private securities offering of equity securities.

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 and other governing documents 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 to issue, as of December 31, 2021, 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. Section 203 of the Delaware General Corporation Law, from which we did not elect to opt out, provides that if a holder acquires 15% or more of our stock without prior approval of our Board of Directors, that holder will be subject to certain restrictions on its ability to acquire us within three years. These provisions may delay or deter a change in control of us, and could limit the price that investors might be willing to pay in the future for shares of our Common Stock.

Historically, warrants to purchase Common Stock have been issued as compensation for professional services, typically related to fund raising or have been issued in connection with the issuance of certain notes.

In addition, on several occasions, certain executive officers, members of the Board of Directors and certain vendors have offered to forgive accrued compensation and other amounts due to them, and the Board of Directors accepted such offers in exchange for either shares of Common Stock or options to purchase Common Stock. In particular, if executive officers offered and if the Board of Directors accepts such offer(s) in the future, a significant number of shares of Common Stock or one or more options to purchase a significant number of shares of Common Stock could be issued or granted. Recently, certain executive officers and a vendor offered to exchange or settle amounts owed by the Company to them in exchange for Series J Preferred Stock which, which although not convertible into Common Stock, has voting rights. The ability of our Board of Directors to issue additional shares of Common Stock, preferred stock or options to purchase shares of Common Stock, or warrants to purchase shares of Common Stock, may have the effect of delaying or preventing an attempt by our stockholders to replace or remove existing directors and management.

Since our Common Stock is 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.

Our Common Stock is 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. Since our Common Stock is 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.

We may issue additional shares of our Common Stock, and investment in our company is likely to be subject to substantial dilution.

Stockholders' interests in the Company will be diluted and stockholders may suffer dilution in their net book value per share when we issue additional shares. Dilution is the difference between what investors pay for their stock and the net tangible book value per share immediately after the additional shares are purchased. We are authorized to issue up to 2,000,000,000 (2 billion) shares of Common Stock. Our financing activities in the past focused on convertible note financing that requires us to issue shares of Common Stock to satisfy principal, interest and any applicable penalties related to these convertible notes. When required under the terms and conditions of the convertible notes, we issue additional shares of Common Stock that have a dilutive effect on our stockholders. We anticipate that at least a substantial portion of our future funding, if any, will be in the form of equity financing from the sale of our Common Stock and so any investment in the Company will likely be diluted, with a resulting decline in the value of our Common Stock.

Additional financing may not be available on terms acceptable to us, and our ability to raise capital through equity financing may be limited by the number of authorized shares of our Common Stock. In order to raise significant additional amounts from equity financing, we will need to seek, and have sought, stockholder approval to amend our Certificate of Incorporation to increase the number of authorized shares of our Common Stock, and any such amendment would require the approval of the holders of a majority of the outstanding shares of our Common Stock. If we are unable to obtain needed financing on acceptable terms, we may not be able to implement our business plan, which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Delaware law, our Certificate of Incorporation and our Bylaws provide for the indemnification of our officers and directors at our expense, and correspondingly limits their liability, which may result in a major cost to us and hurt the interests of our shareholders because corporate resources may be expended for the benefit of officers and/or directors.

Our Certificate of Incorporation and By-Laws of the Company, as amended (the "Bylaws") include provisions that eliminate the personal liability of our directors for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the Company or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the Delaware General Corporation Law, or (iv) for any transaction from which the director derived an improper personal benefit. These provisions eliminate the personal liability of our directors and our shareholders for monetary damages arising out of any violation of a director of his fiduciary duty of due care, but do not affect a director's liabilities under the federal securities laws or the recovery of damages by third parties.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling the Company pursuant to provisions of the Delaware General Corporation Law, the Company has been informed that, in the opinion of the Securities and Exchange Commission, such indemnification is against public policy as expressed in that Act and is, therefore, unenforceable.

We do not intend to pay cash dividends on any investment in the shares of stock of our Company and any gain on an investment in our Company will need to come through an increase in our stock's price, which may never happen.

We have never paid any cash dividends and currently do not intend to pay any cash dividends for the foreseeable future. To the extent that we require additional funding currently not provided for, our funding sources may prohibit the payment of a dividend. Because we do not currently intend to declare dividends, any gain on an investment in our Company will need to come through an increase in our Common Stock's price. This may never happen, and investors may lose all of their investment in our Company.

FINRA sales practice requirements may also limit a stockholder's ability to buy and sell our stock.

In addition to the "penny stock" rules described above, the Financial Industry Regulatory Authority ("FINRA") has adopted rules that require that in recommending an investment to a customer, a broker-dealer must have reasonable grounds for believing that the investment is suitable for that customer. Prior to recommending speculative low-priced securities to their non-institutional customers, broker-dealers must make reasonable efforts to obtain information about the customer's financial status, tax status, investment objectives and other information. Under interpretations of these rules, FINRA believes that there is a high probability that speculative low-priced securities will not be suitable for at least some customers. FINRA requirements make it more difficult for broker-dealers to recommend that their customers buy our Common Stock, which may limit your ability to buy and sell our stock and have an adverse effect on the market for our shares.

Costs and expenses of being a reporting company under the Exchange Act are substantial and may continue to impede us from ever achieving profitability.

We are subject to the reporting requirements of the Exchange Act and aspects of the Sarbanes-Oxley Act. We expect that the requirements of these rules and regulations will continue to comprise a substantial portion of our legal, accounting and financial compliance costs, and to make some activities more difficult, time-consuming and costly, placing significant strain on our personnel, systems and resources.

Our Common Stock trades on the OTC Pink Market

The OTC Pink Market is the lowest and most speculative of the three over-the-counter marketplaces, and securities on the OTC Pink Market are more thinly and infrequently traded due to the more limited ability of broker-dealers and stockholders to buy or sell such securities. Accordingly, the market for and liquidity of our Common Stock has been and is likely to continue to be significantly diminished, and our ability to raise capital would be adversely impacted.

As a smaller reporting company and a non-accelerated filer, we are subject to scaled disclosure requirements that may make it more challenging for investors to analyze our results of operations and financial prospects and may cause investors to find our Common Stock less attractive.

As a smaller reporting company, we are subject to scaled disclosure requirements that may make it more challenging for investors to analyze our results of operations and financial prospects. For instance, as a "smaller reporting company," which is generally defined as a company with less than $250 million of public float or a company with less than $100 million in annual revenues and either no public float or a public float of less than $700 million, we may elect to provide simplified executive compensation disclosures in our filings and take advantage of other decreased disclosure obligations in our filings with the SEC, including being required to provide only two years of audited financial statements in our annual reports. Consequently, it may be more challenging for investors to analyze our results of operations and financial prospects. Additionally, under current SEC rules, we are not an "accelerated filer" and so not required to include an auditor attestation of the effectiveness of our internal control over financial reporting in our annual reports on Form 10-K. We cannot predict if investors will find our Common Stock less attractive because we may rely on these reduced requirements. If some investors find our Common Stock less attractive as a result, there may be a less active trading market for our Common Stock and the price of shares of our Common Stock may be more volatile.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

As of December 31, 2022, 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

We are periodically subject to various pending and threatened legal actions and claims. See Note 9. Commitments and Contingencies – *Pending or Threatened Legal Actions and Claims* in the notes to our consolidated financial statements for the year ended December 31, 2022 for additional information regarding these matters.

The legal proceedings discussed in this report could result in adverse judgments, settlements, fines, injunctions, restitutions or other relief that could require significant expenditures or have other effects on our business. Management believes, based on current knowledge and after consultation with counsel, that the outcome of such actions will not have a material adverse effect on our consolidated financial condition. The outcome of litigation and other legal proceedings is inherently uncertain, and it is possible that one or more of the matters currently pending or threatened could have an adverse effect on our liquidity, financial condition or results of operations for any particular period.

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 was quoted on the OTC Pink Market on December 31, 2022 under the symbol "RSPI". The current quotations on the OTC Pink Market reflect inter-dealer prices, without retail mark-up, mark-down or commission and may not necessarily represent actual transactions.

As of April 5, 2023, there were 125 stockholders of record of our Common Stock, and approximately 4,000 beneficial owners. The high and low sales prices for our Common Stock on December 31, 2022, as quoted on the OTC Pink Market, were $0.0029 and $0.0022, respectively, the last date of the fiscal year on which the Common Stock traded (972,326 shares of common stock).

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, 2022, we did not repurchase any of our securities.

Item 6. [Reserved]

Not applicable.

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.

Overview

The mission of the Company is to develop innovative and revolutionary treatments to combat disorders caused by disruption of neuronal signaling. We are developing treatment options that address conditions affecting millions of people, but for which there are limited or poor treatment options, including obstructive sleep apnea ("OSA"), attention deficit hyperactivity disorder ("ADHD"), epilepsy, acute and chronic pain, including inflammatory and neuropathic pain, and recovery from spinal cord injury ("SCI"), which are conditions that affect millions of people, and certain orphan disorders.. We are also considering developing treatment options for other conditions based on results of preclinical and clinical studies to date.

Our major challenge has been to raise substantial equity or equity-linked financing to support research and development plans for our cannabinoid and neuromodulator platforms, while minimizing the dilutive effect to pre-existing stockholders. At present, we believe that we are hindered primarily by our public corporate structure, our OTC Pink Markets listing, and low market capitalization as a result of our low stock price as well as the weakness of our balance sheet.

For this reason, the Company has effected an internal restructuring plan through which our two drug platforms have been reorganized into separate business units and may in the future, be organized into subsidiaries of RespireRx. We believe that by creating one or more subsidiaries, one of which was formed on January 11, 2023, to further the aims of ResolutionRx and EndeavourRx, it may be possible, through separate finance channels, to unlock the unrealized asset values of each and set up its programs for partnering or sale.

This restructuring plan is based upon our two research platforms: pharmaceutical cannabinoids and neuromodulators. The business unit focused on pharmaceutical cannabinoids is referred to as ResolutionRx and the business unit focused on neuromodulators is referred to as EndeavourRx. It is anticipated that the Company will use, at least initially, its management personnel to provide management, operational and oversight services to these two business units.

(i) ResolutionRx Ltd, which will hold our pharmaceutical cannabinoids platform, is as of January 11, 2023, a wholly-owned subsidiary of the Company, and is developing compounds that target the body's endocannabinoid system, and in particular, the re-purposing of dronabinol, an endocannabinoid CB1 and CB2 receptor agonist, for the treatment of OSA. Dronabinol is already approved by the FDA for other indications.

(ii) EndeavourRx, our neuromodulators platform is made up of two programs: (a) our AMPAkines program, which is developing proprietary compounds that act as positive allosteric modulators ("PAMs") of AMPA-type glutamate receptors to promote neuronal function and (b) our GABAkines program, which is developing proprietary compounds that act as PAMs of $GABA_A$ receptors, and which was established pursuant to our entry into a patent license agreement (the "UWMRF Patent License Agreement") with the University of Wisconsin-Milwaukee Research Foundation, Inc., an affiliate of the University of Wisconsin-Milwaukee ("UWMRF").

Management has begun to organize our ResolutionRx and EndeavourRx business units into two independent subsidiaries: (i) a ResolutionRx subsidiary has been formed and into which we intend to contribute our pharmaceutical cannabinoid platform and its related tangible and intangible assets and certain of its liabilities and (ii) an EndeavourRx subsidiary, into which we would contribute our part or all of our neuromodulator platform, including either or both the AMPAkine and GABAkine programs and their related tangible and intangible assets and certain of their liabilities.

Management believes that there are advantages to separating these platforms formally into newly formed subsidiaries, including but not limited to optimizing their asset values through separate financing channels and making them more attractive for capital raising as well as for strategic transactions.

The Company is also engaged in business development efforts (licensing/sub-licensing, joint venture and other commercial structures) with a view to securing strategic partnerships that represent strategic and operational infrastructure additions, as well as cash and in-kind funding opportunities. These efforts have focused on, but have not been limited to, transacting with brand and generic pharmaceutical and biopharmaceutical companies as well as companies with potentially useful contract research, formulation or manufacturing capabilities, significant subject matter expertise and financial resources. No assurance can be given that any transaction will come to fruition and that if it does, that the terms will be favorable to the Company.

Financing our Platforms

Our major challenge has been to raise substantial equity or equity-linked financing to support research and development plans for our cannabinoid and neuromodulator platforms, while minimizing the dilutive effect to pre-existing stockholders. At present, we believe that we are hindered primarily by our public corporate structure, our OTC Pink Market listing, and low market capitalization as a result of our low stock price.

The formation on January 11, 2023 , of ResolutionRx Ltd, a public, unlisted Australian subsidiary, currently wholly-owned by the Company, provides potentially new opportunities to raise capital, particularly for the cannabinoid platform.

On January 27, 2023, ResolutionRx entered into a Term Sheet and Letter of Intent with Radium Capital. for a series of debt financings secured by the Australian Research and Development Tax Incentive (“R&DTI”), a tax credit or rebate available for the component of R&D activities that are qualified core and supporting activities. In the case of ResolutionRx, this is anticipated to be a 43.5% tax rebate, with up to, and at the discretion of ResolutionRx, 80% to be financed by Radium and collateralized by the rebate. The Company and ResolutionRx believe that this is one step taken in a series of anticipated transactions that will enable the debt and equity or equity-linked financing of ResolutionRx, to support its R&D efforts budgeted at approximately $16.5 million over the next approximately two and half years.

RespireRx intends to enter into a Master Services Agreement ("Master Services Agreement") with ResolutionRx pursuant to which the Company will provide certain services to ResolutionRx for which the Company will be paid. See Note 10. Subsequent Events to our consolidated financial statements as of December 31, 2022 for more details about ResolutionRx.

On February 27, 2023, ResolutionRx entered into a services agreement ("Australian CRO Agreement) with iNGENu CRO Pty Ltd (iNGENu), a contract research organization ("CRO"), pursuant to which iNGENu is to act as a full service CRO in support of ResolutionRx's research and development ("R&D") program, by conducting laboratory experiments to determine a final optimum dronabinol formulation, scaling up and manufacturing the chosen formulation for clinical use, preparing and submitting regulatory documents and designing and conducting clinical trials, including pharmacokinetic/pharmacodynamic, safety and pivotal efficacy studies. The Radium financing is intended to advance these programs which may make such programs more appealing to investors and strategic partners. See Note 10. Subsequent Events to our consolidated financial statements as of December 31, 2022 for more details about ResolutionRx.

On April 3, 2023, the Company filed a Certificate of Designation, Preferences, Rights and Limitations of its Series I Preferred Stock ("Series I Certificate of Designation") with the Secretary of State of the State of Delaware to amend the Company's certificate of incorporation. The filing of the Series I Certificate of Designation was approved by the Company's Board of Directors. The Series I Certificate of Designation sets forth the preferences, rights and limitations of the Series I Preferred Stock, a brief summary of which is as follows:

The number of shares designated as Series I 8% Redeemable Preferred Stock ("Series I Preferred Stock") is 3,500 (which is not subject to increase without the written consent of a majority of the holders (each a "Series I Holder") of the Series I Preferred Stock or as otherwise set forth in the Certificate of Designation). The Series I Preferred Stock Par Value is $0.001 and the Series I Preferred Stock Stated Value is $100.00. The dividend rate is 8% per annum based on a 365 day year, payable in-kind.

Redemption shall happen upon the payment of a Series I "Eligible Payment" which takes place upon the occurrence of an Eligible Payment Event, as both terms are defined in the Certificate. The Series I Eligible Payment is calculated as the Series I Maximum Appreciated Price, which is $0.02, subject to certain adjustments (unless a lesser price is agreed by the Corporation and the Series I Holder) multiplied by the number of shares of Common Stock corresponding to the number of Series I Preferred Shares divided by the Series I Base Measurement Price ($0.0015), multiplied by the Series I Preferred Stock Stated Value. A Series I *Eligible Payment Event* shall include: (i) any license, sublicense, joint venture or similar transaction resulting in an upfront payment of at least $15,000,000.00, or (ii) any milestone payment with respect to research and development of at least $15,000,000.00, or (iii) receipt of royalties in any one year of at least $15,000,000.00 or (iv) any event resulting in the Company's receipt of an amount deemed by the Company's Board of Directors to be establish a Series I Eligible Payment Event. Certain Fundamental Transactions as defined in the Series I Certificate of Designation may be Series I Eligible Payment Events.

For a detailed description the Series Certificate of Designation and the Series I Preferred Stock to be issued, please refer to our Current Report on Form 8-K, filed with the SEC on April 6, 2023, including but not limited to Exhibit 3.1 to the Current Report of Form 8-K.

On April 5, 2023 entered into a securities purchase agreement ("Series I Purchase Agreement) as a first closing of a securities offering exempt from registration under federal securities laws, rules and regulation and those of the various states, with two individual accredited investors investing jointly ("Investors"). Pursuant to the terms of the Securities I Purchase Agreement, the investors invested $25,000 for 250 shares of Series I Preferred Stock. The Series I Purchase Agreement, the Certificate of Designation and the delivery of the Series I Preferred Stock was approved by the Company's Board of Directors.

For a detailed description the Series I Purchase Agreement, please refer to our Current Report on Form 8-K, filed with the SEC on April 6, 2023, including but not limited to Exhibit 99.1 to the Current Report of Form 8-K.

On April 11, 2023, the Company's Board of Directors authorized an amendment to the Company certificate of incorporation to establish a Series J 8% Voting, Participating, Redeemable Preferred Stock (Series J Certificate of Designation"). On April 12, 2023, the Company filed the Series J Certificate of Designation with the Secretary of State of the state of Delaware.

The Series J Certificate of Designation sets forth the preferences, rights and limitations of the Series J Preferred Stock, a summary of which is as follows:

The number of shares designated as Series J 8% Redeemable Preferred Stock ("Series J Preferred Stock") is 15,000 (which is not subject to increase without the written consent of a majority of the holders (each a "Series J Holder") of the Series J Preferred Stock or as otherwise set forth in the Series J Certificate of Designation). The Series J Preferred Stock Par Value is $0.001 and the Series J Preferred Stock Stated Value is $100.00. The dividend rate is 8% per annum based on a 365 day year, payable in-kind.

Redemption shall happen upon the payment of a Series J "Eligible Payment" which takes place upon the occurrence of a Series J Eligible Payment Event, as both terms are defined in the Series J Certificate. The Series J Eligible Payment is calculated as the Maximum Appreciated Price, which is closing price per share of Common Stock or its equivalent on the day that is the trading day on which an Series J Eligible Payment Event is publicly announced prior to the opening of financial markets, or the trading day following the public announcement of the Series J Eligible Payment Event if announced after the opening of the financial markets on the date of the Series J Eligible Payment Event (unless a lesser price is agreed by the Company and the Series I Holder) multiplied by the number of shares of Common Stock corresponding to the number of Series J Preferred Shares divided by the Series J Base Measurement Price ($0.006), subject to certain adjustments, multiplied by the Series J Preferred Stock Stated Value. A Series J Eligible Payment Event shall include: (i) any license, sublicense, joint venture or similar transaction resulting in an upfront payment of at least $20,000,000.00, or (ii) any milestone payment with respect to research and development of at least $20,000,000.00, or (iii) receipt of royalties in any one year of at least $20,000,000.00 or (iv) any event resulting in the Corporation's receipt of an amount deemed by the Corporation's Board of Directors to be establish a Series J Eligible Payment Event. Certain Fundamental Transactions as defined in the Series J Certificate of Designation may be Series J Eligible Payment Events.

Each share of Series J Preferred Stock shall be entitled to that number of votes, which shall be eligible to vote along with the Common Stockholders, or, as the case may be, when voting as a class, that is equal to one hundred (100x) times number calculated by dividing the number of shares of Series J Preferred Stock by the Base Measurement Price as of the record date for such vote or written consent or, if there is no specified record date, as of the date of such vote or written consent.

Upon any liquidation, dissolution or winding-up of the Company, no distribution shall be made to the holders of any shares of capital stock of the Company unless, prior thereto, the Series J Holders receive (i) an amount equal to 100% of the stated value, plus any accrued and unpaid dividends plus (ii) an amount equal to a pro rata portion of the Series J Eligible Payment Amount less the Series J Preferred Stock Stated Value paid pursuant to (i) above, plus (iii) the pro rata amount when considered with all outstanding shares of Common Stock and any securities that may be convertible into, exercisable for or exchanged for Common Stock that have similar rites, of any remaining distribution. The distribution shall result in a Redemption. If the assets of the Company are insufficient to pay in full such amounts due the Series J Holders or any holders of another class that is parri pasu with the Series J Holders ("Series J Pari Passu Holders"), then the entire assets shall be distributed ratably among the Series J Holders and Series J Pari Passu Holders in accordance with the respective amounts that would be payable on such shares if all amounts payable thereon were paid in full and such distribution shall result in a Redemption. A Fundamental Transaction, or a Change of Control Transaction, each as defined in the Certificate, shall be deemed to be Liquidations.

On April 12, 2023, RespireRx entered into an exchange agreement and two exchange and settlement agreements with two executive officrs and one vendor collectively, the "Series J Settlement Agreements" and the executive officers and vendor are referred to herein as the "Series J Exchangers."

Pursuant to the terms of the Settlement Agreements, the Company, in exchange for the issuance of Series J Preferred Stock to the Exchangers, the Exchangers exchanged or settled their rights to receive an aggregate of $570,000 of accrued compensation or debt, advances or other liabilities owed to them. The Series J Preferred Stock is transferrable to Affiliates as such term is defined in the Series J Certificate of Designation. The two executives immediately transferred all of their shares of Series J Preferred Stock to separate trusts of which each is separately the grantor and that are Affiliates of each. The vendor immediately transferred its shares to an individual Affiliate of the vendor..

The Settlement Agreements, the transfer requests and the Series J Certificate of Designation and the delivery of the Series J Preferred Stock was approved by the Company's Board of Directors.

For a detailed description the Series J Certificate of Designation, the Series J Preferred Stock, the Settlement Agreements and the transfer letter agreements, please refer to our Current Report on Form 8-K, filed with the SEC on April 13, 2023, including but not limited to Exhibit 3.1 and Exhibit 99.1 through 99.6 to the Current Report of Form 8-K.

Recent Developments

University of Illinois at Chicago 2014 License Agreement Second Amendment

See Note 9. Commitments and Contingencies – Significant Agreements and Contracts – University of Illinois 2014 Exclusive License Agreement in the notes to consolidated financial statements for the years ended December 31, 2022 and 2021, included in this report.

GRIA UIL collaboration

The Company entered into a material transfer agreement with University College London (UCL) as part of a collaborative research effort involving Dr. Ian Coombs and Prof. Mark Farrant, founder members of the GRIA Scientific Advisory Board of the CureGRIN Foundation ("CureGRIN") and from the UCL Department of Neuroscience, Physiology, and Pharmacology. The UCL group, which also includes Prof, Stuart Cull-Candy F.R.S., has been awarded funding from CureGRIN, and will be working with the RespireRx research team to study the possibility of using CX1739, RespireRx's lead clinical AMPAkine, for the treatment of a major class of GRIA disorders. GRIA Disorder refers to a family of rare genetic diseases caused by mutations in the AMPA glutamate receptor genes that cause either a loss or gain in the functioning of these receptors, which are the site of action of RespireRx's AMPAkines and which play an important role in learning and memory as well as other critical biological functions.

Recent Accounting Pronouncements

For a description of recent accounting pronouncements, see Note 3-Summary of Significant Accounting Policies-*Recent Accounting Pronouncements* to the consolidated financial statements for the fiscal years ended December 31, 2022 and 2021, included with this report.

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.

Through the merger with Pier, the Company gained access to the 2007 License Agreement that Pier had entered into with the University of Illinois which was terminated effective March 21, 2013 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 2007 License Agreement and also included the assignment of rights to the University of Illinois, to certain patent applications filed by RespireRx. The 2014 License Agreement was amended on July 25, 2017 which first amendment was to extend certain timeframes. Effective December 15, 2022, the Company and the Board of Trustees of the University of Illinois ("UIL") entered into the Second Amendment to RespireRx-University of Illinois Exclusive License Agreement. The parties entered into the Second Amendment in order to eliminate accrued financial obligations to UIL and reduce future obligations. Annual $100,00 payments by the Company to UIL are eliminated and the unpaid amount of $200,000 for calendar years 2021 and 2022 are no longer due and payable. Among other changes, the $75,000 payment that was due after the dosing of the 1st patient in a Phase II study anywhere in the world is now reduced to $10,000 and UIL has been given an extension in the term of the License and a deferred compensation obligation of RespireRx including the 4% royalty on net sales due to UIL has been extended for up to 8 years after the original patent rights expire by including a royalty on the net sales protected by a patent application submitted by the Company describing a new formulation of dronabinol. See Note 9. Commitments and Contingencies-Significant Agreements and Contracts-University of Illinois Exclusive License Agreement in our consolidated financial statement for the fiscal year ended December 31, 2022 for more details.

Critical Accounting Policies and Estimates

SEC guidance defines Critical Accounting Estimates as those estimates made in accordance with GAAP that involve a significant level of estimation uncertainty and have had or are reasonably likely to have a material impact on the financial condition or results of operation of the registrant. These items require the application of management's most difficult, subjective or complex judgments, often because of the need to make estimates about the effect of matters that are inherently uncertain and that may change in subsequent periods. In preparing our consolidated financial statements in accordance with GAAP, management has made estimates, assumptions and judgments that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting periods.

In preparing these financial statements, management has utilized available information, including our past history, industry standards and the current and projected economic environment, among other factors, in forming its estimates, assumptions and judgments, giving due consideration to materiality. Because the use of estimates is inherent in GAAP, actual results could differ from those estimates. In addition, other companies may utilize different estimates, which may impact comparability of our results of operations to those of companies in similar businesses. A summary of the accounting estimates that management believes are critical to the preparation of our consolidated financial statements is set forth below. See Note 3 in the notes to consolidated financial statements as of December 31, 2022 for additional disclosures regarding our significant accounting policies.

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) and other expenses relating to the acquisition, design, development and testing of the Company's treatments and product candidates. Research and development costs include salaries of our officers who also perform limited administrative duties for the Company. Management makes an allocation of those salaries to research and development based on estimates of time spent on those activities.

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.

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 and, in accordance with generally accepted accounting principles, are charged to general and administrative expenses.

Results of Operations

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

	Years Ended December 31,	
	2022	**2021**
Operating expenses:		
General and administrative, including $351,600 and $1,104,226 to related parties for the years ended December 31, 2022 and 2021, respectively	$ 1,149,823	$ 1,857,085
Research and development, including $339,600 and $448,625 to related parties for the years ended December 31, 2022 and 2021, respectively	429,532	702,043
Total operating costs and expenses	1,579,355	2,559,128
Loss from operations	(1,579,355)	(2,559,128)
Gain on warrant exchange	-	1,099
Gain/(Loss) on settlement or modification of debt and other liabilities	100,000	62,548
Loss on note modification	(71,161)	-
Interest expense, including $13,536 and $12,289 to related parties for the years ended December 31, 2022 and 2021, respectively	(603,818)	(724,769)
Foreign currency transaction gain (loss)	51,614	75,410)
Net loss	(2,102,720)	(3,144,840)
Deemed dividends from warrant anti-dilution provisions	(1,870,273)	(378,042)
Net loss attributable to common shareholders	$ (3,972,993)	$ (3,522,882)
Net loss per common share - basic and diluted respectively (reflected on a post 10 for 1 reverse stock split basis which occurred on January 5, 2021)	$ (0.04)	$ (0.04)
Weighted average common shares outstanding - basic and diluted respectively (reflected on a post 10 for 1 reverse stock split basis which occurred on January 5, 2021)	111,322,742	88,347,206

Years Ended December 31, 2022 and 2021

Revenues. During the years ended December 31, 2022 and 2021, the Company had no revenues.

General and Administrative. For the year ended December 31, 2022, general and administrative expenses were $1,149,823, a decrease of $707,262 as compared to $1,857,085 for the year ended December 31, 2021.

Salaries were $300,000 as compared to $839,900 for the year ended December 31, 2022 and December 31, 2021, respectively, a reduction of $539,900 as a result of the resignation an termination of our former President and Chief Executive Officer as of January 31, 2022. Associated with the reduction in salaries was a year-to-year reduction of $51,127 in employee benefits. Board of Directors fees were $30,000 for the year ended December 31, 2022 as compared to $60,000 for the year ended December 31, 2021, due to the resignation of single director effective July 31, 2022. Accounting expenses declined $15,462 to $204,543 for the year ended December 31, 2022 as compared to $220,005 for the year ended December 31, 2021 due to a lower utilization of accounting services. Stock-based compensation costs and fees included in general and administrative expenses were $0 for the year ended December 31, 2022, as compared to $28,000 for the year ended December 31, 2021, reflecting a decrease of $28,000. The decrease is the result of the fact that there were no stock option grants to general and administrative employees and consultants and service providers of the Company during the year ended December 31, 2022 as compared to the year ended December 31, 2021. Legal fees for general corporate purposes were $36,798 for the year ended December 31, 2022 as compared to $250,950 for the year ended December 31, 2021, a decrease of $214,152 related to reduced utilization of legal services for general, non-financing related corporate matters. Legal fees associated with our filing of a Form 1-A offering statement and having it become qualified have been charged to miscellaneous general and administrative expenses in the amount of $177,883, during the fiscal year ended December 31, 2022 due to the lack of likelihood of completing the offering, having previously been recorded as a deferred financing cost, a current asset, on our consolidated balance sheet as of December 31, 2021. Insurance costs were $107,776 for the year ended December 31, 2022 as compared to $98,948 for the year ended December 31, 2021, an increase of $8,828, primarily as a result of an increase in the premium for our directors and officer liability insurance policy. Investor relations expenses increased $24,322 to $29,322 from $5,000 for the years ended December 31, 2022 and 2021, respectively due to the completion of one investor relations program in 2021 and the inception of a new digital media program in 2022. SEC filing and other expenses and OTC Market listing fees declined $19,677 totaling $16,245 for the year ended December 31, 2022 as compared to $35,921 for the year ended December 31, 2021 due primarily to a reduction in OTC Market listing fees upon downlisting from the OTC QB Venture Market to the OTC Pink Market. Our transfer agent fees declined $16,249 due to the fact that there was a non-recurring reverse stock split expense in January 2021 and no similar charge in 2022.

Research and Development. For the year ended December 31, 2022, research and development expenses were $429,532, a decrease of $272,511 as compared to $702,043for the year ended December 31, 2021, primarily associated with the completion in 2021 of a contract and consultant's work associated with the development of new proprietary dronabinol formulations and the completion of a contract in 2021 with the University of Wisconsin as part of their outreach services associated with the production of active pharmaceutical ingredient in anticipation of the commencement of additional preclinical studies in our GABAkines program.

Gain or Loss on Extinguishment of Debt and other Liabilities in Exchange for Equity. There was a gain of $100,000 resulting from the modification of liabilities associated with the Second Amendment to the University of Illinois at Chicago 2014 License Agreement during the year ended December 31, 2022 as compared to a gain of $62,548 associated with the payment settlement agreement associated with a vendor agreement during the year ended December 31, 2021. Losses on convertible note modifications resulting from the issuance of incentive shares associated with certain waivers during the year ended December 31, 2022 were $71,161 with no similar losses during the year ended December 31, 2021.

Interest Expense. During the year ended December 31, 2022, interest expense was $603,818 (including $13,536 to related parties), a decrease of $120,951, as compared to $724,769 (including $12,289 to related parties) for the year ended December 31, 2021. The decrease in interest expense resulted primarily from the maturity and repayment by conversion in whole or in part of four convertible notes during the fiscal year ended December 31, 2021 aggregating principal amounts of $317,500 offset in part, by the establishment of four new, generally smaller convertible notes during the year ended December 31, 2022. Also included in interest expense is the amortization of note discounts.

Foreign Currency Transaction Gain. The foreign currency transaction gain was $51,614 for the year ended December 31, 2022, as compared to a foreign currency transaction gain of $75,410 for the year ended December 31, 2021. The foreign currency transaction loss or gain relates to the $399,774 loan from SY Corporation Co., Ltd., formerly known as Samyang Optics Co. Ltd. ("SY Corporation"), made in June 2012, which is denominated in the South Korean Won.

Net Loss. For the year ended December 31, 2022, the Company incurred a net loss of $2,102,720 and a net loss attributable to common shareholders of $3,972,993 (after deemed dividends), as compared to a net loss of $3,144,840 and a net loss attributable to commons shareholders of $3,522,882 (after deemed dividends) for the year ended December 31, 2021.

Liquidity and Capital Resources

Working Capital and Cash

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 $2,102,720 for the fiscal year ended December 31, 2022 and $3,144,840 for the fiscal year ended December 31, 2021, and negative operating cash flows of $143,905 and $956,172 for the fiscal years ended December 31, 2022 and 2021 respectively. The Company had a stockholders' deficiency of $11,880,320 as of December 31, 2022 and expects to continue to incur net losses and negative operating cash flows for at least the next few years. Additionally, the Company has convertible notes outstanding with principal and accrued interest amounts otalling $1,269,622, all but $109,345 has already matured and the $109,354 matures on May 31, 2023. In the past, the Company has been successful in getting maturity dates extended or having convertible note holders repaid via conversion. In addition, the Company has been successful in having license payment due dates extended and then meeting the payment obligations on such extended dates or further extended dates. There can be no assurance that the Company will remain successful in those efforts. 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, 2022, has expressed substantial doubt about the Company's ability to continue as a going concern (see "Going Concern" below).

At December 31, 2022, the Company had a working capital deficit of $11,706,321, as compared to a working capital deficit of $9,713,758 at December 31, 2021, reflecting an increase in the working capital deficit of $1,992,563 for the fiscal year ended December 31, 2022. This increase is comprised of an increase in total current liabilities of $1,806,606, and a decrease in current assets of $185,957. The increase in total current liabilities consists of a net increase in accounts payable and accrued expenses of $488,623, an increase in accrued compensation and related expenses of $687,300, an increase in convertible notes payable of $468,162 inclusive of accrued interest, a decrease in the note payable to SY Corporation inclusive of accrued interest of $3,641 an increase in notes payable to officers and former officers and advances from officers of $144,978 and an increase in other short-term notes payable of $662.

At December 31, 2022, the Company had cash aggregating $87 as compared to $1,398 at December 31, 2020, reflecting a decrease in cash of $1,311 during the fiscal year ended December 31, 2022.

Operating Activities

For the fiscal year ended December 31, 2022, operating activities utilized cash of $143,905 as compared to utilizing cash of $956,172for the fiscal year ended December 31, 2021, to support the Company's ongoing operations and research and development activities.

Financing Activities

For the fiscal year ended December 31, 2022, financing activities consisted of net proceeds from convertible note financings of $95,000 net of original issue discounts and $117,733 from new officer advances and $89,735 with respect to financing of a new directors and officers insurance policy and other insurance policies, net of repayments.

On April 11, 2023, the Company's Board of Directors authorized an amendment to the Company's Certificate of Incorporation to establish Series J 8% Voting, Participating, Redeemable Preferred Stock which was filed with the Secretary of State of the State of Delaware on April 12, 2023. The Company issued 5,700 of Series J Preferred Stock with respect to $570,000 of forgiven or exchanged accounts payable, advances by officers and others to company, debt, other liabilities and accrued but unpaid compensation. The shares of Series J Preferred Stock are not convertible into Common Stock. For additional information about the Certificate of Designation of Series J Preferred Stock, the Series J Preferred Stock, the exchange and exchange and settlement agreements and the transfer letter agreements, see our Current Report on Form 8-K filed with the SEC on April 13, 2023, including but not limited to Exhibit 3.01 and Exhibit 99.1 through Exhibit 99.6.

On April 5, 2023 entered into a securities purchase agreement ("Series I Purchase Agreement) as a first closing of a securities offering exempt from registration under federal securities laws, rules and regulation and those of the various states, with two individual accredited investors investing jointly ("Investors"). Pursuant to the terms of the Securities I Purchase Agreement, the investors invested $25,000 for 250 shares of Series I 8% Redeemable Preferred Stock ("Series I Preferred Stock"). The Series I Preferred Stock is redeemable upon the occurrence of certain events defined in the Certificate of Designation of Preferences, Rights and Limitations of Series I 8% Redeemable Preferred Stock ("Certificate of Designation") and is not convertible into Common Stock.The Series I Purchase Agreement, the Certificate of Designation and the delivery of the Series I Preferred Stock was approved by the Company's Board of Directors.

On April 3, 2023, the Company filed a Certificate of Designation, Preferences, Rights and Limitations of its Series I Preferred Stock ("Series I Certificate of Designation") with the Secretary of State of the State of Delaware to amend the Company's certificate of incorporation. The filing of the Series I Certificate of Designation was approved by the Company's Board of Directors.

For a more detailed description of the Series J Preferred Stock and Series I Preferred Stock, see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations – Financing Our Platforms in this report as well as our Current Reports on Form 8-K, including all exhibits filed with the SEC on April 13, 2023 and April 6, 2023, respectively.

Effective August 22, 2022, the Company and three investors entered into three separate securities purchase agreements and the Company issued to those three investors, three separate convertible notes in the aggregate amount of $111,111 and subject to original issue discount of $11,111. The Company received $100,000 in the aggregate upon completion of the closings. The notes carry interest at 10% per annum which interest is guaranteed during the term of the notes which matures on May 31, 2023. The notes inclusive of accrued interest are repayable in full at maturity or may be converted at any time until maturity at a conversion price of $0.0015 per share of Common Stock. In addition, the Company and the three investors entered into three separate registration rights agreements similar to those associated with prior convertible notes.

On April 14, 2022, the Company and a single investor entered into a securities purchase agreement the pursuant to which the investor provided $25,000 to the Company in return for a convertible promissory note with a face amount of $27,778 (which difference in value is due to an original issue discount of $2,778), and a common stock purchase warrant exercisable for five years at an exercise price of $0.01 per share on a cash or cashless basis, to purchase up to 2,777,800 shares of the Company's common stock, par value $0.001 which was later adjusted to an exercise price of $0.0015 and 18,518,667 shares of Common Stock due to most favored nation provisions and the later issuance of the August 22, 2022 notes described below. In addition, the Company and the investor entered into a piggy-back registration rights agreement. The note contains "blocker provisions" such that no conversion would result in ownership of more than 4.99% of the Company's then outstanding Common Stock. The note and the warrant each contain reserve requirements.

The Note obligated the Company to pay by April 14, 2023 a principal amount of $27,778 together with interest at a rate equal to 10% per annum. The first twelve months of interest, equal to $2,778, is guaranteed and earned in full as of the effective date. The amount due were not paid on April 14, 2023. The Company has not received a default notice from the investor.

The Company periodically issues convertible notes with similar characteristics. As described above and in the table in Note 4. Notes Payable – Convertible Notes Payable in our consolidated financial statements for the fiscal year ended December 31, 2022 elsewhere in this report.

The RespireRx and ResolutionRx may continue to engage in equity, equity-linked, non-convertible note or debt, or convertible note or other forms of debt or hybrid financings, private placements of equity that are exempt from registration under federal and state securities laws rules and regulations or similar laws, rules and regulations in Australia or other countries, equity lines of credit, public offerings of securities and other forms of finance. The RespireRx and ResolutinRx will continue to consider additional forms of debt, equity and strategic partner financing throughout 2023.

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 $2,102,720 and $3,144,840 for the fiscal years ended December 31, 2022 and 2021, respectively, and negative operating cash flows of $143,905 and $956,172 for the fiscal years ended December 31, 2022 and 2021, respectively. The Company also had a stockholders' deficiency of $11,880,320 at December 31, 2022 and expects to continue to incur net losses and negative operating cash flows for at least the next few years. Additionally, the Company has, with respect to nine convertible notes outstanding, $904,439 maturity amount inclusive of accrued interest which have matured, but for which no notices of default have been received which must be paid or converted. The Company will seek to have maturity dates extended in order to avoid a default on such convertible notes, which the Company has achieved in the past, but with respect to which, the Company can provide no assurance. The Company has also not met its payment obligations to the UWM Research Foundation ("UWMRF") of the University of Wisconsin-Milwaukee, but has not received a notice of default and is in regular communication with the UWMRF regarding the establishment of a payment schedule. 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, 2022, 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 extremely 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 taken steps to continue to raise new debt and equity capital to fund the Company's business activities from both related and unrelated parties.

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 the pursuit of the Company's planned research and development activities. The Company regularly evaluates various measures to satisfy the Company's liquidity needs, including development and other agreements with collaborative partners and, when necessary, seeking to exchange or restructure the Company's outstanding securities and liabilities. The Company is evaluating certain changes to its operations and structure to facilitate raising capital from sources that may be interested in financing only discrete aspects of the Company's development programs and in that regard, has formed an Australian subsidiary, ResolutionRx. See Note 10. Subsequent Events. In addition to the formation of ResolutionRx, such changes could include additional significant reorganizations, which may include the formation of one or more additional subsidiaries into which one or more programs may be contributed. 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.

Principal Commitments

Employment Agreements

Effective on May 6, 2020, Timothy Jones was appointed as RespireRx's President and Chief Executive Officer and entered into an employment agreement as of that date. See Note 9 – Commitments and Contingencies – Significant Agreements and Contracts – Employment Agreements to the consolidated financial statements as of December 31, 2021. Effective January 31 2022, Mr. Jones resigned as RespireRx's President and Chief Executive Officer as well as a member of RespireRx's Board of Directors pursuant to an Employment Agreement Termination and Separation Agreement dated February 8, 2022.

Effective January 31, 2022, Dr. Lippa was appointed as RespireRx's Interim President and Interim Chief Executive Officer. Dr. Lippa continues to serve as RespireRx's Executive Chairman and as a member of the Board of Directors as well as the Company's Chief Scientific Officer. See Note 9 – Commitments and Contingencies – Significant Agreements and Contracts – Employment Agreements to the consolidated financial statements as of December 31, 2021. See Note 10. Subsequent Events to the consolidated financial statements as of December 31, 2022.

Jeff E. Margolis currently serves as the Company's Senior Vice President, Chief Financial Officer, Treasurer and Secretary. Mr. Margolis also serves on the Company's Board of Directors. See Note 9. Commitments and Contingencies – Significant Agreements and Contracts – Employment Agreements to the consolidated financial statements as of December 31, 2022.

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. The 2014 License Agreement was amended by the first amendment on July 25, 2017 to extend certain timeframes. Effective December 15, 2022, the Company and the Board of Trustees of the University of Illinois ("UIL") entered into the Second Amendment to RespireRx -University of Illinois Exclusive License Agreement. The parties entered into the Second Amendment in order to eliminate accrued financial obligations to UIL and reduce future obligations. Annual $100,00 payments by the Company to UIL are eliminated and the unpaid amount of $200,000 for calendar years 2021 and 2022 are no longer due and payable. Among other changes, the $75,000 payment that was due after the dosing of the 1st patient in a Phase II study anywhere in the world is now reduced to $10,000 and UIL has been given an extension in the term of the License and a deferred compensation obligation of RespireRx including the 4% royalty on net sales due to UIL has been extended for up to 8 years after the original patent rights expire by including a royalty on the net sales protected by a patent application submitted by the Company describing a new formulation of dronabinol. See Note 9. Commitments and Contingencies-Significant Agreements and Contracts-University of Illinois Exclusive License Agreement for more details.

Noramco Inc. - Dronabinol Development and Supply Agreement

On September 4, 2018, RespireRx entered into a dronabinol Development and Supply Agreement with Noramco Inc., one of the world's major dronabinol manufacturers, which was subsequently assigned by Noramco to its subsidiary, Purisys LLC. See Note 9. Commitments and Contingencies – Significant Agreements and Contracts – Normaco Inc. – Dronabinol Development and Supply Agreement to the consolidated financial statements as of December 31, 2022.

UWM Research Foundation

On August 1, 2020, RespireRx exercised its option pursuant to its option agreement dated March 2, 2020, between RespireRx and UWM Research Foundation, an affiliate of the University of Wisconsin-Milwaukee ("UWMRF"). Upon exercise RespireRx and UWMRF executed the UWMRF Patent License Agreement effective August 1, 2020 pursuant to which RespireRx licensed the identified intellectual property. Note 9. Commitments and Contingencies – Significant Agreements and Contracts – UWMRF Patent License Agreement to the consolidated financial statements as of December 31, 2022.

Off-Balance Sheet Arrangements

At December 31, 2022, 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.

Management 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. 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 established adequate internal controls over financial reporting.

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, our Chief Scientific Officer and our Chief Financial Officer, has evaluated our internal control over financial reporting as of December 31, 2022 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, our management has concluded that material weaknesses in the Company's internal control over financial reporting existed as of December 31, 2022, primarily due to a lack of segregation of duties given the Company's limited number of employees resulting in management's conclusion that our internal control over financial reporting was not effective at December 31, 2022.

Within the constraints of the Company's limited financial resources and 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, 2022 that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

Item 9B. Other Information

Not applicable.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Directors

As of the date of the filing of this Annual Report on Form 10-K, the names of each of the directors and certain biographical information about them are set forth below. Each of our directors serves until his or resignation or until a successor is appointed.

Name	Age	Director Since	Principal Occupation
Arnold S Lippa, Ph.D.	76	2013	Interim President and Interim Chief Executive Officer (as of February 8, 2022) and Chief Scientific Officer and Chairman of the Board of the of Directors
Jeff E. Margolis	67	2013	Senior Vice President, Chief Financial Officer, Treasurer and Secretary and a Director of the Company and President of Aurora Capital LLC, an investment banking and securities brokerage firm
Joseph Siegelbaum	75	2023	Director of the Company and retired partner of the law firm, Goodwin Procter LLP

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"), which until July 2021, was 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 certain of the Company's prior financings. Aurora Capital LLC no longer engages in an investment banking or securities business. Dr. Lippa and Mr. Margolis jointly manage, since 2004, Atypical BioCapital Management LLC, a life sciences fund management company. 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 is a member of the Board of Directors of Hepion Pharmaceuticals, Inc. since December 2015 where he is a member of the audit committee, the compensation committee and the Corporate Governance/Nominating Committee. 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 current positions of Chief Scientific Officer, his current positions (as of February 8, 2022) as Interim President and Interim Chief Executive Officer, and his experience working in management roles in other pharmaceutical companies as described above. We also believe that Dr. Lippa's qualifications also include his experiences as a financier of both biopharmaceutical and other companies. 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, which he founded 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, a life sciences fund management company which in turn manages Atypical BioVentures Fund LLC. Mr. Mr. Margolis Is a managing member of Aurora Consultants LLC, a family investment vehicle and consulting firm. Mr. Margolis, through Aurora Consultants LLC is a member of Atypical Bioventures Fund LLC. 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.

Joseph Siegelbaum: Mr. Siegelbaum was a partner at the law firm of Goodwin Procter LLP in New York, NY from 2000 until his retirement at the end of 2021. Before that he was the co-founder and Managing Partner at the law firm of Friedman Siegelbaum in Roseland, NJ from 1977 to 2000. He served as a member of the Board of Directors and President of the New York March of Dimes from 2004 through 2022. Mr. Siegelbaum also served as a member of the Board of Directors of Oxfam America from 2018 through 2021. He is a graduate of Franklin & Marshall College and Rutgers Law School, where he was Articles Editor of the Rutgers Law Review.

We believe Mr. Siegelbaum's qualifications to serve on our Board include his legal background as well as his knowledge of biopharmaceutical industry gained through his services to clients in the biotechnology, pharmaceutical and biopharmaceutical industry.

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, 2022, each of our executive officers except David Dickason and 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. See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations – Principal Commitments – *Employment Agreements*" for information on the term of service for each of Dr. Lippa and Mr. Margolis. Mr. Dickason has provided his services to the Company on a month-to-month basis pursuant to a consulting agreement with the Company and did not provide any services during the fiscal year ended December 31, 2022. Mr. Purcell provides his services to the Company on a month-to-month basis through his consulting firm, DNA Healthlink, Inc. for a monthly fee and did not provide any services during the fiscal year ended December 31, 2022. Additional information with respect to shares of Common Stock or stock options that have been issued to Mr. Dickason and Mr. Purcell is provided at Note 9 – Commitments and Contingencies – Significant Agreements and Contracts – Consulting Agreements in the Notes to Consolidated Financial Statements for the fiscal years ended December 31, 2022 and 2021, included with this report.

Name	Position with Company
Arnold S. Lippa, Ph.D.	Interim President, Interim Chief Executive Officer, effective January 31, 2022 and Chief Scientific Officer and Chairman of the Board
Jeff E. Margolis	Senior Vice President, Chief Financial Officer, Treasurer and Secretary

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. This arrangement was initially implemented in 2013 when current management was put in place. At that time there were no independent directors. Since that time, the Company has added two independent directors, both in 2014, however, because of the small size of the Board generally and because the Board includes only one independent director, the Company has not appointed standing committees.

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.

Delinquent Section 16(a) Reports

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, 2022 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.

Code of Ethics

The Company had previously adopted a Code of Business Conduct and Ethics, which had covered all of our directors and employees, including our principal executive and financial officers. That Code of Business Conduct and Ethics has never been adopted by the current Board of Directors that was appointed after the change in management that occurred in March 2013 described above. When practicable, the Board of Directors intends to adopt a Code of Business Conduct and Ethics with elements listed under Item 406(b) of Regulation S-K, and that document will be posted on our website at www.respirerx.com and in a report filed with the SEC on a Current Report on Form 8-K.

Item 11. Executive Compensation

Summary Compensation Table for 2022

The table below summarizes the total compensation paid or earned by each of the named executive officers for the fiscal years ended December 31, 2021 and 2020. 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 ($)(1)	Bonus ($)	Stock Awards ($)(1)	All Other Compensation ($)(2)	Total ($)
Arnold S. Lippa, Ph.D. Interim President, Interim Chief Executive Officer and Chief Scientific Officer	2022	339,600	-	-	-	339,600
	2021	339,600	-	-	-	339,600
Timothy L. Jones, Former Chief Executive Officer and President	2022	-	-	-	-	-
	2021	322,350	200,000	-	-	522,350
Jeff E. Margolis Senior Vice President, Chief Financial Officer, Treasurer and Secretary	2022	321,600	-	-	-	321,600
	2021	321,600	-	-	-	321,600

(1) The 2022 and 2021 salary amounts in the table above reflect contractual salary amounts plus employee benefits. There were no bonuses, stock or stock option awards or other compensation during the years ended December 31, 2022 and 2021.

(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.

Narrative to Summary Compensation Table

No accruals for cash compensation or bonuses were accrued for Mr. Jones in 2022 pursuant to the terms of his termination and separation agreement. In 2021, the Company accrued a cash bonus of $200,000 for Mr. Jones in accordance with the terms of his employment contract. Effective January 31, 2022, Mr. Jones resigned as the Company's President and Chief Executive Officers and as a member of the Company's Board of Directors. On February 8, 2022, Dr. Lippa was appointed as the Company's Interim President and Interim Chief Executive Officer while continuing as the Company's Chief Scientific Officer and Executive Chairman of the Board of Directors. See Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations-Principal Commitments-*Employment Agreements* for more information about the compensation terms under the employment agreements of Mr. Jones, Dr. Lippa and Mr. Margolis.

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.

Outstanding Equity Awards at Fiscal Year End

The following table shows information concerning outstanding equity awards at December 31, 2022, 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
Timothy L. Jones	1,700,000	0	0	0.072	7/31/25
Arnold S. Lippa	55,959	0	0	14.500	12/9/27
Jeff E. Margolis	38,868	0	0	14.500	12/9/27

At December 31, 2022, there were 1,794,827 options outstanding to named executive officers all of which were vested.

OPTION EXERCISES AND STOCK VESTED FOR 2022

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, 2022. There were no unvested option awards as of December 31, 2022. At December 31, 2022, there were options and warrants exercisable into 21,292,192 shares of Common Stock outstanding to named executive officers of which 118,247 shares were related to options and all of which had vested having exercise prices ranging from $0.14.50 to $73.77 per share for shares of Common Stock and 21,173,945 were issuable upon exercise of the warrants having exercise prices ranging from $0.07 to $15.75 per share for shares of Common Stock.

Employment Agreements – Termination or Change in Control

Two of the Company's named executive officers, Arnold S. Lippa, Ph.D. and Jeff E. Margolis (each an "Executive"), entered into employment agreements with the Company on May 06, 2020 and 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 May 6, 2020 and August 19, 2015. The employment agreements that would have terminated on September 30, 2018 for Dr. Lippa and Mr. Margolis, were automatically extended for periods of one year pursuant to the terms of such agreements on September 30, 2020 and 2021. 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. Effective as of January 31, 2022, the Company and Mr. Timothy L. Jones entered into an Employment Termination and Separation Agreement on February 8, 2022, and the Company disclosed this agreement as well as Mr. Jones' resignation letter as exhibits on a Current Report on Form 8-K filed on February 11, 2022. Mr. Jones' termination was not for cause.

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.

The Company entered into an agreement with DNA Healthlink, Inc. effective on October 15, 2014 pursuant to which, Richard Purcell, the fourth named executive officer, was to serve as the Company's Senior Vice President of Research and Development on a month-to-month basis at the rate of $12,500 per month. Mr. Purcell did not provide such services during the fourth quarter of 2020, provided limited services on a per hour basis during 2021 and did not provide services in 2022. On September 14, 2021, the Company and DNA Healthlink, Inc. ("DNA Healthlink") entered into a settlement agreement (the "DNA Healthlink Settlement Agreement") regarding $410,000 in unpaid accounts payable owed by the Company to DNA Healthlink (the "DNA Healthlink Settlement Amount") for services provided by DNA Healthlink to the Company pursuant to an agreement by and between the Company and DNA Healthlink dated October 15, 2014. Under the terms of the DNA Healthlink Settlement Agreement, the Company is obligated to pay to DNA Healthlink the full DNA Healthlink Settlement Amount as follows: twelve monthly payments of $8,000 each commencing on November 15, 2021, followed by twelve monthly payments of $10,000 each commencing on November 15, 2022, followed by twelve monthly payments of $15,000 each commencing on November 15, 2023, followed by one final payment of $14,000 on November 15, 2024. If, prior to March 14, 2023, the Company receives one or more upfront license fee payments or any other similar fee or fees from one or more strategic partners that aggregate at least fifteen million dollars ($15,000,000.00) ("Upfront Fees"), then the full DNA Healthlink Settlement Amount, less any amounts previously paid, will be accelerated and become due and payable in full within ninety (90) days of receipt of any Upfront Fees. As a result of the DNA Healthlink Settlement Agreement, the Company recorded a gain with respect to vendor settlements of $62,548 in 2021. The Company made payments of $8,000 in November 2021 and December 2021, but has not made payments since then.

The Company entered into an agreement with David Dickason effective September 15, 2020 pursuant to which, Mr. Dickason, the fifth named executive officer, was to serve as the Company's Senior Vice President of Preclinical Product Development, at will, at an hourly rate of $250 per hour. In addition, the agreement called for a restricted common stock grant of 200,000 shares of Common Stock, with a vesting schedule of 25% on December 15, 2020 and 25% on each of March 15, June 15 and September 15, 2021. 200,000 stock options were granted in lieu of restricted common stock.

Director Compensation

When the Compensation Committee was standing, it 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 considered 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. The Board of Directors, sitting as a compensation committee has continued these policies in carrying out the duties of the previous Compensation Committee.

There were no option grants to Kathryn MacFarlane during 2022 and 2021and Ms. MacFarlane resigned on July 31, 2022. During 2022 and 2021 Ms. MacFarlane earned $30,000 and $60,000 in cash compensation, however, such amounts have not yet been paid.

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, 2022. 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 ($)(1)	Total ($)
Kathryn MacFarlane	30,000		-	30,000

(1) No options were issued during the fiscal year ended December 31, 2022.
(2) $15,000 per quarter was earned by our non-employee member of the board of directors and $0 earned during the quarter of resignation. .

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 Common Stock as of April 11, 2023, 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 April 11, 2023 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. The total number of shares of Common Stock outstanding as of April 11, 2023 was 144,326,672.

Directors, Officers and 5% Stockholders[a]	Shares Beneficially Owned	
	Amount and Nature of Beneficial Ownership	Percent of Class
Arnold Lippa Family Trust of 2007	57,511,542(b)	37.01%
Jeff Margolis Trusts	55,887,559(c)	36.16%
Directors and Officers:		
Jeff E. Margolis	55,887,559(c)	36.16%
Arnold S. Lippa, Ph.D.	-	0.00%
Joseph Siegelbaum	-(d)	0.00%
Richard Purcell	517,691(e)	0.36%
David Dickason	200,000(f)	0.14%
Marc Radin	30,254,840(g)	20.52%
All directors and current executive officers as a group (5 persons)	102,655,076	28.17%

(a) Except as otherwise indicated, each individual or entity has, or is entitled to have within 60 days of April 12, 2023, sole voting or dispositive power with respect to the shares reported as beneficially owned.

(b) Dr. Lippa is neither the trustee nor the beneficiary of the Arnold Lippa Family Trust of 2007 (the "Lippa Trust"). Morgen Krisch, Dr. Lippa's daughter, and her two sons are beneficiaries of the Lippa Trust. These holdings include 11,461,716 shares of Common Stock, options to purchase 66,419 shares of Common Stock, warrants exercisable into 10,983,407 shares of Common Stock and 2,100 shares of Series J Preferred Stock that are not convertible into Common Stock but which have 35,000,000 votes. The address of the Lippa Trust is c/o RespireRx Pharmaceuticals Inc., 126 Valley Road, Suite C, Glen Rock, New Jersey 07452.

(c) Mr. Margolis' holdings are directly held by six trusts, three of which Mr. Margolis is the trustee and the balance of which Mr. Margolis' spouse is the trustee (the "Margolis Trusts"). These holdings include 10,645,193 shares of Common Stock, options to purchase 51,828 shares of Common Stock, warrants exercisable into 10,190,538 shares of Common Stock and 2,100 shares of Series J Preferred Stock that are not convertible into Common Stock but which have 35,000,000 votes. The address of the Margolis Trusts is c/o RespireRx Pharmaceuticals Inc., 126 Valley Road, Suite C, Glen Rock, New Jersey 07452.

(d) Joseph Siegelbaum does not own any shares of Common Stock, options or warrants to purchase shares of Common Stock or Series J Preferred Stock.

(e) Mr. Purcell's holdings include 615 shares of Common Stock and options to purchase 517,076 shares of Common Stock.

(f) Mr. Dickason's holdings include options to purchase 200,000 shares of Common Stock.

(g) Mr. Radin's holdings include 2,126,389 shares of Common Stock, warrants to purchase 2,119,679 shares of Common Stock and options to purchase 1,008,772 shares of Common Stock and 1,500 shares of Series J Preferred Stock that are not convertible into Common Stock but which have 25,000,000 votes. Mr. Radin's holdings include any shares that may be owned in an individual retirement account held by him or his spouse. Mr. Radin is not a director or an executive officer of the Company.

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

In March 2014, the Company's stockholders approved, by written consent, the Cortex Pharmaceuticals, Inc. 2014 Equity, Equity-Linked and Equity Derivative Incentive Plan ("2014 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 shares of Common Stock, in the form of stock grants and options to directors, officers, employees, consultants and other service providers of the Company. There are 32,503 shares authorized and 6,325 available for issuance under the 2014 Plan.

On June 30, 2015, the Board adopted the 2015 Stock and Stock Option Plan (the "2015 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 Plan on March 31, 2016, January 17, 2017, December 9, 2017, December 28, 2018, May 5, 2020, and July 31, 2020 and filed descriptions of such amendments on the Company's Current Reports on Form 8-K on April 6, 2016, January 23, 2017, December 14, 2017, January 4, 2019, May 6, 2020, and August 3, 2020, respectively. The amendments discussed above primarily increased the number of shares of Common Stock authorized to be issued under the 2015 Plan as approved by the Board, with the August 3, 2020 amendment expanding the number of shares of Common Stock authorized to be issued under the 2015 plan to 158,985,260 shares, which number of shares was adjusted to 15,898,526 upon the consummation of the reverse stock split with respect to Common Stock on January 5, 2021. On July 29, 2021, the Company amended the 2015 Plan to increase the number of shares by an additional 7,000,000 to 22,898,526 shares and filed a description of this amendment on the Company's Current Report on Form 8-K on July 30, 2021. The Company has not presented, nor does it intend to present, the 2015 Plan, as amended, to shareholders for approval.

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, 2022.

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	1,564	$ 64.025	6,325
Equity compensation plans not approved by security holders (including non-plan options)	9,197,792	$ 0.582	13,670,110
Total	9,199,356	$ 0.592	13,676,435

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

Director Independence

As of December 31, 2022, ther were no independent directors due as that term is defined under Section 803 of the NYSE Amex Company Guide ("Section 803"). As noted above, as of December 31, 2022, all of the functions of the Audit, Compensation and Governance and Nominations Committees were being performed by the full board of directors. Dr. Lippa, Mr. Jones and Mr. Margolis are not "independent directors" as defined above. On March 22, 2023, Mr. Joseph Siegelbaum was appointed to the board of directors as an "independent director" as that term is defined under Section 803.

Transactions with Related Persons

Dr. Arnold S. Lippa and Jeff E. Margolis, officers and directors of RespireRx since March 22, 2013, have indirect ownership and managing membership interests in Aurora Capital LLC ("Aurora") through interests held in its members, and Jeff. E. Margolis is also an officer of Aurora. Aurora, until July 2021 was a boutique investment banking firm specializing in the life sciences sector.

During the fiscal year ended December 31, 2022, Arnold S. Lippa, the Company's Interim President and Interim Chief Executive Officer (as of February 8, 0222) and the Company's Chief Scientific Officer and Executive Chairman extended credit to the Company in the aggregate amount of $117,733,. The total balance of advances due to Dr. Lippa as of December 31, 2022 is $226,393 and has been accounted for by the Company as an advance by Dr. Lippa payable on demand. Dr. Lippa has advanced certain patent related amounts during 2022. The proceeds of these advances were to make payments to the Company's auditors, patent counsel and payments due with respect to an insurance premium that had been financed. See also Note 4. Notes Payable to our consolidated financial statements as of December 31, 2022.

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, 2022 and 2021 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 2022 and 2021.

	2022	2021
Audit Fees[1]	$ 117,000	$ 122,800
Audit-Related Fees[2]	-	-
Tax Fees[3]	-	-
All Other Fees[4]	-	7,500
Total	$ 117,000	$ 130,300

(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."

(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, including fees for consents and work related to registration statements, if any.

All audit related 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. Tax services are not provided by Haskell & White LLP.

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.

RESPIRERX PHARMACEUTICALS INC.
AND SUBSIDIARY

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS
(INCLUDING REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM)

Years Ended December 31, 2021 and 2020

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, 2022 and 2021, the related consolidated statements of operations, stockholders' 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, 2022 and 2021, and the consolidated results of its operations and its cash flows for each of the years then ended, in conformity with generally accepted accounting principles generally accepted in the United States of America.

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.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of the critical audit matters do not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing a separate opinion on the critical audit matters or on the accounts or disclosures to which it relates.

Accounting for Complex Debt Transactions

Critical Audit Matter Description

During the year ended December 31, 2022, the Company entered into several convertible notes payable that included original issue discounts, conversion features, and warrants. The proceeds of the convertible notes payable are allocated to the components of the convertible debt instrument in accordance with *ASC 470-20, Debt with Conversion and Other Options.* Management used the Black-Scholes option-pricing model to estimate the fair value of any warrants issued with the convertible notes, and allocated the proceeds to the warrants and the debt host based on a relative fair value basis. The Black-Scholes option-pricing model involves the use of significant estimates, including the following:

- Risk-free interest rate;
- Expected share price volatility;
- Expected dividend yield; and
- Contractual life of the award.

Given the significant estimates involved in determining the individual components of the debt instrument and the related debt discounts resulting from the relative fair value calculation for the warrants and equity characteristics of the conversion features, the related audit effort in evaluating management's estimates in determining those items was extensive and required a high degree of auditor judgment.

How the Critical Audit Matter was Addressed in the Audit

We obtained an understanding over management's process to determine the individual components of the debt instrument and the methodology to calculate the relative fair value of the warrants in accordance with the applicable accounting standards. This also included assessing how management develops each of the estimates for the inputs to the Black-Scholes option-pricing model. We applied the following audit procedures related to testing the management's estimates utilized in the Black-Scholes option-pricing model for valuing the warrants:

- We compared the Company's risk-free interest rate used to the comparable United States Treasury yield for a term comparable to the warrants' remaining contractual term.
- We recalculated the Company's historical share price volatility for a term of 12 months prior to the grant date because management considered the volatility for this period to be a better reflection of future value than the historical share price volatility of the term of the options.

- We performed a look-back of the Company's previously issued dividends, noting there were none. We inquired with management of the Company who informed us that no future dividends were currently anticipated.
- We agreed the inputs used for the term of the warrants to the contractual term of the warrant.

We also reviewed management's relative fair value calculation used to determine the components of the debt instrument and the values assigned to each as follows:

- We obtained a copy of the convertible debt agreement to understand its terms, noting management properly identified the components of the debt instrument.
- We agreed the proceeds of the notes to deposits in the banking records.
- We evaluated the accounting methodology to assign values to the individual debt components determining it was consistent with the applicable accounting standards.
- We agreed the fair value assigned to the warrants to the fair value calculated using the Black-Scholes option-pricing model.
- We recalculated the relative fair value assigned to the warrants and host debt instrument.

Classification of Research and Development Costs for Salaries

Critical Audit Matter Description

During the year ended December 31, 2022, the Company allocated 100% of the compensation for its Chief Scientific Officer and Interim Chief Executive Officer as research and development expenses, which is a significant component of the Company's overall research and development expenses for the year.

Given the subjective determination of the estimate to allocate the costs as research and development expense and whether his activities constituted research and development costs as defined within the accounting literature, the related audit effort in evaluating management's estimates in determining those activities was extensive and required a high degree of auditor judgment.

How the Critical Audit Matter was Addressed in the Audit

We obtained an understanding of the duties and activities of the Chief Scientific Officer and Interim Chief Executive Officer, including what other personnel perform general and administrative tasks of the Company. We applied the following audit procedures related to the testing of management's determination that 100% of this compensation qualifies as research and development expenses:

- Obtained a written memorandum signed by the Chief Scientific Officer and Interim Chief Executive Officer that describes his research and development activities during the year, which provided examples of these activities and any time incurred on general and administrative duties as deminimus.
- We examined documentation provided as examples of the research and development activities and evaluated the examples of research and development expenditures to determine they are consistent with the accounting literature to qualify as research and development expenses.
- Confirmed with the other principal officer of the Company that his services provided all general administrative services for the Company.

/s/ HASKELL & WHITE LLP

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

Irvine, California
April 17, 2023

RESPIRERX PHARMACEUTICALS INC.
AND SUBSIDIARY

CONSOLIDATED BALANCE SHEETS

	December 31,	
	2022	**2021**
ASSETS		
Current assets:		
Cash and cash equivalents	$ 88	$ 1,398
Deferred financing costs	-	177,883
Prepaid expenses	22,693	29,456
Total current assets	22,781	208,737
Total assets	$ 22,781	$ 208,737
LIABILITIES AND STOCKHOLDERS' DEFICIENCY		
Current liabilities:		
Accounts payable and accrued expenses, including $725,618 and $483,195 payable to related parties at December 31, 2022 and 2021, respectively	$ 5,724,390	$ 5,235,767
Accrued compensation and related expenses	3,296,008	2,608,708
Convertible notes payable, currently due and payable on demand, including accrued interest of $327,881 and $151,391 at December 31, 2022 and 2021, respectively, (of which $58,934, including accrued interest of $39,525, was the subject of notices of default at December 31, 2022) (Note 4)	1,258,315	790,153
Note payable to SY Corporation, including accrued interest of $507,330 and $459,358 at December 31, 2022 and 2021, respectively, payment obligation currently in default (Note 4)	833,463	837,104
Notes and advances payable to officers, including accrued interest of $71,292 and $59,006 at December 31, 2022 and 2021, respectively (Note 4)	375,334	230,356
Notes payable to former officer, including accrued interest of $98,144 and $77,622 as of December 31, 2022 and December 31, 2021, respectively (Note 4)	225,744	205,222
Other short-term notes payable	15,847	15,185
Total current liabilities	11,729,101	9,922,495
Long-term liabilities		
Long-term accounts payable associated with payment settlement agreements, including long-term accounts payable due to affiliates of $294,000 and $0 as of December 31, 2021 and 2020 respectively (Note 5)	174,000	294,000
Total long-term liabilities	174,000	294,000
Total liabilities	11,903,101	10,216,495
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 0.000030 common shares per Series B share: 1	21,703	21,703
Common stock, $0.001 par value; shares authorized: 2,000,000,000; shares issued and outstanding: 125,544,276 and 97,894,276 at December 31, 2021 and 2020, respectively (reflected on a post 10 for 1 reverse stock split basis which occurred on January 5, 2021)	125,544	97,894
Additional paid-in capital	164,030,289	163,827,781
Accumulated deficit	(176,057,856)	(173,955,136)
Total stockholders' deficiency	(11,880,320)	(10,007,758)
Total liabilities and stockholders' deficiency	$ 22,781	$ 208,737

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,	
	2022	**2021**
Operating expenses:		
General and administrative, including $351,600 and $1,104,226 to related parties for the years ended December 31, 2022 and 2021, respectively	$ 1,149,823	$ 1,857,085
Research and development, including $339,600 and $448,625 to related parties for the years ended December 31, 2022 and 2021, respectively	429,532	702,043
Total operating costs and expenses	1,579,355	2,559,128
Loss from operations	(1,579,355)	(2,559,128)
Gain on warrant exchange	-	1,099
Gain on settlement or modification of debt and other liabilities	100,000	62,548
Loss on note modification	(71,161)	
Interest expense, including $13,536 and $12,289 to related parties for the years ended December 31, 2022 and 2021, respectively	(603,818)	(724,769)
Foreign currency transaction gain (loss)	51,614	75,410)
Net loss	(2,102,720)	(3,144,840)
Deemed dividends from warrant anti-dilution provisions	(1,870,273)	(378,042)
Net loss attributable to common shareholders	$ (3,972,993)	$ (3,522,882)
Net loss per common share - basic and diluted respectively (reflected on a post 10 for 1 reverse stock split basis which occurred on January 5, 2021)	$ (0.04)	$ (0.04)
Weighted average common shares outstanding - basic and diluted respectively (reflected on a post 10 for 1 reverse stock split basis which occurred on January 5, 2021)	111,322,742	88,347,206

See accompanying notes to consolidated financial statements and report of independent registered public accounting firm.

RESPIRERX PHARMACEUTICALS INC.
AND SUBSIDIARY

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' DEFICIENCY

Years Ended December 31, 2022 and 2021

	Series B and Series H Convertible Preferred Stock		Common Stock		Additional Paid-in	Accumulated	Total Stockholders'
	Shares	Amount	Shares	Par Value	Capital	Deficit	Deficiency
Balance at December 31, 2020	37,500	$ 21,703	71,271,095	$ 71,271	$162,654,002	$(170,810,296)	$ (8,063,320)
Sale of common stock	-	-	3,600,000	3,600	113,699	-	117,299
Costs of stock issuance	-	-	-	-	(52,609)	-	(52,609)
Issuance of note commitment shares and beneficial conversion feature	-	-	3,553,000	3,553	66,935	-	70,488
Issuance of Common Stock upon conversion of Convertible Notes	-	-	16,625,557	16,625	315,885	-	332,510
Stock-based compensation	-	-	-	-	58,750	-	58,750
Adjustment due to reverse stock split	-	-	(56)	-	-	-	-
Gain on warrant exchange	-	-	-	-	(1,099)	-	(1,099)
Issuance of notes payable with beneficial conversion features, other note discounts, warrant, and/or commitment shares	-	-	-	-	675,063	-	675,063
Issuance of common stock upon cashless warrant exercise	-	-	2,844,680	2,845	(2,845)	-	-
Net loss	-	-	-	-	-	(3,144,840)	(3,144,840)
Balance at December 31, 2021	37,500	$ 21,703	97,894,276	$ 97,894	$163,827,781	$(173,955,136)	$ (10,007,758)
Warrant value for issuance of convertible notes					13,158		13,158
Issuance of common stock upon conversion of convertible notes			21,700,000	21,700	195,300		217,000
Issuance of common stock upon cashless exercise of warrants			5,950,000	5,950	(5,950)		-
Net loss						(2,102,720)	(2,102,720)
Balance at December 31, 2022	37,500	$ 21,703	125,544,276	$ 125,544	$164,030,289	$(176,057,856)	$ (11,880,320)

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,	
	2022	**2021**
Cash flows from operating activities:		
Net loss	$ (2,102,720)	$ (3,144,840)
Adjustments to reconcile net loss to net cash used in operating activities:		
Amortization of debt discounts related to convertible notes payable	390,911	552,787
Stock-based compensation and fees included in -		
General and administrative expenses	-	28,000
Research and development expenses and vesting options	-	30,750
Equity based conversion fees	2,000	-
Deferred financing costs	177,883	-
Gain on warrant exchange	-	(1,099)
Gain on settlement or modification of debt or other liabilities	(100,000)	-
Loss on modification of convertible notes	71,161	-
Foreign currency transaction loss (gain)	(51,614)	(75,410)
Changes in operating assets and liabilities:		
(Increase) decrease in -		
Prepaid expenses and advanced clinical research payments	102,614	2,197
Deferred financing costs	-	(177,883)
Increase (decrease) in -		
Accounts payable and accrued expenses	482,282	605,820
Accrued compensation and related expenses	687,300	1,067,899
Accrued interest payable	196,278	155,607
Net cash used in operating activities	(143,905)	(956,172)
Cash flows from financing activities:		
Proceeds from convertible note borrowings	120,000	823,869
Proceeds from sale of Common Stock	-	117,299
Borrowings on short-term notes payable, net of repayments	(95,188)	10,577
Proceeds from officer notes	117,783	5,000
Net cash provided by financing activities	142,595	956,745
Cash and cash equivalents:		
Net increase (decrease)	(1,310)	573
Balance at beginning of period	1,398	825
Balance at end of period	$ 88	$ 1,398

(Continued)

RESPIRERX PHARMACEUTICALS INC.
AND SUBSIDIARY

CONSOLIDATED STATEMENTS OF CASH FLOWS
(Continued)

	Years Ended December 31,	
	2022	**2021**
Supplemental disclosures of cash flow information:		
Cash paid for -		
Interest	$ 12,720	$ 8,653
Non-cash financing activities:		
Shares issued with conversion of debt	$ 217,000	$ 332,510
Commitment shares/warrants issued with debt financing	$ 13,158	$ 70,488
Cashless warrant exercises	$ 5,950	$ 2,845
Amortization of deferred financing costs	$ -	$ 52,609
Accounts payable and accrued expenses extinguished with common stock options	$ -	$ 35,000
Conversion of accounts payable to long-term liabilities	$ 120,000	$ 294,000
Issuance of warrants with convertible notes or as deemed dividend associated with most-favored nation provisions of convertible notes	$ 1,870,273	$ 323,096
Debt discounts established for convertible notes	$ 13,334	$ 351,967
Increase in principal amount of convertible note	-	13,000
Conversion of accounts payable to officer notes payable to officer	$ 13,659	$ -
Insurance policies	$ 95,850	$ 100,215

See accompanying notes to consolidated financial statements and report of independent registered public accounting firm.

RESPIRERX PHARMACEUTICALS INC.
AND SUBSIDIARY
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years Ended December 31, 2022 and 2021

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 (as amended, the "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 a wholly owned subsidiary. Pier was a clinical stage biopharmaceutical company developing a pharmacologic treatment for obstructive sleep apnea ("OSA") and had been engaged in research and clinical development activities which activities are now in RespireRx.

On January 11, 2023, RespireRx formed what is initially a wholly-owned subsidiary, ResolutionRx Ltd ("ResolutionRx"), an unlisted public company in Australia into which the Company is in the process of contributing its cannabinoid platform described below. See Note 10. Subsequent Events.

Basis of Presentation

The consolidated financial statements are of RespireRx and its wholly-owned subsidiary, Pier (collectively referred to herein as the "Company," "we" or "our," unless the context indicates otherwise).

2. Business

The mission of the Company is to develop innovative and revolutionary treatments to combat disorders caused by disruption of neuronal signalling. We are developing treatment options that address conditions affecting millions of people, but for which there are limited or poor treatment options, including OSA, attention deficit hyperactivity disorder ("ADHD"), epilepsy, acute and chronic pain, including inflammatory and neuropathic pain, recovery from spinal cord injury ("SCI") and certain orphan disorders. We are also considering developing treatment options for other conditions based on results of preclinical and clinical studies to date. To achieve these goals, the Company has determined that some or all of these opportunities should be contributed to what could be, wholly-owned subsidiaries, joint ventures or sub-licenses, or even sold and has initiated efforts to do so.

In order to facilitate our business activities and product development and to set up its programs for development by subsidiaries, partnering or sale, the Company has implemented an internal restructuring plan based upon our two research platforms: pharmaceutical cannabinoids and neuromodulators. As of January 11, 2023, the the Company formed ResolutionRx Ltd, initially a wholly-owned subsidiary focused on pharmaceutical cannabinoids and EndeavourRx, a the business unit focused on neuromodulators. It is anticipated that the Company will use, at least initially, its management personnel to provide management, operational and oversight services to these two.

(i) ResolutionRx, our pharmaceutical cannabinoids subsidiary is developing compounds that target the body's endocannabinoid system, and in particular, the re-purposing of dronabinol, an endocannabinoid CB1 and CB2 receptor agonist, for the treatment of OSA. Dronabinol is already approved by the FDA for other indications. See Note10. Subsequent Events.

(ii) EndeavourRx, our neuromodulators platform is made up of two programs: (a) our AMPAkines program, which is developing proprietary compounds that act as positive allosteric modulators ("PAMs") of AMPA-type glutamate receptors to promote neuronal function and (b) our GABAkines program, which is developing proprietary compounds that act as PAMs of $GABA_A$ receptors, and which was established pursuant to our entry into a patent license agreement (the "UWMRF Patent License Agreement") with the University of Wisconsin-Milwaukee Research Foundation, Inc., an affiliate of the University of Wisconsin-Milwaukee ("UWMRF").

Like ResolutionRx, which as of January 11, 2023, was organized as a wholly-owned subsidiary, of the Company, management also intends to organize our EndeavourRx business unit, in part or in whole, into a subsidiary which would conduct research and development of our neuromodulator platform, including either or both of the AMPAkine and GABAkine programs and their related tangible and intangible assets and certain of their liabilities.

The Company's business development efforts (licensing, sub-licensing, joint venture and other commercial structures), if successful, would represent strategic and operational infrastructure additions, as well as cash and in-kind funding opportunities. These efforts have focused on, but have not been limited to, seeking transactions with brand and generic pharmaceutical and biopharmaceutical companies as well as companies with potentially useful clinical development, formulation or manufacturing capabilities, significant subject matter expertise and financial resources. No assurance can be given that any transaction will come to fruition and that, if it does, the terms will be favorable to the Company.

Financing our Platforms

Our major challenge has been to raise substantial equity or equity-linked financing to support research and development plans for our cannabinoid and neuromodulator platforms, while minimizing the dilutive effect to pre-existing stockholders. At present, we believe that we are hindered primarily by our public corporate structure, our OTC Pink Markets listing, and low market capitalization as a result of our low stock price as well as the weakness of our balance sheet.

For this reason, the Company has affected an internal restructuring plan through which our two drug platforms have been reorganized into separate business units and may in the future, be organized into subsidiaries of RespireRx. We believe that by creating one or more subsidiaries to further the aims of ResolutionRx and EndeavourRx, it may be possible, through separate finance channels, to unlock the unrealized asset values of each and set up its programs for partnering or sale.

The Company is also engaged in business development efforts (licensing/sub-licensing, joint venture and other commercial structures) with a view to securing strategic partnerships that represent strategic and operational infrastructure additions, as well as cash and in-kind funding opportunities. These efforts have focused on, but have not been limited to, seeking to transact with brand and generic pharmaceutical and biopharmaceutical companies as well as companies with potentially useful formulation or manufacturing capabilities, significant subject matter expertise and financial resources. We believe that some or all of our assets should be licensed, sub-licensed, joint ventured or even sold and have initiated efforts to do so. No assurance can be given that any transaction will come to fruition and that if it does, that the terms will be favorable to the Company.

On January 11, 2023, the Company established ResolutionRx Ltd, initially a wholly-owned subsidiary of RespireRx, as an unlisted public company in Australia an. On February 27, 2023, ResolutionRx entered into a services agreement (“Australian CRO Agreement) with iNGENu CRO Pty Ltd (iNGENu), a contract research organization (“CRO”), pursuant to which iNGENu is to act as a full service CRO in support of ResolutionRx’s research and development (“R&D”) program, by conducting laboratory experiments to determine a final optimum dronabinol formulation, scaling up and manufacturing the chosen formulation for clinical use, preparing and submitting regulatory documents and designing and conducting clinical trials, including pharmacokinetic/pharmacodynamic, safety and pivotal efficacy studies. In addition, on January 27, 2023 ResolutionRx entered into a letter of intent and term sheet with Radium Capital (“Radium”) for a series of debt financings secured by the Australian Research and Development Tax Incentive (“R&DTI”), a tax credit or rebate available for the component of R&D activities that are qualified core and supporting activities. In the case of ResolutionRx, this is anticipated to be a 43.5% tax rebate, with up to, and at the discretion of ResolutionRx, 80% to be financed by Radium and collateralized by the rebate. The Company and ResolutionRx believe that these are two of the first steps taken in a series of anticipated transactions that will enable the debt and equity or equity-linked financing of ResolutionRx, to support its R&D efforts over the next approximately two and half years. RespireRx is in the process of entering into a Master Services Agreement (“Master Services Agreement”) with ResolutionRx pursuant to which the Company will provide certain services to ResolutionRx for which the Company will be paid. See Note 10. Subsequent Events for more details about ResolutionRx.

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 $2,102,720 and $3,144,840 for the fiscal years ended December 31, 2022 and 2021, respectively, and negative operating cash flows of $143,905 and $956,172 for the fiscal years ended December 31, 2022 and 2021, respectively. The Company also had a stockholders’ deficiency of $11,880,320 at December 31, 2022 and expects to continue to incur net losses and negative operating cash flows for at least the next few years. Additionally, the Company has, with respect to nine convertible notes outstanding, $904,439 maturity amount inclusive of accrued interest as of December 31, 2022 which have matured, but for which no notices of default have been received which must be paid or converted. The Company will seek to have maturity dates extended in order to avoid a default on such convertible notes, which the Company has achieved in the past, but with respect to which, the Company can provide no assurance. The Company has also not met its payment obligations to the UWM Research Foundation (“UWMRF”) of the University of Wisconsin-Milwaukee, but has not received a notice of default and is in regular communication with the UWMRF regarding the establishment of a payment schedule. 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, 2022, 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 extremely 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 taken steps to continue to raise new debt and equity capital to fund the Company's business activities from both related and unrelated parties.

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 the pursuit of the Company's planned research and development activities. The Company regularly evaluates various measures to satisfy the Company's liquidity needs, including development and other agreements with collaborative partners and, when necessary, seeking to exchange or restructure the Company's outstanding securities and liabilities. The Company is evaluating certain changes to its operations and structure to facilitate raising capital from sources that may be interested in financing only discrete aspects of the Company's development programs and in that regard, has formed an Australian subsidiary, ResolutionRx. See Note 10. Subsequent Events. In addition to the formation of ResolutionRx, such changes could include additional significant reorganizations, which may include the formation of one or more additional subsidiaries into which one or more programs may be contributed. 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.

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.

Reverse Stock Split on January 5, 2021

On January 5, 2021, the Company effected a ten to one reverse-stock split of its common stock. Every ten shares of the "old" common stock was exchanged for one "new" share of common stock rounded down to the nearest whole share with any fractional shares of common stock paid to the stockholder in cash. Option and warrant issuances prior to January 5, 2021 have also been proportionately adjusted by dividing the number of shares into which such options and warrants may exercise by ten and multiplying the exercise price by ten.

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.

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 amounts of financial instruments (consisting of cash and accounts payable and accrued expenses) are 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 and other notes payable, management does not believe that the credit markets have materially changed for these types of borrowings since the original borrowing date. The Company considers the carrying amounts of the notes payable to officers and former officers, inclusive of accrued interest, to be representative of the respective fair values of such instruments due to the short-term nature of those instruments and their terms.

Deferred Financing Costs

Costs incurred in connection with ongoing debt and equity financings, if any, 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 equity financings are netted against the proceeds.

Capitalized Financing Costs

The Company presents debt issuance costs related to 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.

Convertible Notes Payable

Convertible notes are evaluated to determine if they should be recorded at amortized cost. To the extent that there are associated warrants, commitment shares or a beneficial conversion feature, the convertible notes and warrants are evaluated to determine if there are embedded derivatives to be identified, bifurcated and valued at fair value in connection with and at the time of such financing.

Notes Exchanges

In cases where debt or other liabilities are exchanged for equity, the Company compares the carrying value of debt, inclusive of accrued interest, if applicable, being exchanged, to the fair value of the equity issued and records any loss or gain as a result of such exchange. See Note 4. Notes Payable.

Extinguishment of Debt and Settlement or Modification of Liabilities

The Company accounts for the extinguishment of debt and settlement or modification of liabilities by comparing the carrying value of the debt or liability to the value of consideration paid or assets given up and recognizing a loss or gain in the consolidated statement of operations in the amount of the difference in the period in which such transaction occurs.

Prepaid Insurance

Prepaid insurance represents the premium paid for directors' and officers' insurance as well as the amount paid or incurred for office-related insurances and clinical trial coverage. Prepaid insurance premiums are recorded as prepaid insurance in the Company's consolidated balance sheet at each reporting date and amortized over the twelve month period of each policy to the Company's consolidated statement of operations for each reporting period.

Stock-Based Awards

The Company periodically issues common stock and stock options to officers, directors, Scientific Advisory Board members, consultants and other vendors 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, outside consultants and vendors 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 consolidated financial statements over the vesting period of the awards.

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

Stock options granted to members of the Company's outside consultants and other vendors are valued on the grant date. As the stock options vest, the Company recognizes this expense over the period in which the services are provided.

The 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 value of the common stock on the grant date, and the estimated volatility of the common stock over the estimated life 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 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.

The Company recognizes the value of stock-based payments 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.

As of December 31, 2022, there were stock option grants exercisable into 9,199,356 shares of common stock granted to two officers and one former officer, the two officers also being directors (one officer, who was also a director resigned effective January 31, 2022, but still retains the options which were fully vested), one director who was not an officer, consultants and other vendors. Certain stock options granted were subject to vesting schedules. As of December 31, 2022 and 2021, all stock options were fully vested and there were no new grants of stock options during the fiscal year ended December 31, 2022. The Black-Scholes value of vested stock options granted during the fiscal year ended December 31, 2021 was $39,500, of which $35,000 were options in payment of accounts payable and the Black-Scholes value of options granted during the fiscal year ended December 31, 2020 that vested during the fiscal year ended December 31, 2021 was $54,250.

There were no stock options requiring an assessment of fair value during the fiscal year ended December 31, 2022. For stock options requiring an assessment of fair value during the fiscal year ended December 31, 2021 the fair value of each stock option award was estimated using the Black-Scholes option-pricing model using the following assumptions:

	2021
Risk-free interest rate	1.24%
Expected dividend yield	0%
Expected volatility	189.33%
Expected life at date of issuance	5

The expected life for stock options requiring an assessment of fair value during the fiscal year ended December 31, 2021 is estimated to be equal to the term of the common stock options issued in 2021.

The Company recognizes the fair value of stock-based awards 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 fiscal years ended December 31, 2022 and 2021.

Warrants exercisable into 256,926,748 shares of Common Stock with a value of $590,932 were issued and repriced due to most-favored-nation ("MFN") provisions during the fiscal year ended December 31, 2022. During the fiscal year ended December 31, 2021 warrants exercisable into 380,568 shared of Common Stock with a value of $16,200 were issued to a placement agent. There were no warrants issued as compensation or for services during the fiscal years ended December 31, 2022 requiring such assessment. Warrants, if issued for services, are typically issued to placement agents or brokers for fund raising services and are not issued from any of the Company's stock and option plans, from which options issued to non-employees for services are typically issued.

For warrants requiring an assessment of fair value during the fiscal years ended December 31, 2022 and 2021 the fair value of each warrant was estimated using the Black-Scholes option-pricing model using the following assumptions:

	2022	2021
Risk-free interest rate	2.79-3.99%	0.80-1.02%
Expected dividend yield	0%	0%
Expected volatility	204.46-229.09%	192.64-353.06%
Expected life at date of issuance	5	5

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, 2022, 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, 2022, 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 and Development

Research and development costs include compensation paid to management directing the Company's research and development activities, including but not limited to compensation paid to our Chief Scientific Officer and fees paid to consultants and outside service providers and organizations (including research institutes at universities), and other expenses relating to the acquisition, design, development and clinical testing of the Company's treatments and product candidates.

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.

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 and are charged to general and administrative expenses.

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 loss attributable to common stockholders consists of net income or loss, as adjusted for actual and deemed dividends declared, amortized or accumulated. The Company recorded a deemed dividend for the issuance of warrants during year ended December 31, 2022 and December 31, 2021 of $1,972,995 and $378,042, respectively. The deemed dividend is added to the net loss in determining the net loss available to common stockholders.

Loss per common share is computed by dividing net loss attributable of common stockholders 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, 2022 and 2021, 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,	
	2022	**2021**
Series B convertible preferred stock	1	1
Convertible notes payable	641,341,808	48,173,552
Common stock warrants	419,683,183	59,420,298
Common stock options	9,199,356	9,306,368
Total	1,070,224,348	116,900,219

Reclassifications

Certain comparative figures in 2022 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 2020, the FASB issued Accounting Standards Update No. 2020-06, Debt – Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging—Contracts in Entity's Own Equity (Subtopic 815-40). The subtitle is Accounting for Convertible Instruments and Contracts in an Entity's Own Equity. This Accounting Standard Update ("ASU") addresses complex financial instruments that have characteristics of both debt and equity. The application of this ASU would reduce the number of accounting models for convertible debt instruments and convertible preferred stock. Limiting the accounting models would result in fewer embedded conversion features being separately recognized from the host contract as compared with current GAAP. Convertible instruments that continue to be subject to separation models are (1) those with embedded conversion features that are not clearly and closely related to the host contract, that meet the definition of a derivative, and that do not qualify for a scope exception from derivative accounting and (2) convertible debt instruments issued with substantial premiums for which the premiums are recorded as paid-in capital. The Company has historically issued complex financial instruments and has considered whether embedded conversion features have existed within those contracts or whether derivatives would appropriately be bifurcated. To date, no such bifurcation has been necessary. Management has evaluated the potential impact and has early adopted as of January 1, 2022. Management believes the adoption has simplified the accounting for convertible debt instruments and does not believe adoption has had a substantial impact on the financial statements, however, it is possible that this ASU may have a substantial impact on the Company's financial statements from future convertible debt financings.

4. Notes Payable

Convertible Notes Payable

The table below summarizes all convertible notes outstanding as of December 31, 2022. Those with similar characteristics outstanding as of December 31, 2022 are grouped separately. The following abbreviations are used in the column headings: DIC is Debt Issuance Cost, OID is Original Issue Discount, Wts are warrants, CNC is Capitalized Note Cost and BCF is Beneficial Conversion Feature. Also included are repayments by conversion, exchange or otherwise during or prior to the fiscal year ended December 31, 2022:

Inception Date	Maturity date	Original Principal Amount	Interest rate	Original aggregate DIC, OID, Wts, CNC and BCF	Cumulative amortization of DIC, OID, Wts, CNC and BCF	Accrued coupon interest	Repayment by conversion, increase in principal amount, net where appropriate	Balance sheet carrying amount at December 31, 2022 inclusive
November 5, 2014	September 15, 2016[1]	$ 25,000	10%	$	$	$	$ 30,291	$ 55,291
November 5, 2014	September 15, 2016[1]	25,000	10%				30,291	55,291
November 5, 2014	September 15, 2016[1]	25,000	12%				38,697	63,697
Sub-total		75,000					99,279	174,279
December 31, 2018	February 28, 2019[2]	25,000	10%				11,925	36,925
January 2, 2019	February 28, 2019[2]	10,000	10%				4,871	14,871
Sub-total		$ 35,000		$	$	$	$ 16,796	$ 51,796
May 17, 2019	May 17, 2020[3]	$ 50,000	10.00%	$ (50,000)	$ 50,000	$ 5,000	$ (52,253)	$ 2,747
July 28, 2020	June 30, 2022[3]	53,000	8.00%	(13,000)	13,000	9,738	(16,247)	46,491
February 17, 2021	June 17, 2022[3]	112,000	10.00%	(112,000)	112,000	11,896	(80,000)	43,896
April 1, 2021	July 31, 2022[3]	112,500	10.00%	(112,500)	112,500	23,696	-	136,196
May 3, 2021	July 31, 2022[3]	150,000	10.00%	(150,000)	150,000	-	(150,000)	-
May 10, 2021	August 10, 2022[3]	150,000	10.00%	(150,000)	150,000	21,064	(13,213)	157,851
June 30, 2021	June 29, 2022[3]	115,000	10.00%	(115,000)	115,000	21,387	-	136,387
August 31, 2021	August 31, 2022[3]	115,000	10.00%	(109,675)	109,675	15,344	-	130,344
October 7, 2021	October 7, 2022[3]	115,000	10.00%	(96,705)	96,705	14,178	-	129,178
December 23, 2021	June 21, 2022[3]	87,000	10.00%	(36,301)	36,301	8,728	25,621	121,349
April 14, 2022	April 14, 2023[3]	27,778	10.00%	(15,936)	11,396	1,986	-	25,224
August 22, 2022	May 31, 2023[3]	66,667	10.00%	(6,667)	2,393	2,393	-	64,786
August 22, 2022	May 31, 2023[3]	22,222	10.00%	(2,222)	797	798	-	21,595
August 22, 2022	May 31, 2023[3]	16,667	10.00%	(1,667)	598	598	-	16,196
Sub-total		$ 1,192,834		$ (971,673)	$ 960,365	$ 136,806	$ (286,092)	$1,032,240
Total		$ 1,302,834		$ (971,673)	$ 960,365	$ 136,806	$ (170,017)	$1,258,315

[1] These convertible notes were sold to investors in 2014 and 2015 (“Original Convertible Notes), and have a fixed interest rate of 10% per annum and in the case of the one note for which a notice of default has been received, 12%. The Original Convertible Notes have no reset rights or other protections based on subsequent equity transactions, equity-linked transactions or other events and are convertible into an aggregate of 1,508 shares of Common Stock. As of December 31, 2022, principal and accrued interest on the Original Convertible Note that is subject to a default notice totaled $58,934, of which $39,525 was accrued interest.

[2] On December 31, 2018 and January 2, 2019, the Company issued convertible notes to a single investor totaling $35,000 of maturity amount with accrued interest of $16,796 as of December 31, 2022. The number of shares of common stock (or preferred stock) into which these notes may convert is not determinable.

[3] These fourteen convertible notes were issued between May 17, 2019 and August 22, 2022. They all currently have similar terms including conversion prices that generally are or are likely to be $0.0015 per share of Common Stock. Ten matured prior to December 31, 2022 and four have or will expire between April 14, 2023 and May 31, 2023.The Company has initiated discussions with all note holders regarding maturity date extensions. The Company has not received any notices of default with respect to these notes. These notes contain, among other provisions, most favored nation provisions, reserve requirements and default interest rates.

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 as of that date) from and executed a secured note payable to SY Corporation Co., Ltd., (“SY Corporation”). 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 September 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. Management 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 has in the past made several efforts towards a comprehensive resolution of the aforementioned matters involving SY Corporation. During the fiscal year ended December 31, 2022, there were no further communications between the Company and 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, 2022 and 2021:

	December 31, 2022	December 31, 2021
Principal amount of note payable	$ 399,774	$ 399,774
Accrued interest payable	507,330	459,358
Foreign currency transaction adjustment	(73,641)	(22,028
Total note payable	$ 833,463	$ 837,104

Interest expense with respect to this promissory note was $47,973 for years ended December 31, 2022 and 2021, respectively.

Advances from and Notes Payable to Officers

Between January 19, 2016 and April 9, 2018, Dr. Arnold S. Lippa, the Company's Interim President, Interim Chief Executive Officer, Chief Scientific Officer and Executive Chairman of the Board of Directors advanced $127,600 to the Company for working capital purposes under three demand promissory notes with interest at 10% and collateralized by the Company's assets, $50,000 of which was convertible under certain circumstances. Although such conditions were not met, Dr. Lippa converted into a Board approved offering, the $50,000 principal amount of one such note on September 12, 2018, but did not convert any interest. Accordingly, total principal and interest as of December 31, 2022, was $148,892, of which $71,292 was accrued interest.

Between January 19, 2016 and April 9, 2018, Dr. James S. Manuso, the Company's then President, Chief Executive Officer and Vice Chairman of the Board of Directors advanced $127,600 to the Company for working capital purposes under three demand promissory notes with interest at 10% and collateralized by the Company's assets, $50,000 of which was convertible under certain circumstances. The conditions for conversion were not met and Dr. Manuso did not convert his convertible note. Accordingly, total principal and interest as of December 31, 2022 was $225,744, of which $98,144 was accrued interest.

During the year ended December 31, 2022, Dr. Lippa advanced on an interest free basis the Company $117,733. The outstanding balance of the advances as of December 31, 2022 of $226,393 is payable on demand.

For the fiscal years ended December 31, 2022 and 2021, $13,536 and $12,289 was charged to interest expense with respect to Dr. Lippa's notes, respectively.

For the fiscal years ended December 31, 2022 and 2021, $20,522 and $18,656 was charged to interest expense with respect to Dr. James S. Manuso's notes, respectively.

As of September 30, 2018, Dr. James S. Manuso resigned his executive officer positions and as a member of the Board of Directors of the Company. All of the interest expense noted above for 2022 and 2021 was incurred while Dr. Manuso was no longer an officer.

Other Short-Term Notes Payable

Other short-term notes payable at December 31, 2022 and December 31, 2021 consisted of premium financing agreements with respect to various insurance policies. At December 31, 2022, a premium financing agreement was payable with respect to directors' and officers' liability insurance in the initial amount of $85,457 (after payment of a deposit of $21,364), with interest at 11% per annum, in nine monthly installments of $9,971. In addition, there is $5,965 of premium financing payable with respect to office and other insurances, as of December 31, 2022 At December 31, 2022 and 2021, the aggregate amount of the short-term notes payable was $15,847 and $15,185 respectively.

5. Settlement and Payment Agreements

Effective December 15, 2022, the Company and the Board of Trustees of the University of Illinois ("UIL") entered into the Second Amendment to RespireRx -University of Illinois Exclusive License Agreement. The parties entered into the Second Amendment in order to eliminate accrued financial obligations to UIL and reduce future obligations. Annual $100,000 payments by the Company to UIL are eliminated and the unpaid amount of $200,000 for calendar years 2021 and 2022 are no longer due and payable. Among other changes, the $75,000 payment that was due after the dosing of the 1st patient in a Phase II study anywhere in the world is now reduced to $10,000 and UIL has been given an extension in the term of the License and a deferred compensation obligation of RespireRx including the 4% royalty on net sales due to UIL has been extended for up to 8 years after the original patent rights expire by including a royalty on the net sales protected by a patent application submitted by the Company describing a new formulation of dronabinol. See Note 9. Commitments and Contingencies-Significant Agreements and Contracts-University of Illinois Exclusive License Agreement for more details.

Effective August 1, 2022, the Company and the Company's former legal counsel, entered into a payment settlement agreement and release pursuant to which the Company and its former legal counsel agreed that the Company owed $2,608,914 to such counsel and that under the terms of the agreement the amount owed and payable by wire transfer on or before December 30, 2022 shall be $250,000. If that amount is paid on or before December 30, 2022, certain mutual releases would become effective and no further amounts would be due. If the $250,000 amount was not paid by December 30, 2022, the section of the agreement related to mutual releases would be null and void ab initio and the amount immediately due and payable by the Company to its former counsel would be adjusted to $2,608,914 less any amounts paid on or after the date of the agreement. The amount due by Decemb er 30, 2022 was not paid and the payment settlement agreement was amended to call for a payment of $350,000 by February 15, 2023, which amount was also not paid. The Company and its former legal counsel are in discussions regarding further revised payment settlement terms. The amount due to the Company and its former legal counsel included in accounts payable as of December 31, 2022 is $2,608,914.

Effective January 31, 2022, the Company and the Company's former President and Chief Executive Officer and Member of the Board of Directors, Timothy Jones, resigned his officer positions as well as from the Board of Directors pursuant to an Employment Agreement Termination and Separation Agreement ("SA") dated February 8, 2022. Pursuant to the terms of the SA, the Company has agreed to pay Mr. Jones up to a maximum of $789,267 in accordance with a schedule set forth in the SA based on amounts of funding raised by the Company, all in payment for Mr. Jones' service to the Company as President and Chief Executive Officer prior to January 31, 2022. Mr. Jones did not resign because of any disagreement with the Company relating to the Company's operations, policies or practices.

On April 29, 2021, RespireRx agreed to a payment and settlement agreement with the University of California Innovation and Entrepreneurship ("UIC") with respect to accounts payable in an amount that was not in dispute and is reflected in accounts payable and accrued expenses in the Company's condensed consolidated financial statements as of December 31, 2022. The total amount due is $234,657. The agreed payment schedule is for the Company to pay $10,000 on each of July 1, 2021, September 1, 2021, November 1, 2021, January 1, 2022 and March 31, 2022. If RespireRx paid an aggregate of $175,000 on or before March 31, 2022, the amounts would have been considered paid in full with no further amounts due. RespireRx has not made any payments after the September, 2021 payment. According to the terms of the agreement, if an aggregate of $175,000 was not paid by March 31, 2022, the remaining unpaid amount up to an aggregate of the original amount of $234,657 would be due and payable. Payment was not made and the original amount of $234,657 was been recorded in accounts payable at December 31, 2022. The Company remains in discussions with an agent on behalf of UIC to establish a new payment settlement schedule.

On February 21, 2020, Sharp Clinical Services, Inc. ("Sharp"), a vendor of the Company, filed a complaint against the Company in the Superior Court of New Jersey Law Division, Bergen County related to a December 16, 2019 demand for payment of past due invoices inclusive of late fees totaling $103,890. On May 29, 2020, a default was entered against the Company, and on September 4, 2020, a final judgment was entered against the Company in the amount of $104,217. On March 3, 2021, we executed a settlement agreement with Sharp (the "Sharp Settlement Agreement"), and on March 9, 2021, Sharp requested of the Bergen (NJ) County Sheriff, the return of the Writ of Execution which resulted in a release of the lien in favor of Sharp. The Sharp Settlement Agreement calls for a payment schedule of ten $10,000 payments due on April 1, 2021 and every other month thereafter, and permitted early settlement at $75,000 if the Company had paid Sharp that lower total by August 1, 2021. The Company did not pay Sharp that lower amount by that date. The Company has recorded a liability to Sharp of $53,568 as of December 31, 2022 after payments totaling $30,000 pursuant to the Sharp Settlement Agreement. The Company has not made the any of the payments due on or after October 1, 2021. On March 3, 2022, Company's then counsel received a default notice from counsel to Sharp with respect to the Sharp Settlement Agreement, which stated that Sharp may exercise its remedies. Company's then counsel communicated with counsel to Sharp. On March 28, 2022, one of the Company's bank accounts was debited for the benefit of Sharp $415 inclusive of fees about which the Company is seeking additional information but which the management believes indicates that either a new Writ of Execution was established or the original writ was re-established.

By letter dated February 5, 2016, the Company received a demand from a law firm representing Salamandra, LLC ("Salamandra") alleging an amount due and owing for unpaid services rendered. On January 18, 2017, following an arbitration proceeding, an arbitrator awarded Salamandra the full amount sought in arbitration of $146,082. Additionally, the arbitrator granted Salamandra attorneys' fees and costs of $47,937. All such amounts have been accrued as of December 31, 2022, including accrued interest at 4.5% annually from February 26, 2018, the date of the judgment, through December 31, 2022, totaling $39,552. The Company had previously entered into a settlement agreement with Salamandra that is no longer in effect. The Company has approached Salamandra seeking to negotiate a new settlement agreement. A lien with respect to the amounts owed is in effect.

On February 23, 2021 our bank received two New Jersey Superior Court Levies totaling $320,911 related to amounts owed to two vendors (Sharp and Salamandra as defined above) which amounts were not in dispute, debited our accounts and restricted access to those accounts. Our accounts were debited for $1,559 on February 23, 2021 which represented all of the cash in our accounts on that date.

On September 14, 2021, the Company and DNA Healthlink, Inc. ("DNA Healthlink") entered into a settlement agreement (the " DNA Healthlink Settlement Agreement") regarding $410,000 in unpaid accounts payable owed by the Company to DNA Healthlink (the "DNA Healthlink Settlement Amount") for services provided by DNA Healthlink to the Company pursuant to an agreement by and between the Company and DNA Healthlink dated October 15, 2014. Under the terms of the DNA Healthlink Settlement Agreement, the Company is obligated to pay to DNA Healthlink the full DNA Healthlink Settlement Amount as follows: twelve monthly payments of $8,000 commenced on November 15, 2021, followed by twelve monthly payments of $10,000 which commenced on November 15, 2022, followed by twelve monthly payments of $15,000 commencing on November 15, 2023, followed by one final payment of $14,000 on November 15, 2024. If, prior to March 14, 2023, the Company had received one or more upfront license fee payments or any other similar fee or fees from one or more strategic partners that aggregate at least fifteen million dollars ($15,000,000.00) ("Upfront Fees"), then the full DNA Healthlink Settlement Amount, less any amounts previously paid, would have been accelerated and become due and payable in full within ninety (90) days of receipt of any Upfront Fees. As a result of the DNA Healthlink Settlement Agreement, the Company recorded a gain with respect to vendor settlements of $62,548 during the fiscal year ended December 31, 2021. The Company made payments of $8,000 in November 2021 and December 2021, but has not made payments thereafter. Of the $390,000 total amount due, $174,000 has been reflected as long term liabilities and the remaining amount has been relected in accounts payable and accrued expenses in the Company's Consolidated Balance Sheet as of December 31, 2022.

An annual obligation payable to the University of Illinois of $100,000 that was originally due on December 31, 2021 pursuant to the 2014 License Agreement was extended to April 30, 2022 and was not timely paid by the extended due date. Effective as of December 15, 2022, the Company and the Board of Trustees of the University of Illlinois entered into the Second Amendment to RespireRx-University of Illinois Exclusive License Agreement pursuant to which, among other matters, eliminated the $100,000 obligation that was due on December 31, 2021 and thereafter. See Note 9. Commitments and Contingencies-Significant Agreements and Contracts-University of Illinois 2014 Exclusive License Agreement for more details.

By email 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 payable for investment banking services rendered. Such amount has been included in accrued expenses at December 31, 2022 and December 31, 2021.

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 as of December 31, 2022 and 2021 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.

6. Stockholders' Deficiency

Preferred Stock

RespireRx has authorized a total of 5,000,000 shares of preferred stock, par value $0.001 per share. As of December 31, 2022 and December 31, 2021, 1,250,000 shares were designated as 9% Cumulative Convertible 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; 1,700 shares were designated as Series G 1.5% Convertible Preferred Stock. On July 13, 2020, RespireRx designated 1,200 shares of Series H, Voting, Non-participating, Convertible Preferred Stock ("Series H Preferred Stock") and on September 30, 2020 RespireRx amended the Certificate of Designation of the Series H Preferred Stock to increase the number of shares of Series H Preferred Stock to 3,000 shares. On July 13, 2020 and September 30, 2020, RespireRx issued an aggregate of 1,624.1552578 shares of Series H Preferred Stock inclusive of 2% accrued dividends, all of which converted on September 30, 2020 into 25,377,426 shares of Common Stock and warrants to purchase 25,377,426 shares of Common Stock, and therefore as of that time on September 30, 2020 and thereafter through December 31, 2022, there were no shares of Series H Preferred Stock outstanding. Under the Certificate of Designation of the Series H Preferred Stock, shares of Series H Preferred Stock converted or redeemed by conversion are to be canceled and are not to be reissued. Therefore, as of December 31, 2022, there were 1,375.8447422 shares of Series H Preferred Stock available for issuance.

Series B Preferred Stock outstanding as of December 31, 2022 and 2021 consisted of 37,500 shares issued in a May 1991 private placement. The shares of Series B Preferred Stock are convertible into 1 share of common stock. RespireRx may redeem the Series B Preferred Stock for $25,001 at any time upon 30 days prior notice.

Although other series of preferred stock have been designated, no other shares of preferred stock are outstanding. As of December 31, 2022 and December 31, 2021, 3,504,424 shares of preferred stock were undesignated and may be issued with such rights and powers as the Board of Directors may designate.

Common Stock

There are 125,544,276 shares of the Company's Common Stock outstanding as of December 31, 2022. After reserving for conversions of convertible debt as well as common stock purchase options and warrants exercises before accounting for incremental contract excess reserves, there were 790,554,292 shares of the Company's Common Stock available for future issuances as of December 31, 2022. The conversion of $215,000 of convertible notes and of $2,000 of costs associated with such conversions resulted in the issuance of 21,700,000 shares of Common Stock during the fiscal year ended December 31, 2022. The cashless exercise of 7,700,000 warrants resulted in the issuance of 5,950,000 shares of Common Stock during the fiscal year ended December 31, 2022.

Common Stock Warrants

On June 28, 2021, RespireRx exchanged a warrant originally issued on July 30, 2020 in connection with a prior convertible note, that was exercisable into 375,000 shares of Common Stock for a warrant exercisable into 327,273 shares of Common Stock. On June 30, 2021, RespireRx exchanged 687,500 warrants originally issued on July 2, 2020 in connection with a prior convertible note for 600,000 new warrants. In both cases, along with the reduction in the number of warrants, the exercise price of such warrants was reduced from $0.07 to $0.02 per share of Common Stock. In connection with these exchanges, RespireRx recorded a gain of $1,099 during the fiscal year ended December 31, 2021. The warrant holders were granted a cashless exercise right that they did not previously have. In fiscal year ended December 31, 2022, the Company adjusted these warrants both in number and exercise price due to most favored nation provisions in certain convertible notes to a total of 12,363,640 shares issuable upon the exercise of the warrants at an exercise price of $0.0015.

As a result of the issuance of new convertible notes during fiscal year ended December 31, 2022 and the existence of most favored nations provisions that were activated upon the issuance of these notes and including prior warrant issuances, there were warrants outstanding that are exericisable into 419,683,183 shares of Common Stock with a weighted average exercise price of $0.0074 and a weighted average life of 3.28 years.

A summary of warrant activity for the year ended December 31, 2022 is presented below.

	Number of Shares		Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in Years)
Warrants outstanding at December 31, 2021	59,420,298	$	0.0718	3.33
Issued	370,280,035	$	0.0015	4.27
Expired	(2,317,150)	$	0.5121	-
Exercised	(7,700,000)	$	0.0015	-
Warrants outstanding at December 31, 2022	419,683,183	$	0.0074	3.28

The exercise prices of common stock warrants outstanding and exercisable are as follows at December 31, 2022:

Exercise Price	Warrants Outstanding and Exercisable(Shares)	Expiration Dates
$ 0.0015	393,882,308	September 30, 2023-April 14, 2027
$ 0.0389	208,227	May 10, 2026
$ 0.0470	172,341	May 3, 2026
$ 0.0700	25,377,426	September 30, 2023
$ 15.0000	19,000	December 30, 2023
$ 15.7500	23,881	April 30, 2023
$		
	419,683,183	

Based on a fair value of $0.0023 per share on December 31, 2022, there were warrants exercisable into 393,882,308 shares of Common Stock warrants that were in-the-money.

A summary of warrant activity for the year ended December 31, 2021 is presented below.

	Number of Shares		Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in Years)
Warrants outstanding at December 31, 2020	28,809,352	$	0.1528	2.64
Issued	39,182,841	$	0.0200	4.50
Expired	(9,395)	$	74.8891	-
Exchanged	(1,062,500)	$	0.0700	-
Exercised	(7,500,000)	$	0.0200	-
Warrants outstanding at December 31, 2021	59,420,298	$	.0718	3.33

Stock Options

On March 18, 2014, RespireRx adopted its 2014 Equity, Equity-Linked and Equity Derivative Incentive Plan (the "2014 Plan"). 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. As of December 31, 2022, there are 6,325 shares available in the 2014 Plan.

On June 30, 2015, the Board of Directors adopted the 2015 Stock and Stock Option Plan (as amended, the "2015 Plan"). On July 29, 2021, the Company amended the 2015 Plan to increase the number of shares by an additional 7,000,000 to 22,898,526 shares. As of December 31, 2022, there are 13,670,110 shares available in the 2015 Plan.

The Company has not and does not intend to present the 2015 Plan to stockholders for approval.

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

During the fiscal year ended December 31, 2022, there were 107,012 shares of Common Stock previously issuable upon exercise of options that expired unexercised that were added back to the number of shares available in the 2015 Plan.

There were no stock grants and there were stock option grants for the fiscal years ended December 31, 2022 and 2021 respectively.

Information with respect to the Black-Scholes variables used in connection with the evaluation of the fair value of stock-based compensation costs and fees is provided at Note 3 Summary of Significant Accounting Policies.

A summary of stock option activity for the fiscal year ended December 31, 2022 is presented below.

	Number of Shares		Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in Years)
Options outstanding at December 31, 2021	9,306,368	$	1.095	3.95
Granted	-	$	0.000	0.00
Expired	(107,012)	$	(44.29)	-
Options outstanding at December 31, 2022	9,199,356	$	0.592	3.74

The exercise prices of common stock options outstanding and exercisable were as follows at December 31, 2022:

Exercise Price		Options Outstanding (Shares)	Options Exercisable (Shares)	Expiration Date
$	0.0190	2,194,444	2,194,444	December 31, 2026
$	0.0540	1,700,000	1,700,000	September 30, 2025
$	0.072	5,050,000	5,050,000	July 31, 2025
$	7.00-$159.25	254,912	254,912	April 5, 2023 - December 9, 2027
		9,199,356	9,199,356	

Based on a fair value of $0.0023 per share on December 31, 2022, there were there were no exercisable in-the-money common stock options as of December 31, 2022.

A summary of stock option activity for the fiscal year ended December 31, 2021 is presented below.

	Number of Shares		Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in Years)
Options outstanding at December 31, 2020	7,165,215	$	2.225	4.60
Granted	2,194,444	$	0.019	4.98
Expired	(53,291)	$	(73.305)	-
Options outstanding at December 31, 2021	9,306,368	$	1.095	3.95

The exercise prices of common stock options outstanding and exercisable were as follows at December 31, 2021:

Exercise Price	Options Outstanding (Shares)	Options Exercisable (Shares)	Expiration Date
$ 0.019	2,194,444	2,194,444	December 21, 2026
$ 0.072	5,050,000	5,050,000	September 30, 2025
$ 0.054	1,700,000	1,700,000	July 31, 2025
$ 7.00-$195.00	361,924	361,924	January 17, 2022 - December 9, 2027
	9,306,368	9,306,368	

Based on a fair value of $0.012 per share on December 31, 2021, there were no exercisable in-the-money common stock options as of December 31, 2021.

For the years ended December 31, 2022 and 2021, stock-based compensation costs and fees included in the consolidated statements of operations consisted of general and administrative expenses of $0 and $28,000 respectively, and research and development expenses of $0 and $30,750, respectively.

Reserved and Unreserved Shares of Common Stock

As of December 31, 2022, there are 2,000,000,000 shares of common stock authorized, of which 125,544,276 are issued and outstanding. As of December 31, 2022, there are outstanding options to purchase 9,199,356 shares of common stock and 6,325 and 13,670,110 shares available for issuance under the 2014 Plan and 2015 Plan, respectively. There are 649 Pier contingent shares of common stock that may be issued under certain circumstances. As of December 31, 2022, there are 641,341,808 shares issuable upon conversion of convertible notes. As of December 31, 2022, there are 419,683,183 shares that may be issued upon exercise of outstanding warrants. As of December 31, 2022, the Series B Preferred Stock may convert into 1 share of common stock. Therefore, the Company is reserving 1,083,901,432 shares of commonstock for future issuances with respect to conversions and exercises as well as for the Pier contingent shares. In addition, certain convertible notes and related warrants impose an additional contractual reserve requirement, above the number of shares into which such convertible notes and related warrants may convert or exercise respectively.

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, 2022 and 2021 are summarized below.

	December 31,	
	2022	**2021**
Capitalized research and development costs	$ -	$ -
Research and development credits	1,760,000	2,906,000
Stock-based compensation	-	3,911,000
Stock options issued in connection with the payment of debt	-	202,000
Net operating loss carryforwards	22,577,000	19,671,000
Accrued compensation	482,000	733,000
Accrued interest due to related party and others	222,000	186,000
Total deferred tax assets	25,041,000	27,609,000
Valuation allowance	(25,041,000)	(27,609,000)
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, 2022 and 2021, 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, 2022 and 2021 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, 2022 and 2021.

	Years Ended December 31,	
	2022	2021
U. S. federal statutory tax rate	(21.0)%	(21.0)%
Change in valuation allowance	(9.0)%	(1.0)%
Adjustment to deferred tax asset	30.0%	22.0%
Effective tax rate	0.0%	0.0%

As of December 31, 2022, the Company had federal and state tax net operating loss carryforwards of approximately $83,317,000 and $81,348,000, respectively. The state tax net operating loss carryforward consists of $67,305,000 for California purposes and $14,043,000 for New Jersey purposes. The federal net operating loss carryforwards will expire at various dates from 2023 through 2042. State net operating losses expire at various dates from 2022 through 2033 for California and through 2043 for New Jersey. The Company also had federal and California research and development tax credit carryforwards. The federal research and development tax credit carryforwards will expire at various dates from 2022 through 2032. 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 limits its securities related activities primarily to investment banking services.

A description of advances and notes payable to officers is provided at Note 4. Notes Payable – Advances from and Notes Payable to Officer.

9. Commitments and Contingencies

Pending or Threatened Legal Action and Claims

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 as of December 31, 2022 and 2021 with respect to such matters. See Note 5. Settlement and Payment Agreements to the consolidated financial statements as of December 31, 2022 for additional items and details.

Significant Agreements and Contracts

Consulting Agreements

Richard Purcell, the Company's Senior Vice President of Research and Development since October 15, 2014, has provided his services to the Company on an at will and month-to-month basis. Since agreeing to a payment and settlement agreement, the Company has contracted for his services on a prepaid hourly basis at a rate of $250 per hour, through his consulting firm, DNA Healthlink, Inc. See Note 5. Payment and Settlement Agreements for a description of the current payment terms. During the fiscal year ended December 31, 2022 Mr. Purcell did not provide any services to the Company.

The Company entered into a consulting contract with David Dickason effective September 15, 2020 pursuant to which Mr. Dickason was appointed to and serves as the Company's Senior Vice President of Pre-Clinical Product Development on an at-will basis at the rate of $250 per hour. During the fiscal year ended December 31, 2022 Mr. Dickason did not provide any services to the Company.

Employment Agreements

Effective on May 6, 2020, Timothy Jones was appointed as RespireRx's President and Chief Executive Officer and entered into an employment agreement as of that date. Effective January 31 2022, Mr. Jones resigned as RespireRx's President and Chief Executive Officer as well as a member of RespireRx's Board of Directors pursuant to an Employment Agreement Termination and Separation Agreement dated February 8, 2022. See Note 5. Payment and Settlement Agreements.

Effective January 31, 2022, Dr. Lippa was appointed as RespireRx's Interim President and Interim Chief Executive Officer. Dr. Lippa continues to serve as RespireRx's Executive Chairman and as a member of the Board of Directors as well as the Company's Chief Scientific Officer.

Jeff E. Margolis currently serves as the Company's Senior Vice President, Chief Financial Officer, Treasurer and Secretary. Mr. Margolis also serves on the Company's Board of Directors.

The table below summarized the current cash commitments to Dr. Lippa and Mr. Margolis through the next September 30th renewal date.

	Contract year ending September 30, 2023		
	Nine months		
	Base Salary	Benefits	Total
Arnold S. Lippa	$ 225,000	$ 29,700	$ 254,700
Jeff E. Margolis	225,000	16,200	241,200
	$ 450,000	$ 45,900	$ 495,900

Under certain circumstances base salaries may be contractually increased or the executives may become eligible for additional benefits and base salaries may be increased at the discretion of the Board of Directors. All executives are eligible for stock and stock option and similar grants at the discretion of the Board or Directors.

The payment of certain amounts reflected in the table above have been voluntarily deferred indefinitely and payments against accrued compensation may be made based upon the Company's ability to make such payments.

UWMRF Patent License Agreement

On August 1, 2020, RespireRx exercised its option pursuant to its option agreement dated March 2, 2020, between RespireRx and UWM Research Foundation, an affiliate of the University of Wisconsin-Milwaukee ("UWMRF"). Upon exercise, RespireRx and UWMRF executed the UWMRF Patent License Agreement effective August 1, 2020 pursuant to which RespireRx licensed the identified intellectual property.

Under the UWMRF Patent License Agreement, the Company has an exclusive license to commercialize GABAkine products based on UWMRF's rights in certain patents and patent applications, and a non-exclusive license to commercialize products based on UWMRF's rights in certain technology that is not the subject of the patents or patent applications. UWMRF maintains the right to use, and, upon the approval of the Company, to license, these patent and technology rights for any non-commercial purpose, including research and education. The UWMRF Patent License Agreement expires upon the later of the expiration of the Company's payment obligations to UWMRF or the expiration of the last remaining licensed patent granted thereunder, subject to early termination upon the occurrence of certain events. The License Agreement also contains a standard indemnification provision in favor of UWMRF and confidentiality provisions obligating both parties.

Under the UWMRF Patent License Agreement, in consideration for the licenses granted, the Company will pay to UWMRF the following: (i) patent filing and prosecution costs incurred by UWMRF prior to the effective date, paid in yearly installments over three years from the Effective Date; (ii) annual maintenance fees, beginning on the second anniversary of the Effective Date, which annual maintenance fees terminate upon the Company's payment of royalties pursuant to clause (iv) below; (iii) milestone payments, paid upon the occurrence of certain dosing events of patients during clinical trials and certain approvals by the FDA; and (iv) royalties on net sales of products developed with the licenses, subject to minimum annual payments and to royalty rate adjustments based on whether separate royalty payments by the Company yield an aggregate rate beyond a stated threshold. The Company will pay to UWMRF certain percentages of revenues generated from sublicenses of the licenses provided under the UWMRF Patent License Agreement by the Company to third parties.

Certain payments under the UWMRF Patent License Agreement have not been paid by the Company. The Company is in regular discussions with UWMRF regarding when the Company may be able to commence making payments. The Company has not received a notification of default either during the fiscal year ended December 31, 2022 or in any subsequent periods. All amounts due under the UWMRF Patent License Agreement are reflected in the Company's consolidated financial statements as of December 31, 2022 in accounts payable and accrued expenses.

University of Wisconsin-Milwaukee Outreach Services Agreement

On July 12, 2021, the Company and the Board of Regents of the University of Wisconsin System on behalf of the University of Wisconsin-Milwaukee ("UWM") entered into an Outreach Services Agreement pursuant to which UWM agreed to provide, among other molecules, multiple milligram to gram quantities of KRM-II-81 (GABAkine) and the Company agreed to pay UWM an annual sum of $75,000 payable in three installments of $25,000 each beginning October 12, 2021, which amount was timely paid, and on a quarterly basis thereafter. The payments that were due on January 12, 2022 and April 12, 2022 have not yet been paid. The agreement terminated on June 30, 2022. Amounts due on January 12, 2022 and April 12, 2022 are recorded in accounts payable as of December 31, 2022.

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 was amended on July 25, 2017 and effective December 15, 2022, the first amendment was to extend certain timeframes and the second amendment represented an extensive set of modifications ("2nd Amendment").

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.

Among other things, the 2nd Amendment redefined the term "Product" primarily to include in the definition, any product or process that would be enforceable under the licensed patent rights after the patent rights have expired. In addition, new definitions were added for "Deferred Compensation Annual Net Sales Payments" and "Deferred Compensation Minimum Payment(s)," both of which only become due and payable after the expiration of the patent rights and shall not be due and payable while any of the patent rights have not yet expired. These deferred compensation arrangements were in consideration for deferment of certain financial obligations. The deferred payments are due for eight years from the first commercial of a regulatory approved product but after the patent rights have expired. The 2nd Amendment also modified the term to the period of time from the effective date until the later of the date: (a) of the last to lapse, expire or terminate of the patent rights or (b) when the licensee (the Company) provides notice of that the use of technical information as defined in the 2014 License Agreement as amended has ceased or (c) of the expiration of the last form of market exclusivity or (d) of the last date in which the Licensee (the Company) owes payments to the University. The 2nd Amendment amended and clarified Schedule 2 to the 2014 License Agreement, as amended by among other things, by (i) including a 4% royalty on Net Sales by the Licensee or sublicensee as Deferred Compensation Annual License Payments

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 obligation of $100,000 due on December 31, 2021, was extended to May 31, 2022 and then further extended to an indefinite future date while discussions to amend the obligation are taking place. The minimum annual royalty obligation due on December 31, 2021 has not yet been paid. What was the $100,000 annual minimum that existed from inception through December 31, 2020 was eliminated and therefore the amounts previously recorded in accounts payable and accrued expenses, were reduced to $0. The annual minimum amount due the first year with a market approval from the US FDA (United States Food and Drug Administration) or a foreign equivalent and every year thereafter until the first commercial sale of a product of $350,000 replaced two similarly timed payments of $150,000 and $200,000. The first year with a commercial sale of a product and every year thereafter is now $400,000 whereas it was previously $250,000 after the first year of commercial sale. One time milestone payments have been changed to read as follows:

(i) $10,000 due within 5 days after dosing of the first patient with a product in a Phase II human clinical study anywhere in the world.

(ii) $150,000 due within 5 days after dosing of the first patient with a product in a Phase III human clinical study anywhere in the world.

(iii) $350,000 due within 5 days after the earlier date of the following (a) enrolling 80% of the patients with a product in the Phase III human clinical study anywhere in the world, (b) one year after the initiation of the Phase III human clinical study anywhere in the world, or (c) termination of the Phase III human clinical study anywhere in the world.

(iv) $500,000 due within 5 days after the first NDA (New Drug Application) filed with the US FDA or any other foreign equivalent regulatory agency for a product anywhere in the world.

(v) $1,000,000 due within twelve (12) months after the first commercial sale of a product anywhere in the world.

There are reporting requirements by the Licensee to the University.

Royalty stacking provisions remained unchanged in the 2nd Amendment.

The concept of reduced royalties upon expiration of the patent rights, but while technical information was being used, was eliminated with the 2nd Amendment.

During the fiscal years ended December 31, 2022 and 2021, the Company recorded charges to operations of $0 and $100,000, respectively representing the annual minimum royalty, which is included in research and development expenses in the Company's consolidated statement of operations. The $100,000 from the fiscal year ended December 31, 2021 was reversed as a result of the effectiveness of the 2nd Amendment as of December 15, 2022 and the estimate for the fiscal year ended December 31, 2022 was $0.

Noramco Inc. - Dronabinol Development and Supply Agreement

On September 4, 2018, RespireRx entered into a dronabinol Development and Supply Agreement with Noramco Inc., one of the world's major dronabinol manufacturers, which Noramco subsequently assigned to its subsidiary, Purisys LLC (the "Purisys Agreement"). Under the terms of the Purisys Agreement, Purisys agreed to (i) provide all of the active pharmaceutical ingredient ("API") estimated to be needed for the clinical development process for both the first- and second-generation products (each a "Product" and collectively, the "Products"), three validation batches for New Drug Application ("NDA") filing(s) and adequate supply for the initial inventory stocking for the wholesale and retail channels, subject to certain limitations, (ii) maintain or file valid drug master files ("DMFs") with the FDA or any other regulatory authority and provide the Company with access or a right of reference letter entitling the Company to make continuing reference to the DMFs during the term of the agreement in connection with any regulatory filings made with the FDA by the Company, (iii) participate on a development committee, and (iv) make available its regulatory consultants, collaborate with any regulatory consulting firms engaged by the Company and participate in all FDA or Drug Enforcement Agency ("DEA") meetings as appropriate and as related to the API. We now refer to the second-generation product as our proprietary formulation or proprietary product and have de-emphasized the first-generation product.

In consideration for these supplies and services, the Company has agreed to purchase exclusively from Noramco during the commercialization phase all API for its Products as defined in the Development and Supply Agreement at a pre-determined price subject to certain producer price adjustments and agreed to Noramco's participation in the economic success of the commercialized Product or Products up to the earlier of the achievement of a maximum dollar amount or the expiration of a period of time.

There was no activity during the fiscal years ended December 31, 2022 or 2021 with respect to the Purisys Agreement.

University of California Irvine

On April 29, 2021, RespireRx agreed to a payment settlement arrangement with the University of California Innovation and Entrepreneurship affiliated with the Regents of the University of California on behalf of its Irvine Campus ("Irvine"), pursuant to which the Company and Irvine agreed that the total amount due to Irvine by RespireRx was $234,656.58 and that Irvine would accept $175,000 as settlement in full if funds were received from RespireRx as follows: $10,000 on each of July 1, 2021, September 1, 2021, November 1, 2021, January 1, 2022, March 1, 2022 and $125,000 on or before March 31, 2022. Failure to meet those terms would render the agreement null and void. The payment terms were not met. All amounts owed of approximately $213,000 after payments totaling $20,000 have been recorded on the Company's balance sheet as of December 31, 2022.

Transactions with Bausch Health Companies Inc. (formerly known as Biovail Laboratories International SRL)

Beginning in March 2010, the Company entered into a series of asset purchase and license agreements with Biovail Laboratories International SRL which later merged with Valeant Pharmaceuticals International, Inc. which was later renamed Bausch Health Companies Inc. ("Bausch").

In March 2011, the Company entered into a new agreement with Bausch to reacquire the ampakine compounds, patents and rights that Bausch 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 pertaining to an intravenous dosage form of the ampakine compounds for respiratory depression, a therapeutic area not currently pursued by the Company. Bausch 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, Bausch 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 Bausch would share in all such future development costs with the Company. If Bausch makes the co-marketing election, the Company would owe no further milestone payments to Bausch and the Company would be eligible to receive a royalty on net sales of the compound by Bausch or its affiliates and licensees.

There was no activity during tshe fiscal years ended December 31, 2022 or 2021 that affect the Bausch agreement.

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, 2022, aggregating $591,333 Employment agreement amounts included in the 2023 column represent amounts contractually due from January 1, 2023 through September 30, 2023 when such contracts expire unless extended pursuant to the terms of the contracts.

		Payments Due By Year				
	Total	2023	2024	2025	2026	2027
License agreements	$ 95,433	$ 40,433	$ 10,000	$ 15,000	$ 15,000	$ 15,000
Employment agreements (1)	495,900	495,900	-	-	-	-
Total	$591,333	$536,333	$ 10,000	$ 15,000	$ 15,000	$ 15,000

(1) The payment of certain of such amounts has been deferred indefinitely.

10. Subsequent Events

Creation of Wholly-Owned Subsidiary ResolutionRx Ltd

On January 11, 2023, RespirerRx formed ResolutionRx Ltd ("ResolutionRx"), initially as a wholly-owned subsidiary of RespireRx. ResolutionRx is an unlisted public Australian company focused on developing and commercializing proprietary pharmaceutical cannabinoids. RespireRxintends to contribute, via sub-license and license or a different transaction structure that provides access to intellectual property and commercialization rights, its cannabinoid, specifically its dronabinol drug development program for OSA and certain other indications subject to certain liabilities.

On 27 February 2023, ResolutionRx entered into a services agreement for clinical research and other related services with iNGENu CRO Pty Ltd, a contract research organization with headquarters in Melbourne, Australia. iNGENu is a bespoke contract research organization focused on cannabinoid and psychedelic clinical research.

On 27 January 2023, entered into a letter of intent ("Radium LOI") and term sheet ("Radium Term Sheet") with Radium Capital ("Radium"). The Radium LOI and Radium Term Sheet summarize the background and principal terms of a series of planned financing arrangements between Radium Capital ("Radium") and ResolutionRx in order to unlock research and development tax incentives ("R&DTI"). ResolutionRx and Radium have agreed to enter into a series of loan agreements which in the United States may be considered to be analogous to a line of credit designed to finance research and development (R&D) efforts prior to receipt of R&DTI from the Australian government. In the case of ResolutionRx, it is anticipated that the R&DTI would be 43.5% of qualified R&D expenses and is a rebate. Radium would finance up to, at the request of ResolutionRx, up to 80% of R&DTI, subject to certain conditions, including but not limited to receipt by Radium of a comfort letter from ResolutionRx's R&DTI tax advisors as to the qualification of the R&D expenses for the R&DTI. R&D expenses outside Australia would be subject to an Overseas Finding before being considered for the R&DTI. Not all R&D expenses are qualified for the R&DTI. The loans would be collateralized by the R&D credit.

ResolutionRx will require additional capital and is in discussions with several parties in this respect, receipt of which cannot be ensured.

On April 3, 2023, the Company filed a Certificate of Designation, Preferences, Rights and Limitations of its Series I Preferred Stock ("Series I Certificate of Designation") with the Secretary of State of the State of Delaware to amend the Company's certificate of incorporation. The filing of the Series I Certificate of Designation was approved by the Company's Board of Directors. The Series I Certificate of Designation sets forth the preferences, rights and limitations of the Series I Preferred Stock, a brief summary of which is as follows:

The number of shares designated as Series I 8% Redeemable Preferred Stock ("Series I Preferred Stock") is 3,500 (which is not subject to increase without the written consent of a majority of the holders (each a "Series I Holder") of the Series I Preferred Stock or as otherwise set forth in the Certificate of Designation). The Series I Preferred Stock Par Value is $0.001 and the Series I Preferred Stock Stated Value is $100.00. The dividend rate is 8% per annum based on a 365 day year, payable in-kind.

Redemption shall happen upon the payment of a Series I "Eligible Payment" which takes place upon the occurrence of an Eligible Payment Event, as both terms are defined in the Certificate. The Series I Eligible Payment is calculated as the Series I Maximum Appreciated Price, which is $0.02, subject to certain adjustments (unless a lesser price is agreed by the Corporation and the Series I Holder) multiplied by the number of shares of Common Stock corresponding to the number of Series I Preferred Shares divided by the Series I Base Measurement Price ($0.0015), multiplied by the Series I Preferred Stock Stated Value. A Series I Eligible Payment Event shall include: (i) any license, sublicense, joint venture or similar transaction resulting in an upfront payment of at least $15,000,000.00, or (ii) any milestone payment with respect to research and development of at least $15,000,000.00, or (iii) receipt of royalties in any one year of at least $15,000,000.00 or (iv) any event resulting in the Company's receipt of an amount deemed by the Company's Board of Directors to be establish a Series I Eligible Payment Event. Certain Fundamental Transactions as defined in the Series I Certificate of Designation may be Series I Eligible Payment Events.

For a detailed description the Series Certificate of Designation and the Series I Preferred Stock to be issued, please refer to our Current Report on Form 8-K, filed with the SEC on April 6, 2023, including but not limited to Exhibit 3.1 to the Current Report of Form 8-K.

On April 12, 2023, the Company filed the Series J Certificate of Designation with the Secretary of State of the state of Delaware.

The Series J Certificate of Designation sets forth the preferences, rights and limitations of the Series J Preferred Stock, a summary of which is as follows:

The number of shares designated as Series J 8% Redeemable Preferred Stock ("Series J Preferred Stock") is 15,000 (which is not subject to increase without the written consent of a majority of the holders (each a "Series J Holder") of the Series J Preferred Stock or as otherwise set forth in the Series J Certificate of Designation). The Series J Preferred Stock Par Value is $0.001 and the Series J Preferred Stock Stated Value is $100.00. The dividend rate is 8% per annum based on a 365 day year, payable in-kind.

Redemption shall happen upon the payment of an Series J "Eligible Payment" which takes place upon the occurrence of a Series J Eligible Payment Event, as both terms are defined in the Series J Certificate. The Series J Eligible Payment is calculated as the Maximum Appreciated Price, which is closing price per share of Common Stock or its equivalent on the day that is the trading day on which an Series J Eligible Payment Event is publicly announced prior to the opening of financial markets, or the trading day following the public announcement of the Series J Eligible Payment Event if announced after the opening of the financial markets on the date of the Series J Eligible Payment Event (unless a lesser price is agreed by the Company and the Series I Holder) multiplied by the number of shares of Common Stock corresponding to the number of Series J Preferred Shares divided by the Series J Base Measurement Price ($0.006), subject to certain adjustments, multiplied by the Series J Preferred Stock Stated Value. A Series J Eligible Payment Event shall include: (i) any license, sublicense, joint venture or similar transaction resulting in an upfront payment of at least $20,000,000.00, or (ii) any milestone payment with respect to research and development of at least $20,000,000.00, or (iii) receipt of royalties in any

one year of at least $20,000,000.00 or (iv) any event resulting in the Corporation's receipt of an amount deemed by the Corporation's Board of Directors to be establish a Series J Eligible Payment Event. Certain Fundamental Transactions as defined in the Series J Certificate of Designation may be Series J Eligible Payment Events.

Each share of Series J Preferred Stock shall be entitled to that number of votes, which shall be eligible to vote along with the Common Stockholders, or, as the case may be, when voting as a class, that is equal to one hundred (100x) times number calculated by dividing the number of shares of Series J Preferred Stock by the Base Measurement Price as of the record date for such vote or written consent or, if there is no specified record date, as of the date of such vote or written consent.

Upon any liquidation, dissolution or winding-up of the Company, no distribution shall be made to the holders of any shares of capital stock of the Company unless, prior thereto, the Series J Holders receive (i) an amount equal to 100% of the stated value, plus any accrued and unpaid dividends plus (ii) an amount equal to a pro rata portion of the Series J Eligible Payment Amount less the Series J Preferred Stock Stated Value paid pursuant to (i) above, plus (iii) the pro rata amount when considered with all outstanding shares of Common Stock and any securities that may be convertible into, exercisable for or exchanged for Common Stock that have similar rites, of any remaining distribution. The distribution shall result in a Redemption. If the assets of the Company are insufficient to pay in full such amounts due the Series J Holders or any holders of another class that is parri pasu with the Series J Holders ("Series J Pari Passu Holders"), then the entire assets shall be distributed ratably among the Series J Holders and Series J Pari Passu Holders in accordance with the respective amounts that would be payable on such shares if all amounts payable thereon were paid in full and such distribution shall result in a Redemption. A Fundamental Transaction, or a Change of Control Transaction, each as defined in the Certificate, shall be deemed to be Liquidations.

On April 12, 2023, RespireRx entered into an exchange agreement and two exchange and settlement agreements with two executive officrs and one vendor collectively, the "Series J Settlement Agreements" and the executive officers and vendor are referred to herein as the "Series J Exchangers."

Pursuant to the terms of the Settlement Agreements, the Company, in exchange for the issuance of Series J Preferred Stock to the Exchangers, the Exchangers exchanged or settled their rights to receive an aggregate of $570,000 of accrued compensation or debt, advances or other liabilities owed to them. The Series J Preferred Stock is transferrable to Affiliates as such term is defined in the Series J Certificate of Designation. The two executives immediately transferred all of their shares of Series J Preferred Stock to separate trusts of which each is separately the grantor and that are Affiliates of each. The vendor immediately transferred its shares to an individual Affiliate of the vendor..

The Settlement Agreements, the transfer requests and the Series J Certificate of Designation and the delivery of the Series J Preferred Stock was approved by the Company's Board of Directors.

For a detailed description the Series J Certificate of Designation, the Series J Preferred Stock, the Settlement Agreements and the transfer letter agreements, please refer to our Current Report on Form 8-K, filed with the SEC on April 13, 2023, including but not limited to Exhibit 3.1 and Exhibit 99.1 through 99.6 to the Current Report of Form 8-K.

Cashless Warrant Exercises

A single convertible note holder who also held common stock purchase warrants with cashless exercise provisions, exercised a portion of the those warrants on a cashless basis resulting in the issuance of Common Stock as follows:

Date of Exercise	Number of Shares Of Common Stock Into Warrants were Exercisable on Cash Basis	Number of Shares of Common Stock Issued Upon Cashless Exercise
January 4, 2023	8,225,000	6,202,459
February 2, 2023	8,000,000	6,235,294
March 6, 2023	8,075,000	6,344,643
Total	24,300,000	18,782,396

Advance from Officer

During the fiscal year ended December 31, 2022, Arnold Lippa made advances to the Company of $117,773 which advances are due on demand. The proceeds of these advances were to make payments to the Company's auditors, patent counsel, other patent related costs and payments due with respect to an insurance premium that had been financed.

RespireRx Pharmaceuticals Inc.
Annual Report on Form 10-K
Year Ended December 31, 2022
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	Fourth Certificate of Amendment of Second Restated Certificate of Incorporation of RespireRx Pharmaceuticals Inc. (incorporated by reference to Exhibit 3.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 6, 2020).
3.6	Fifth Certificate of Amendment to the Second Restated Certificate of Incorporation of RespireRx Pharmaceuticals Inc. (incorporated by reference to Exhibit 3.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on November 25, 2020.
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).
3.8	Certificate of Designation, Preferences, Rights and Limitations of Series H 2% Voting, Non-Participating, Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 13, 2020).

3.9	Amendment to Certificate of Designation, Preferences, Rights and Limitations of Series H 2% Voting, Non-Participating, Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 5, 2020).
3.10	Certificate of Designation, Preferences, Rights and Limitations of Series I 8% Redeemable Preferred Stock incorporated by reference to Exhibit 3.1 to the Company's Report on Form 8-K (File no. 001-16467) filed on April 6, 2023.
3.11	Certificate of Designation, Preferences, Rights and Limitations of Series J 8% Redeemable Preferred Stock incorporated by reference to Exhibit 3.1 to the Company's Report on Form 8-K (File no. 001-16467) filed on April 13, 2023.
3.12	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).
3.13	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)
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).
4.3**	Description of Registrant's Securities
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 Quarterly 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)
10.46	Form of Demand Promissory Note incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed on April 11, 2018.
10.47	Form of Note Exchange Agreement, incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed on June 6, 2018.
10.48	Form of Purchase Agreement (including a Form of Warrant), incorporated by reference to the Company's Current Report on Form 8-K filed on September 12, 2018 (File no. 1-16467).
10.49	Development and Supply Agreement, dated September 4, 2018, between the Company and Noramco, Inc., incorporated by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q filed on November 16, 2018.
10.50	Form of Convertible Promissory Note (including a Form of Warrant), incorporated by reference to the Company's Current Report on Form 8-K filed on December 17, 2018 (File no. 1-16467).
10.51	Form of Convertible Promissory Note (including the Form of Warrant), incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed March 5, 2019.
10.52	Securities Purchase Agreement, dated April 24, 2019, between RespireRx Pharmaceuticals Inc. and Power Up Lending Group Ltd., incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed April 30, 2019.
10.53	Convertible Promissory Note, dated April 24, 2019, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed April 30, 2019.
10.54	Securities Purchase Agreement, dated May 17, 2019, between RespireRx Pharmaceuticals Inc. and Crown Bridge Partners, LLC, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed May 23, 2019.
10.55	Convertible Promissory Note, dated May 17, 2019, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed May 23, 2019.
10.56	Common Stock Purchase Warrant, dated May 17, 2019, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed May 23, 2019.
10.57	Securities Purchase Agreement, dated August 19, 2019, between RespireRx Pharmaceuticals Inc. and FirstFire Global Opportunities Fund, LLC, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed August 27, 2019.
10.58	Convertible Promissory Note, dated August 19, 2019, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed August 27, 2019.

10.59	Common Stock Purchase Warrant, dated August 19, 2019, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed August 27, 2019.
10.60	Settlement Agreement and Release, dated August 21, 2019, between RespireRx Pharmaceuticals Inc. and Salamandra, LLC, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed August 27, 2019.
10.61	Securities Purchase Agreement, dated October 22, 2019, between RespireRx Pharmaceuticals Inc. and EMA Financial, LLC, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed October 28, 2019.
10.62	10% Convertible Note, dated October 22, 2019, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed October 28, 2019.
10.63	Common Stock Purchase Warrant, dated October 22, 2019, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed October 28, 2019.
10.64	Securities Purchase Agreement, dated November 4, 2019, between RespireRx Pharmaceuticals Inc. and Odyssey Funding, LLC, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed November 5, 2019.
10.65	RespireRx Pharmaceuticals Inc. 10% Convertible Redeemable Note due November 4, 2020, dated November 4, 2019, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed November 5, 2019.
10.66	First Amendment to Settlement Agreement and Release, dated as of December 16, 2019, between RespireRx Pharmaceuticals Inc. and Salamandra, LLC, incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed December 18, 2019.
10.67	Company Option Agreement, dated as of March 2, 2020, by and between the UWM Research Foundation, Inc. and RespireRx Pharmaceuticals Inc. (incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed March 4, 2020).
10.68	Form of Exchange Agreement (incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed March 26, 2020).
10.69	Securities Purchase Agreement, dated April 15, 2020, between RespireRx Pharmaceuticals Inc. and Power Up Lending Group Ltd. (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 21, 2020).
10.70	Convertible Promissory Note, dated April 15, 2020, in favor of Power Up Lending Group Ltd. (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 21, 2020).
10.71	Securities Purchase Agreement, dated June 7, 2020, between RespireRx Pharmaceuticals Inc. and Power Up Lending Group Ltd. (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on June 11, 2020).
10.72	Convertible Promissory Note, dated June 7, 2020, in favor of Power Up Lending Group Ltd. (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on June 11, 2020).
10.73†	Employment Agreement, dated May 6, 2020, between RespireRx Pharmaceuticals Inc. and Timothy Jones (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 6, 2020).
10.74†	Amendment No. 1 to Employment Agreement of Timothy Jones, effective July 31, 2020 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 3, 2020).
10.75†	Fourth Amendment of Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan (incorporated by reference to Exhibit 99.7 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 6, 2020).
10.76†	Fifth Amendment of Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan (incorporated by reference to Exhibit 99.14 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 3, 2020).
10.77	Securities Purchase Agreement, dated July 2, 2020, between RespireRx Pharmaceuticals Inc. and FirstFire Global Opportunities Fund, LLC (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 7, 2020).

10.78	Convertible Promissory Note, dated July 2, 2020, in favor of FirstFire Global Opportunities Fund, LLC (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 7, 2020).
10.79	Common Stock Purchase Warrant, dated July 2, 2020, in favor of FirstFire Global Opportunities Fund, LLC (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 7, 2020).
10.80†	Exchange Agreement, dated July 13, 2020, between RespireRx Pharmaceuticals Inc. and Jeff Eliot Margolis (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 13, 2020).
10.81†	Exchange Agreement, dated July 13, 2020, between RespireRx Pharmaceuticals Inc. and Arnold S. Lippa (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 13, 2020).
10.82	Equity Purchase Agreement, dated July 28, 2020, between RespireRx Pharmaceuticals Inc. and White Lion Capital, LLC (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 3, 2020).
10.83	Registration Rights Agreement, dated July 28, 2020, between RespireRx Pharmaceuticals Inc. and White Lion Capital, LLC (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 3, 2020).
10.84	8% Fixed Promissory Note, dated July 28, 2020 in favor of White Lion Capital, LLC (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 3, 2020).
10.85	Amendment No. 1 to 8% Fixed Promissory Note in favor of White Lion Capital, LLC, dated September 30, 2020 (incorporated by reference to Exhibit 99.6 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 5, 2020).
10.86†	Amendment No. 1 to Employment Agreement of Timothy Jones, effective July 31, 2020 (incorporated by reference to Exhibit 99.5 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 3, 2020).
10.87†	Fifth Amendment of Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan (incorporated by reference to Exhibit 99.14 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 3, 2020).
10.88	Patent License Agreement, dated as of August 1, 2020, between RespireRx Pharmaceuticals Inc. and the University of Wisconsin-Milwaukee Research Foundation, Inc. (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 4, 2020).
10.89	Securities Purchase Agreement, dated July 30, 2020, between RespireRx Pharmaceuticals Inc. and EMA Financial, LLC (incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 4, 2020).
10.90	10% Convertible Note, dated July 30, 2020, in favor of EMA Financial, LLC (incorporated by reference to Exhibit 99.5 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 4, 2020).
10.91	Common Stock Purchase Warrant, dated July 30, 2020, in favor of EMA Financial, LLC (incorporated by reference to Exhibit 99.6 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 4, 2020).
10.92†	Exchange Agreement, dated September 30, 2020, between RespireRx Pharmaceuticals Inc. and Timothy Jones (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 5, 2020).
10.93†	Exchange Agreement, dated September 30, 2020, between RespireRx Pharmaceuticals Inc. and Jeff Eliot Margolis (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 5, 2020).
10.94†	Exchange Agreement, dated September 30, 2020, between RespireRx Pharmaceuticals Inc. and Arnold S. Lippa (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 5, 2020).
10.95†	Exchange Agreement, dated September 30, 2020, between RespireRx Pharmaceuticals Inc. and Marc Radin PC (incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 5, 2020).
10.96†	Exchange Agreement, dated September 30, 2020, between RespireRx Pharmaceuticals Inc. and Patent Network Law Group (incorporated by reference to Exhibit 99.5 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 5, 2020).
10.97	Waiver and Amendment to Convertible Promissory Note, dated January 13, 2021, by and between RespireRx Pharmaceuticals Inc. and FirstFire Global Opportunities Fund LLC (incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed January 20, 2021).

10.98	Waiver with Respect to 8% Fixed Promissory Note, dated January 13, 2021, by and between RespireRx Pharmaceuticals Inc. and White Lion Capital, LLC (incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed January 20, 2021).
10.99	Securities Purchase Agreement, dated February 17, 2021, between RespireRx Pharmaceuticals Inc. and FirstFire Global Opportunities Fund, LLC. (incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed February 19, 2021).
10.100	Piggy-Back Registration Rights Agreement, dated February 17, 2021, between RespireRx Pharmaceuticals Inc. and FirstFire Global Opportunities Fund, LLC (incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed February 19, 2021).
10.101	Convertible Promissory Note, dated February 17, 2021 (incorporated by reference to the Company's Current Report on Form 8-K (file no. 1-16467) filed February 19, 2021).
10.102	Amendment No. 1 to Convertible Promissory Note, FirstFire Global Opportunities Fund, LLC (incorporated by reference to the Company's Current Report of Form 8-K (file no. 1-16467) filed November 23, 2021).
10.103	Securities Purchase Agreement, dated March 31, 2021, between RespireRx Pharmaceuticals Inc. and EMA Financial, LLC (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 5, 2021).
10.104	Piggy-Back Registration Rights Agreement, dated March 31, 2021, between RespireRx Pharmaceuticals Inc. and EMA Financial, LLC (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 1-16467) filed April 5, 2021).
10.105	10% Convertible Note, dated March 31, 2021, in favor of EMA Financial, LLC (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 5, 2021).
10.106	Common Stock Purchase Warrant, dated March 31, 2021, in favor of EMA Financial, LLC (incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 5, 2021).
10.107	Securities Purchase Agreement, dated April 30, 2021, between RespireRx Pharmaceuticals Inc. and Labrys Fund, L.P. (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 3, 2021).
10.108	Piggy-Back Registration Rights Agreement, dated April 30, 2021, between RespireRx Pharmaceuticals Inc. and Labrys Fund, L.P. (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 1-16467) filed May 3, 2021).
10.109	10% Convertible Note, dated April 30, 2021, in favor of Labrys Fund, L.P. (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 3, 2021).
10.110	Common Stock Purchase Warrant, dated April 30, 2021, in favor of Labrys Fund, L.P. (incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 3, 2021).

10.111	Securities Purchase Agreement, dated May 10, 2021, between RespireRx Pharmaceuticals Inc. and LGH Investments, LLC (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 14, 2021).
10.112	Piggy-Back Registration Rights Agreement, dated May 10, 2021, between RespireRx Pharmaceuticals Inc. and LGH Investments, LLC (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 1-16467) filed May 14, 2021).
10.113	10% Convertible Note, dated May 10, 2021, in favor of LGH Investments, LLC (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 14, 2021).
10.114	Common Stock Purchase Warrant, dated May 10, 2021, in favor of LGH Investments, LLC (incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 14, 2021).
10.115	Securities Purchase Agreement, dated June 29, 2021, between RespireRx Pharmaceuticals Inc. and EMA Financial, LLC (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 6, 2021).
10.116	Piggy-Back Registration Rights Agreement, dated June 29, 2021, between RespireRx Pharmaceuticals Inc. and EMA Financial, LLC (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 1-16467) filed July 6, 2021).
10.117	10% Convertible Note, dated June 29, 2021, in favor of EMA Financial, LLC (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 6, 2021).
10.118	Common Stock Purchase Warrant, dated June 29, 2021, in favor of EMA Financial, LLC (incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 6, 2021).
10.119	Exchange Agreement, dated June 28, 2021, between RespireRx Pharmaceuticals Inc. and EMA Financial, LLC (incorporated by reference to Exhibit 99.5 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 6, 2021).
10.120	Common Stock Purchase Warrant, dated June 28, 2021, in favor of EMA Financial, LLC (incorporated by reference to Exhibit 99.6 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 6, 2021).
10.121	Exchange Agreement, dated June 30, 2021, between RespireRx Pharmaceuticals Inc. and FirstFire Global Opportunities Fund LLC (incorporated by reference to Exhibit 99.8 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 6, 2021).
10.122	Common Stock Purchase Warrant, dated June 30, 2021, in favor of FirstFire Global Opportunities Fund LLC (incorporated by reference to Exhibit 99.9 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 6, 2021).
10.123	Securities Purchase Agreement, dated August 31, 2021, between RespireRx Pharmaceuticals Inc. and Barton Asset Management LLC (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on September 3, 2021).

10.124	Piggy-Back Registration Rights Agreement, dated August 31, 2021, between RespireRx Pharmaceuticals Inc. and Barton Asset Management LLC (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on September 3, 2021).
10.125	10% Convertible Note, dated August 31, 2021 (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on September 3, 2021).
10.126	Common Stock Purchase Warrant, dated August 31, 2021 (incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on September 3, 2021).
10.127	Securities Purchase Agreement, dated October 7, 2021, between RespireRx Pharmaceuticals Inc. and Dariusz Nasiek and Sara Nasiek JTTEN (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 12, 2021).
10.128	Piggy-Back Registration Rights Agreement, dated October 7, 2021, between RespireRx Pharmaceuticals Inc. and Dariusz Nasiek and Sara Nasiek JTTEN (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 12, 2021).
10.129	10% Convertible Note, dated October 7, 2021 (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 12, 2021).
10.130	Common Stock Purchase Warrant, dated October 7, 2021 (incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 12, 2021).
10.131	Settlement Agreement, dated September 14, 2021, between RespireRx Pharmaceuticals Inc. and DNA Healthlink, Inc. (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on September 20, 2021).
10.132	Securities Purchase Agreement, dated October 7, 2021, between RespireRx Pharmaceuticals Inc. and Dariusz Nasiek and Sara Nasiek JTTEN (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 12, 2021).
10.133	Piggy-Back Registration Rights Agreement, dated October 7, 2021, between RespireRx Pharmaceuticals Inc. and Dariusz Nasiek and Sara Nasiek JTTEN (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 12, 2021).
10.134	10% Convertible Note, dated October 7, 2021 (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 12, 2021).
10.135	Common Stock Purchase Warrant, dated October 7, 2021 (incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on October 12, 2021).
10.136	Form of Placement Agent's Warrant Agreement (contained in Appendix A of Exhibit 1.2)
10.137	Amendment No. 1 To Convertible Promissory Note in favor of FirstFire Global Opportunities Fund LLC dated November 23, 2021, effective as of November 17, 2021 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on November 23, 2021).
10.138	Amendment No. 3 To 8% Fixed Promissory Note in favor of White Lion Capital LLC dated December 14, 2021, effective as of December 1, 2021(incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on December 14, 2021).
10.139	Note Purchase Agreement, dated December 23, 2021, between RespireRx Pharmaceuticals Inc. and Quick Capital, LLC (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on December 23, 2021).
10.140	Convertible Promissory Note, dated December 23, 2021 (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on December 23, 2021).
10.141	Amendment No. 1 To Securities Purchase Agreement in favor of FirstFire Global Opportunities Fund LLC, dated March 24, 2022, effective as of February 17, 2022 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed March 28, 2022).
10.142	Amendment No. 2 To Convertible Promissory Note, dated March 24, 2022, effective as of February 17, 2022 (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on March 28, 2022).
10.143†	Employment Agreement Termination and Separation Agreement, dated February 8, 2021, effective as of January 31, 2021 between Timothy L. Jones and RespireRx Pharmaceuticals Inc. incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on February 11, 2021).

10.144	Securities Purchase Agreement dated April 14, 2022, between RespireRx Pharmaceuticals Inc. and Barton Asset Management LLC incorporated by reference to Exhibit 10.144 of the Company's Annual Report of Form 10-K for the fiscal year ended December 31, 2021 (file no. 001-16468) filed on April 15, 2022.
10.145	Piggy-back Registration Rights Agreement dated April 14, 2022 between RespireRx Pharmaceuticals Inc. and Barton Asset Management LLC incorporated by reference to Exhibit 10.145 of the Company's Annual Report of Form 10-K for the fiscal year ended December 31, 2021 (file no. 001-16468) filed on April 15, 2022.
10.146	Promissory Note dated, April 14, 2022 incorporated by reference to Exhibit 10.146 of the Company's Annual Report of Form 10-K for the fiscal year ended December 31, 2021 (file no. 001-16468) filed on April 15, 2022.
10.147	Common Stock Purchase Warrant, dated April 14, 2022 incorporated by reference to Exhibit 10.147 of the Company's Annual Report of Form 10-K for the fiscal year ended December 31, 2021 (file no. 001-16468) filed on April 15, 2022.
10.148†	Timothy L. Jones Resignation Letter, dated February 8, 2022 incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on February 11, 2022.
10.149	First Amendment to the Promissory Note Issued on March 31, 2021, dated April 1, 2022, by and between RespireRx Pharmaceuticals Inc. and EMA Financial, LLC incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 4, 2022.
10.150	First Amendment to the Promissory Note Issued on March 31, 2021, dated May 11, 2022, by and between RespireRx Pharmaceuticals Inc. and Labrys Fund, LP incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 16, 2022.
10.151	Payment Settlement Agreement and Release, dated August 1, 2022, by and between Faegre Drinker Biddle and Reath LLP and RespireRx Pharmaceuticals Inc. incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 3, 2022.
10.152	Securities Purchase Agreement template for August 22, 2022 three convertible note financings totaling $105,556 in principal amount and $95,000 of net proceeds, identical in terms except as to dollar amounts and purchaser incorporated by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q (file no. 001-16467) filed on November 17, 2022.
10.153	Piggy-back Registrations Rights Agreement template for August 22, 2022 three convertible note financings totaling $105,556 in principal amount and $95,000 of net proceeds, identical in terms except as to dollar amounts and purchaser incorporated by reference to Exhibit 10.2 of the Company's Quarterly Report on Form 10-Q (file no. 001-16467) filed on November 17, 2022.
10.154	Promissory Note template for August 22, 2022 three convertible note financings totaling $105,556 in principal amount and $95,000 of net proceeds, identical in terms except as to dollar amounts and purchaser incorporated by reference to Exhibit 10.3 of the Company's Quarterly Report on Form 10-Q (file no. 001-16467) filed on November 17, 2022.
10.155	Second Amendment to Respirerx -University Of Illinois Exclusive License Agreement incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on January 23, 2023.
10.156	Form of Securities Purchase Agreement incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 6, 2023.
10.157	Exchange Agreement with Jeff Eliot Margolis dated April 12, 2023 incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 13, 2023.
10.158	Exchange and Settlement Agreement with Arnold Lippa dated April 12, 2023 incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 13, 2023.
10.159	Exchange and Settlement Agreement with Marc M Radin, PC dated April 12, 2023 incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 13, 2023.
10.160	Transfer Letter Agreement with Jeff Eliot Margolis dated April 12, 2023 incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 13, 2023.
10.161	Transfer Letter Agreement with Arnold Lippa dated April 12, 2023 incorporated by reference to Exhibit 99.5 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 13, 2023.
10.162	Transfer Letter Agreement with Marc M Radin, PC dated April 12, 2023 incorporated by reference to Exhibit 99.6 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 13, 2023.
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**	Inline XBRL Instance Document.
101.SCH**	Inline XBRL Taxonomy Extension Schema Document.
101.CAL**	Inline XBRL Taxonomy Extension Calculation Linkbase Document†
101.DEF**	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB**	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE**	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

† Each of these Exhibits constitutes a management contract, compensatory plan or arrangement.
** Filed herewith.
*** Furnished 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, 2023

By: */s/ Arnold S. Lippa*
Arnold S. Lippa
Interim President, Interim Chief Executive Officer, and Director, Chief Scientific Officer, Chairman of the Board of Directors

We, the undersigned directors and officers of RespireRx Pharmaceuticals Inc., do hereby constitute and appoint each of Arnold L. Lippa, 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/ Arnold S. Lippa, Ph.D Arnold S. Lippa, Ph.D.	Interim President, Interim Chief Executive Officer, Chief Scientific Officer and Executive Chairman of the Board of Directors	April 17, 2023
/s/ Jeff E. Margolis Jeff E. Margolis	Senior Vice President, Chief Financial Officer, Treasurer, Secretary and Member of the Board of Directors	April 17, 2023
/s/ Joseph Siegelbaum Joseph Siegelbaum	Director	April 17, 2023

EXHIBIT 4.3

DESCRIPTION OF THE REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

The following is a general description of the common stock of RespireRx Pharmaceuticals Inc. (the "Company") and does not purport to be complete. For a complete description of the terms and provisions of the common stock, refer to the Company's Second Restated Certificate of Incorporation, as amended to date (the "Certificate of Incorporation") and By-Laws of the Company, as amended (the "Bylaws"), each of which is an exhibit incorporated by reference into the Annual Report on Form 10-K of which this exhibit is a part. This summary is qualified in its entirety by reference to these documents.

Authorized and Outstanding Capital Stock

The Company is authorized to issue a total of 2,005,000,000 shares of capital stock, with a par value of $0.001 per share. Of the authorized amount, 2,000,000,000 of the shares are designated as Common Stock and 5,000,000 of the shares are designated as Preferred Stock.

Description of Common Stock

General. Each share of the Company's Common Stock has the same rights and privileges. Holders of the Common Stock do not have any preferences or any preemptive, redemption, subscription, conversion or exchange rights. All outstanding shares of common stock are fully paid and non-assessable. The Company's Common Stock is quoted on the OTC Pink Market, under the symbol "RSPI."

Voting Rights. The holders of Common Stock are entitled to vote upon all matters submitted to a vote of stockholders and are entitled to one vote for each share of Common Stock held. There is no cumulative voting.

Dividends. The Company has never paid cash dividends on its Common Stock and does 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 and may be paid on the Common Stock subject to the prior rights and preferences, if any, applicable to shares of preferred stock or any series of preferred stock, when and if declared by the Board, out of funds legally available therefor.

Liquidation and Distribution. If the Company voluntarily or involuntarily liquidates, dissolves or winds-up, or upon any distribution of assets, the holders of Common Stock will be entitled to receive, after distribution in full of the preferential amounts, if any, to be distributed to the holders of preferred stock or any series of preferred stock, all of the remaining assets available for distribution equally and ratably in proportion to the number of shares of Common Stock held by them.

Material Limitation or Qualification of Rights of Common Stock

Preferred Stock, Generally. The Company may issue preferred stock with such powers, preferences, rights, qualifications, limitations, and restrictions as the Board may, without prior stockholder approval, establish. The existence, and potential future issuance, of shares of preferred stock by the Company could result in substantial dilution of the economic and governance rights of holders of the Company's common stock.

The Company's authorized shares of preferred stock are designated into series as follows: c, 3,500 shares of Series I 8% Redeemable Preferred Stock ("Series I Preferred Stock"), 3,000 shares of Series H 2% Voting, Non-Participating Convertible Preferred Stock, 37,500 shares as Series B Convertible Preferred Stock ("Series B Preferred Stock"), 1,700 shares as Series G 1.5% Convertible Preferred Stock ("Series G Preferred Stock"), 1,250,000 shares as 9% Cumulative Convertible Preferred Stock ("9% Preferred Stock"), 205,000 shares as Series A Junior Participating Preferred Stock ("Series A Preferred Stock"), and 3,505,800 shares are undesignated and may be issued with such rights and powers as the Board may designate.

Series J Preferred Stock. 5,700 shares of Series J Preferred Stock are issued and outstanding. The shares of Series J Preferred Stock are not convertible into Common Stock. The Series J Preferred Stock have a per share par value of $0.001 and a per share stated value of $100.00. The shares of Series J Preferred Stock are redeemable upon the occurrence of certain eligible payment ("Series J Eligible Payment") events (each a "Series J Preferred Stock Eligible Payment Event") that would cause an Series J Eligible Payment. Such Series J Eligible Payment Events include but are not limited to the receipt by the Company of an amount equal to or greater than $20 million from a licensing or sub-licensing fee, certain royalty payment receipts or the sale of an asset. Each share of Series J Preferred Stock shall be entitled to that number of votes, which shall be eligible to vote along with the Common Stockholders, or, as the case may be, when voting as a class, that is equal to one hundred (100x) times number calculated by dividing the number of shares of Series J Preferred Stock by the base measurement price as of the record date for such vote or written consent or, if there is no specified record date, as of the date of such vote or written consent. To the extent that under the Delaware General Corporation Law, the vote of the Series J Preferred Stock holders, voting separately as a class or series, as applicable, is required to authorize a given action of the Company, the affirmative vote or consent of the holders of at least a majority of the then outstanding shares of the Series J Preferred Stock shall constitute the approval of such action by the class or series. In the event of any liquidation or winding up of the Company prior to and in preference to any junior securities and pari passu with holders of any class or series of preferred stock that is pari passu with the Series J Preferred Stock, the holders of the Series J Preferred Stock will be entitled to receive in preference to the holders of any junior securities a per share amount equal to the $100.00, plus any accrued and unpaid dividends. In addition, the holders of Series J Preferred Stock have participating rights with holders of Common Stock after all holders of preferred stock have received their liquidation preference rights.

Series I Preferred Stock. 450 shares of Series I Preferred Stock are issued and outstanding. The shares of Series I Preferred Stock are not convertible into Common Stock. The Series I Preferred Stock have a per share par value of $0.001 and a per share stated value of $100.00. The shares of Series I Preferred Stock are redeemable upon the occurrence of certain eligible payment ("Series I Eligible Payment") events (each a "Series I Preferred Stock Eligible Payment Event") that would cause a Series I Eligible Payment. Such Series I Eligible Payment Events include but are not limited to the receipt by the Company of an amount equal to or greater than $15 million from a licensing or sub-licensing fee, certain royalty payment receipts or the sale of an asset. Each share of Series I Preferred Stock shall be entitled to one vote for each share of Series I Preferred Stock and shall only vote as a class to the extent that under the Delaware General Corporation Law ("DGCL") the vote of the Series I Preferred Stock holders, voting separately as a class or series, as applicable, is required to authorize a given action of the Company, the affirmative vote or consent of the Series I Preferred Stock holders of at least a majority of the then outstanding shares of the Series I Preferred Stock. In addition to the above, any action that would reduce the rights or privileges of the Series I Preferred Stock will require an affirmative vote or consent of the Series I Preferred Stock holders of at least a majority of the then outstanding shares of the Series I Preferred Stock. In the event of any liquidation or winding up of the Company prior to and in preference to any junior securities and pari passu with holders of any class or series of preferred stock that is pari passu with the Series I Preferred Stock, the holders of the Series J Preferred Stock will be entitled to receive in preference to the holders of any junior securities a per share amount equal to the $100.00, plus any accrued and unpaid dividends.

Series B Preferred Stock. 37,500 shares of Series B Preferred Stock are issued and outstanding. Each share of Series B Preferred Stock is convertible into approximately 0.000030 shares of common stock at an effective conversion price of $22,083.75 per share of common stock, which is subject to adjustment under certain circumstances. As of December 31, 2021, the shares of Series B Preferred Stock outstanding are convertible into 1 share of Common Stock. Shares of Series B Preferred Stock do not entitle the holder to voting rights. The Company may redeem the Series B Preferred Stock for $25,001, equivalent to $0.6667 per share, an amount equal to the liquidation preference, at any time upon 30 days prior notice.

Series H Preferred Stock. No shares of Series H Preferred Stock are issued and outstanding or accrued as dividends as all outstanding shares of Series H Preferred Stock inclusive of accrued dividends converted into units that resulted in the issuance of 25,377,426 shares of Common Stock and warrants to purchase 25,377,426 shares of Common Stock. Each share of Series H Preferred Stock is convertible into 15,625 units at an effective conversion price of $0.064 per unit, with each unit comprising one share of Common Stock and one warrant exercisable for one share of Common Stock. Each share of Series H Preferred Stock entitles the holder to that number of votes equal to two times the number of shares of Common Stock into which it is convertible. In the event of any liquidation or winding up of the Company prior to and in preference to any junior securities, the holders of the Series H Preferred Stock will be entitled to receive in preference to the holders of any junior securities a per share amount equal to the $0.001, plus any accrued and unpaid dividends.

Series G Preferred Stock. No shares of Series G Preferred Stock are issued and outstanding. If issued, each share of Series G Preferred Stock is convertible into that number of shares of Common Stock determined by dividing $1,000 by an initial conversion price of $0.033. The conversion price with respect to a share of Series G Preferred Stock is subject to adjustment upon certain events that occur while such share is outstanding, pursuant to Section 7 of the Certificate of Designation for the Series G Preferred Stock (see Exhibit 3.7 to the Company's Annual Report on Form 10-K of which this exhibit is a part). As of December 31, 2020, the conversion price with respect to Series G Preferred Stock is not subject to adjustment because no shares of Series G Preferred Stock are outstanding. If issued, each outstanding share of Series G Preferred Stock, prior to the date such share is eligible for conversion, entitles the holder to 30,303 votes per share (which may be subject to adjustment as described above), and thereafter, each share entitles the holder to voting rights on an as-converted basis.

9% Preferred Stock. No shares of 9% Preferred Stock are issued and outstanding. If issued, each share of 9% Preferred Stock is convertible into shares of common stock according to a conversion rate subject to adjustment upon the occurrence of certain events, including a reverse stock split, as set forth under the Certificate of Incorporation (see Exhibit 3.1 to the Company's Annual Report on Form 10-K of which this exhibit is a part). Thereunder, each share of 9% Preferred Stock is convertible into that number of shares of common stock determined by dividing $1.00 by a conversion rate of $1.50, subject to adjustment pursuant to the reverse stock splits effected by the Company on September 1, 2016 and January 5, 2021, whereby, on September 1, 2016 each 325 shares of Common Stock was exchanged and combined into one share of Common Stock and on January 5, 2021, each 10 shares of Common Stock was exchanged and combined into one share of Common Stock. Shares of 9% Preferred Stock do not entitle the holder to voting rights.

Series A Preferred Stock. No shares of Series A Preferred Stock are issued and outstanding. Shares of Series A Preferred Stock do not entitle the holder to voting rights, except to the extent the holder would be entitled to vote with the holders of Common Stock as set forth in the Certificate of Designation for the Series A Preferred Stock.

Anti-Takeover Provisions in the Certificate of Incorporation and Bylaws

Certain provisions of our Certificate of Incorporation and Bylaws summarized below may delay, defer or prevent a tender offer or takeover attempt, including attempts that might result in a premium over the market price for the Company's securities.

Our Certificate of Incorporation and Bylaws provide: (i) that the Company may issue preferred stock with such powers, preferences, rights, qualifications, limitations, and restrictions as the Board may, without prior stockholder approval, establish, as described above; and (ii) that special meetings of stockholders may only be called by the chairman of the Board, the president, the secretary, a majority of the members of the Board or the holders of a majority of the shares of Common Stock then outstanding.

EXHIBIT 21

Subsidiaries of the Registrant

Pier Pharmaceuticals, Inc. incorporated in the state of Delaware
ResolutionRx Ltd incorporated in Australia

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statements on Form S-8 (No. 333-258313, No. 333-248816, No. 333-211441 and No. 333-208017) of RespireRx Pharmaceuticals Inc. (the "Company") of our report dated April 17, 2023 relating to our audits of the Company's consolidated financial statements as of December 31, 2022 and 2021, and for each of the years then ended, included in the Company's Annual Report on Form 10-K for the year ended December 31, 2022.

Our report dated April 17, 2023 contains an explanatory paragraph that states the Company does not have sufficient working capital to fund its operations and commitments. These conditions raise substantial doubt about the Company's ability to continue as a going concern. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

/s/ HASKELL & WHITE LLP

Irvine, California
April 17, 2023

EXHIBIT 31.1

CERTIFICATION

I, Arnold S. Lippa certify that:

1. I have reviewed this annual report on Form 10-K of RespireRx Pharmaceuticals Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: April 17, 2023

/s/ Arnold S. Lippa

Arnold S. Lippa
Interim President, Interim Chief Executive Officer, Chief Scientific Officer and Executive Chairman of the Board of Directors

EXHIBIT 31.2

CERTIFICATION

I, Jeff E. Margolis, certify that:

1. I have reviewed this annual report on Form 10-K of RespireRx Pharmaceuticals Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: April 17, 2023

/s/ Jeff E. Margolis

Jeff E. Margolis
Senior Vice President, Chief Financial Officer, Treasurer, Secretary and Director

EXHIBIT 32

CERTIFICATION

Arnold S. Lippa, Interim President, Interim Chief Executive Officer, Chief Scientific Officer and Executive Chairman of the Board of Directors of RespireRx Pharmaceuticals Inc. (the "Company"), and Jeff E. Margolis, Senior Vice President, Chief Financial Officer, Treasurer, Secretary and Director of the Company, each hereby certifies, pursuant to Rule 13a-14(b) or Rule 15d-14(b) of the Securities Exchange Act of 1934, 18 U.S.C. Section 1350, that:

(1) the Annual Report on Form 10-K of the Company for the year ended December 31, 2022 (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

Dated: April 17, 2023

/s/ Arnold S. Lippa

Arnold S. Lippa
Interim President, Interim Chief Executive Officer, Chief Scientific Officer and Executive Chairman of the Board of Directors

Dated: April 17, 2023

/s/ Jeff E. Margolis

Jeff E. Margolis
Senior Vice President, Chief Financial Officer, Treasurer, Secretary and Director

This certification accompanies the Annual Report pursuant to Rule 13a-14(b) or Rule 15d-14(b) under the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350 and shall not be deemed filed by the Company for purposes of Section 18 of the Securities Exchange Act of 1934.