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

**FORM 8-K**

Current Report

Pursuant to Section 13 or 15(d) of  
the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): July 12, 2016

**RESPIRERX PHARMACEUTICALS INC.**

(Exact name of registrant as specified in its charter)

Delaware  
(State or other jurisdiction  
of incorporation)

1-16467  
(Commission  
File Number)

33-0303583  
(I.R.S Employer  
Identification No.)

126 Valley Road, Suite C  
Glen Rock, New Jersey  
(Address of principal executive offices)

07452  
(Zip Code)

Registrant's telephone number, including area code: (201) 444-4947

(Former name or former address, if changed since last report.)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- ☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- ☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- ☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- ☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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**Item 7.01 Regulation FD Disclosure**

On July 12, 2016, RespireRx Pharmaceuticals Inc. (the “Company”) announced that the Company’s President, Chief Executive Officer and Vice Chairman of the Board of Directors, James S. Manuso, Ph.D., will present at the Cantor Fitzgerald 2nd Annual Healthcare Conference on Wednesday, July 13, 2016 at 9:30 a.m. Eastern Time. The Conference is being sponsored by Cantor Fitzgerald & Co. and is being held at Le Parker Méridien Hotel, New York, New York, on July 12 and July 13, 2016.

The slide presentation that Dr. Manuso will be using at the conference is attached as Exhibit 99.1 and is being furnished and not filed pursuant to Item 7.01 of Form 8-K. A copy of the slide deck will also be available by clicking on the investors tab on the Company’s web-site ([www.respirerx.com](http://www.respirerx.com)) and following the links and instructions.

The press release announcing the Company’s participation in the conference is attached as Exhibit 99.2.

**Item 9.01 Financial Statements and Exhibits**

(d) Exhibits.

A list of exhibits that are furnished and filed as part of this report is set forth in the Exhibit Index, which is presented elsewhere in this document, and is incorporated herein by reference.

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Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

RESPIRERX PHARMACEUTICALS INC.

Date: July 13, 2016

By: */s/ Robert N. Weingarten*

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Robert N. Weingarten  
Vice President and Chief Financial Officer

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## EXHIBIT INDEX

Exhibit Number	Exhibit Description
99.1	Slide Presentation*
99.2	Press Release dated July 12, 2016*

\* Furnished herewith.



OTC QB: RSPI

CANTOR FITZGERALD 2<sup>ND</sup> ANNUAL HEALTHCARE CONF.  
JULY 13, 2016

Medicines for Respiratory Diseases

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The matters discussed in this presentation that are not historical facts are "forward-looking statements." Forward-looking statements include, but are not limited to, statements containing the words "believes," "anticipates," "intends," "expects," "projects" and words of similar import. Readers are cautioned not to place undue reliance on these forward-looking statements, which are based on the information available to management at this time and which speak only as of the date of this presentation. The Company undertakes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. These forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results, performance or achievements of the Company or its industry to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. All forward-looking statements should be evaluated with the understanding of their inherent uncertainty.

While the Company believes the information contained herein is reliable, the Company makes no representations or warranties regarding the accuracy or completeness of this information. In addition, any investment in the Company is subject to numerous risks. Investors must be able to afford the loss of their entire investment. Any such representations and warranties and further discussion of risk factors would be made solely in formal agreements executed by the Company with its investors.

"Breath is the universal factor of life. We are born the first time we inspire, and we die the last time we expire. Breath is life itself. In Sanskrit the same word means both breath and life."

.....Abbot George Burke

- Two proprietary, small molecule platforms
- Three Phase 2 or Phase 2-ready development programs
- Three pre-clinical programs
- Focus on blockbuster markets with unmet clinical needs
- More than 120 + patents and patent applications
- Multiple opportunities for strategic collaborations
- Non-dilutive financing from NHLBI and NIDA
- Experienced and accomplished management team



- **Sleep Apneas**
  - Dronabinol for Obstructive Sleep Apnea (**OSA**)
  - Ampakines for Central Sleep Apnea (**CSA**)
- **Drug-induced Respiratory Depression (RD) - Ampakines**
  - Acute use – surgical anesthesia/sedation
  - Semi-acute use – post-surgical pain management with opioids
  - Chronic use – outpatient pain management with opioids
- **Positive Phase 2A efficacy results in RD, OSA and CSA**
- **Commercial and IP protection for compounds and uses**
- **More than \$5 million in NIH grants supporting two programs**

# Respiratory Diseases Product Pipeline



Compound	Indication	Preclinical	Phase 1	Phase 2
Dronabinol	Obstructive Sleep Apnea			
CX1739	Central Sleep Apnea			
	Opioid-induced RD			
	Spinal Damage/Pompe			
CX717	Combination Formulation with Opioids for Reduced Respiratory Depression			
CX1942	Drug-induced Respiratory Depression (injectable)			

- **Sleep Apnea**
  - Repetitive episodes of airflow cessation (apnea) or reduction (hypopnea) for more than 10 seconds during sleep
  - Three types: Obstructive, Central & Mixed
- **The Sleep Apnea Market is Large**
  - 18 million U.S. adults suffer from moderate or severe sleep apneas
  - Market potential for sleep apneas is \$3 - 9 Billion/Year
- **Current Treatments**
  - CPAP device
  - Surgery
  - Dental devices
- **Clear Market Need**
  - Poor compliance with CPAP
  - No drug treatment available



# Obstructive Sleep Apnea (OSA)

- **Obstructive Sleep Apnea (OSA):** a decrease or complete halt in airflow during sleep
  - Induced by relaxation of muscles during sleep
  - Soft tissue in back of throat collapses and obstructs upper airway
- **Significant morbidity due to stroke, hypertension, heart failure, diabetes, and other cardiovascular diseases**

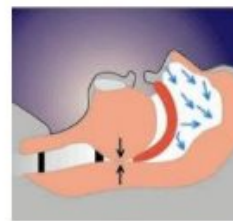
Normal Breathing



Snoring



OSA



## CPAP Efficacy is Severely Limited by Patient Compliance

- Standard of Care
- Works as an air splint to keep upper airway open during sleep
- 30% of diagnosed patients never initiate CPAP treatment when prescribed a machine
- Over 50% of patients stop using CPAP in the first year
- Many CPAP users wear the device for less than 4 hours per night, limiting efficacy



- **Mechanism of Action**
  - Dronabinol is (delta 9) THC, a cannabinoid agonist
- **Background**
  - Schedule III drug available by prescription, with a low risk of addiction
  - Approved for the treatment of anorexia in AIDS patients and nausea and vomiting in cancer patients undergoing chemotherapy
  - Phase 2A data demonstrated clear signal of activity in OSA
  - Phase 2B study with 120 patients in OSA in progress
- **Intellectual Property**
  - License to issued method-of-use patent in the US for the use of dronabinol for treating OSA (expires 2025)
  - Pending patents on modified release formulations
- **Funding**
  - \$5MM NIH-funded grant for Phase 2B study in OSA



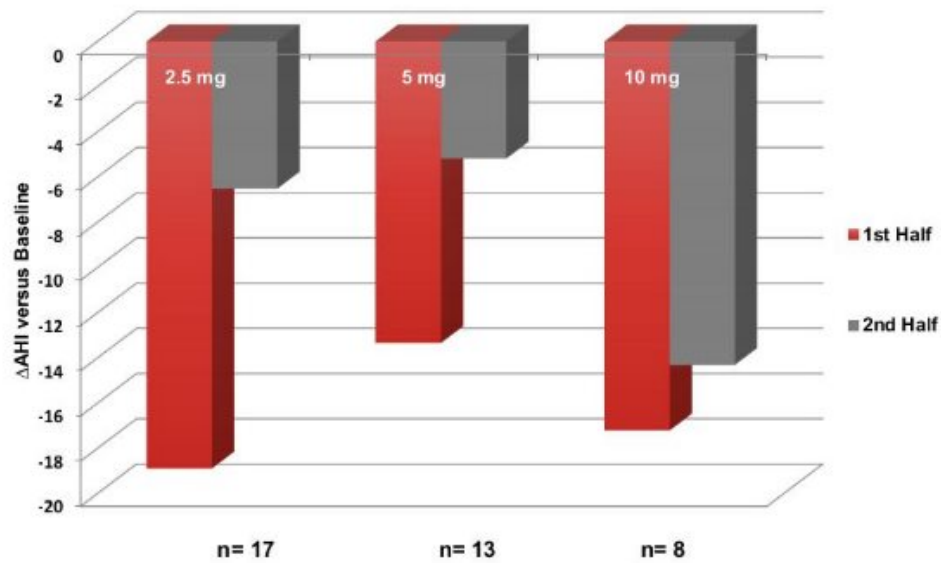
- **Randomized, double-blind, placebo-controlled dose escalation study in 22 patients with OSA**
- **Placebo (N=5) or dronabinol (N=17) for 21 days**
  - 2.5, 5 and 10 mg/night studied with weekly dose escalation
- **Overnight polysomnogram (PSG) at baseline, and after 7, 14 and 21 days of treatment**
- **FDA-accepted efficacy tests:**
  - Apnea-Hypopnea Time (AHT)
  - Apnea-Hypopnea Index (AHI)
  - Stanford Sleepiness Scale (SSS)

## Dronabinol Proven to Reduce Apnea in OSA Subjects





## Apnea Suppression as a Function of Dose and Time



The plasma half-life of dronabinol is 2 – 4 hours.

- Sponsored and led by U of Illinois
- 4 major centers, fully funded by NIH
- Potentially pivotal for an NDA submission
- Doses: Placebo, 2.5 mg, 10 mg qd
- All 120 subjects dosed (40/group, 6 weeks dosing)
- Data analysis underway; readout in Q3/2016
- Meet with FDA after trial completion to determine registration path forward

- Licensed issued Method-of-Use patent for dronabinol in OSA
  - Expires in 2025
- Schedule III drug: off-label use monitored by US government, discouraging generic manufacturers from selling off-label
- Off-label use of generics and medical marijuana are not covered by insurers
- Market pricing and manufacturing protection

# The Dronabinol Opportunity

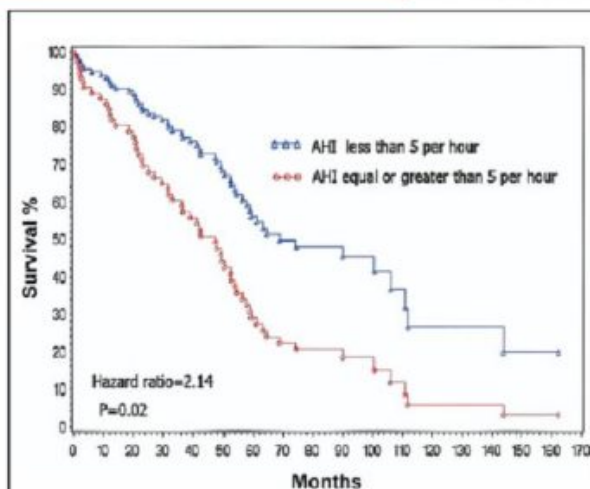


Impact on Patient	Commercial Opportunity
First medicine available for OSA	Changes the nature of OSA treatment
Ease of Use/Better Patient Compliance	Broadly expands prescriber base from sleep specialists to include primary care physicians and cardiologists
Low cost	Recurring lifetime sales versus one time sale or ongoing rental of a device
Safe and effective	Market will expand into the currently undiagnosed/untreated population
Potential for better cardiovascular outcomes	Potential for reducing systemic healthcare costs by reduced cardiac re-hospitalizations

- **Caused by a lack of drive from the brain to breathe during sleep**
- **Manifestations of CSA**
  - 70% of chronic narcotic users
  - Up to 40% of heart failure patients
  - 5% of sleep apnea patients are idiopathic
- **No medicine or device is approved for the CSA indication**

## Severity of CSA is Correlated with Increased Mortality in Heart Failure Patients

**Reducing Central  
Sleep Apnea May  
Reduce Mortality in  
Heart Failure Patients**



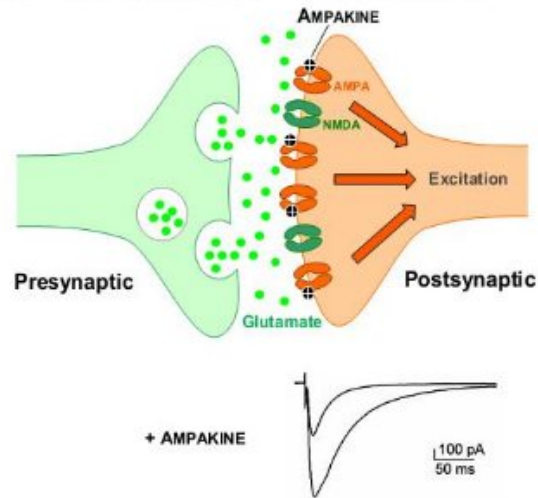
**Figure 1** CSA is a Predictor of Mortality in Systolic HF

Survival of heart failure (HF) patients with or without central sleep apnea (CSA) after accounting for all other confounders. AHI = apnea-hypopnea index.

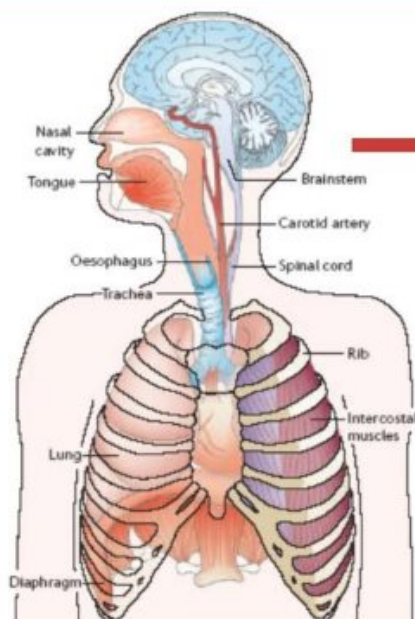
Javaheri et al, J. Amer. Coll. Cardiology 49:20, 2007

## AMPA Receptors Mediate Synaptic Transmission in the Brain

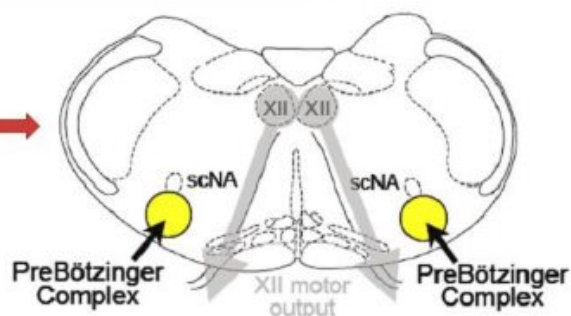
- Glutamate is the major excitatory neurotransmitter in the CNS
- Fast excitatory transmission is mediated by AMPA-type glutamate receptors
- Ampakines are positive, allosteric modulators of the AMPA-type glutamate receptor
- Prolong and strengthen synaptic transmission







Initial research conducted by Dr. J. Greer, U. Alberta  
Ren et al, Anesthesiology. 110:1364-1370, 2009



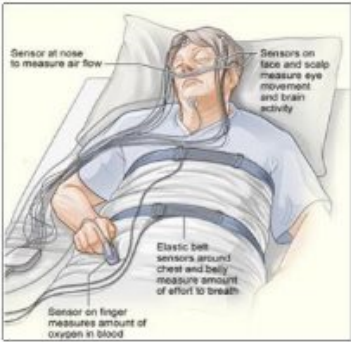
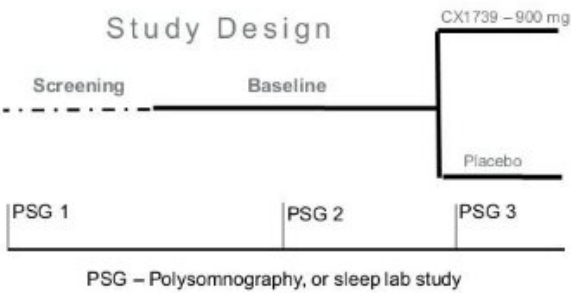
- Neurons in this brainstem region control inspiratory breathing rhythm
- PreBotC neurons use AMPA receptors for signaling
- Opioids and other depressants mediate their inhibitory effects on breathing at this site
- Ampakines normalize breathing by enhancing firing of PreBotC respiratory rhythm neurons



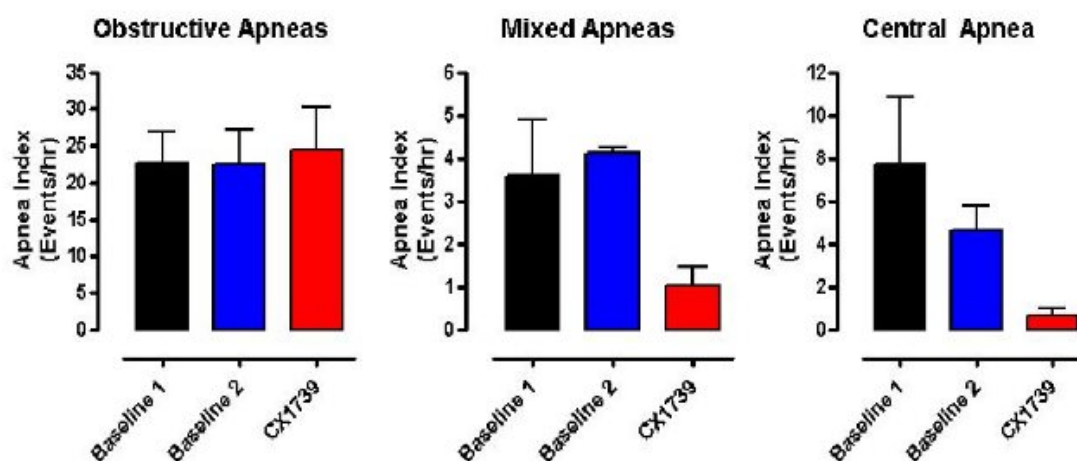
- **Targeted Indications**
  - Central Sleep Apnea (CSA)
  - Reversal and prevention of opioid-induced Respiratory Depression
  - Combination formulation with an opioid for treatment of chronic pain
- **Stage of Development**
  - Successfully completed four Phase 1 studies
  - Efficacy signals observed in CSA
  - Phase 2 trial in opioid-induced RD initiated at Duke University
- **Intellectual Property Protection (owned and licensed)**
  - Issued Composition-of-Matter Patent (expires 2028), filed worldwide
  - Method-of-use patent (expires 2030)

# CX1739: Completed Phase 2A in Sleep Apnea

Design	Randomized, double-blind, placebo-controlled study
Population	20 adults with all types of moderate to severe sleep apnea (16 given CX1739; 4 given Placebo)
Dosing	Each subject received either placebo or a <u>single</u> dose of 900mg CX1739 one hour before lights out
Primary Measures	Apnea-Hypopnea measures; Oxygen saturation; Sleep quality, measured by PSG (Apnea: no airflow for >10s; Hypopnea: reduced airflow for >10s)



## Patient Selection: CX1739 Was More Effective in Treating Mixed and Central Sleep Apneas



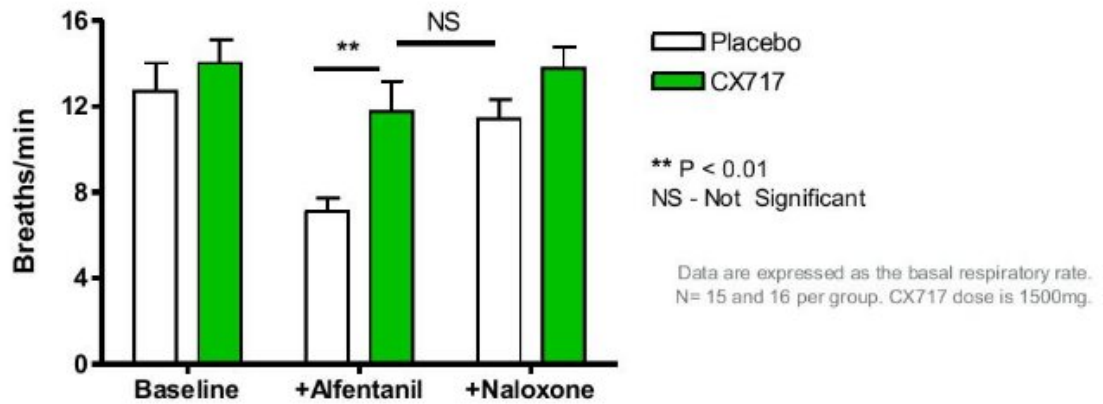
## ***RD is the most frequent lethal side effect of opioid use***

- **Acute and Semi-Acute Use of opioids**
  - ~25M patients/year at risk for Respiratory Depression (hospitalized, peri- and post-surgical opioid patients)
- **Chronic Opioid Use**
  - Use of Ampakines in combination with other drugs to prevent RD
- **Unmet Need**
  - Medicine to counter or reduce RD without interfering with analgesia or anesthesia
- **Multi-billion dollar per year market potential**

- Two clinical studies in normal, healthy volunteers with CX717, a second-generation Ampakine
- Moderate Respiratory Depression was induced experimentally by infusion of the opioid, Alfentanil
- Respiratory and analgesia end-points were measured

**Oral CX717 prevented and reversed the Respiratory Depression without impacting the pain-relieving properties of the opioid**

## CX717 Prevents Opioid-induced Respiratory Depression in Humans



Alfentanil reduced breathing rate & produced Respiratory Depression  
CX717 maintains respiratory rate in the presence of Alfentanil

## CX717 Does Not Interfere With the Analgesic Properties of Opioids

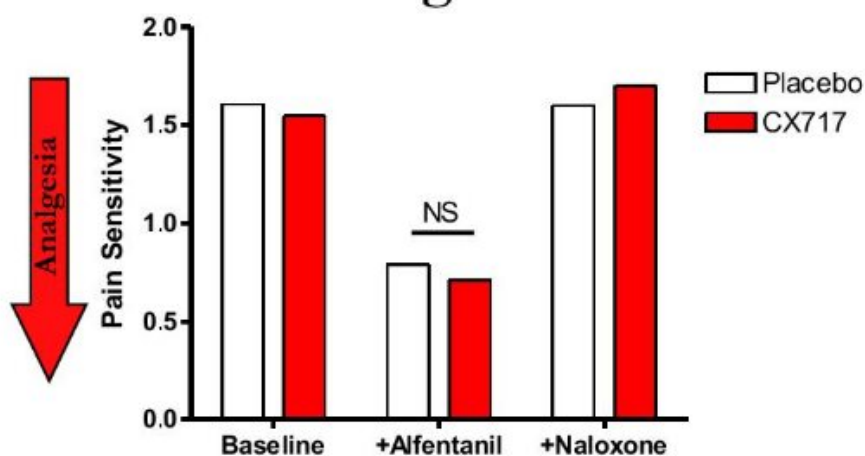


Delivery of a electrical stimulation to finger

Alfentanil reduced the pain sensitivity  
(produced analgesia)

Analgesia was unaffected by CX717

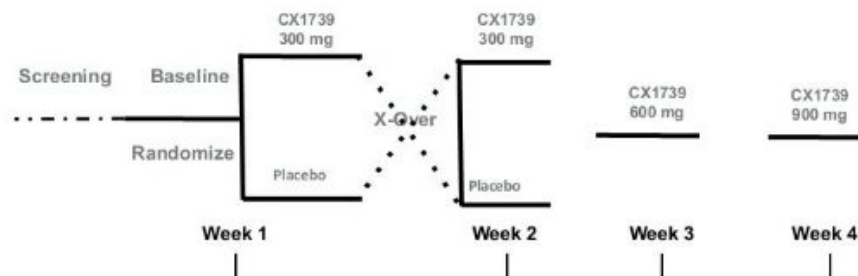
### Analgesia



Data are expressed as the pain sensitivity, normalized to the Baseline measurement.  
N = 15 and 16 per group. CX717 dose is 1500mg.



<b>Protocol</b>	Antagonism of Opioid-Induced Respiratory Depression by CX1739 with Preservation of Opioid Analgesia
<b>Design</b>	Randomized, Blinded, Placebo-controlled, Cross-Over with Dose Escalation
<b>Dosing</b>	Each subject will receive acute doses of placebo, 300 mg, 600 mg, and 900mg CX1739 once per week for four consecutive weeks; Each week, subjects will receive doses of remifentanyl 3 hours (Tmax) after CX1739 or placebo.
<b>Study Objectives</b>	<u>Primary:</u> What is the efficacy of ascending doses of CX1739 to antagonize remifentanyl-induced RD in healthy subjects, as measured by plethysmography? Is CX1739 safe when used in conjunction with remifentanyl? <u>Secondary:</u> Does CX1739 reduce the analgesic effects of remifentanyl? Does CX1739 alter the bispectral index (BIS) measure of sedation?





# Respiratory Diseases Product Pipeline



Compound	Indication	Preclinical	Phase 1	Phase 2
Dronabinol	Obstructive Sleep Apnea			
CX1739	Central Sleep Apnea			
	Opioid-induced RD			
	Spinal Damage/Pompe			
CX717	Combination Formulation with Opioids for Reduced Repertory Depression			
CX1942	Drug-induced Respiratory Depression (injectable)			

- **Non-Core Programs in Drug Abuse and Addiction**

- Cocaine and Amphetamines
- Research and development program with NIDA
- NIDA contracts with specialist labs and pays for animal studies
- Company provides compounds and retains all rights

## Capital Structure (thousands of shares) & Market Metrics



	<b>Total as of May 31, 2016</b>
Common Stock	648,768
Common Stock Equivalents of Convertible Notes	9,153
Common Stock Equivalents of all Options and Warrants Granted	556,251
<b>Total</b>	<b>1,214,172</b>

	<b>May 31, 2016</b>
Closing price per share of Common Stock	\$0.021
Fully diluted market capitalization (\$ rounded)	\$25,498,000

\* Preliminary Proxy Statement has been filed with the SEC for Special Stockholders' meeting to be held on August 16, 2016 to approve 325:1 reverse stock split and adjust the number of authorized shares

# Management and Directors



James Manuso	President, CEO & Vice Chairman
Arnold Lippa	CSO & Chairman
Jeff Margolis	VP, Secretary/Treasurer, Director
Robert Weingarten	CFO, Director
Richard Purcell	Senior VP, R&D
Katie MacFarlane	Director CCO Agile Therapeutics
James Sapirstein	Director CEO ContraVir Pharmaceuticals
John Greer	Chairman, Scientific Advisory Board Prof & Dir. Neuroscience Ctr., U. Alberta

- Two proprietary, small molecule platforms
- Three Phase 2 or Phase 2-ready development programs
- Three pre-clinical programs
- Focus on blockbuster markets with unmet clinical needs
- More than 120 + patents and patent applications
- Multiple opportunities for strategic collaborations
- Non-dilutive financing from NHLBI and NIDA
- Experienced and accomplished management team

- Prepare RSPI for an up-listing to NASDAQ
- Engage advisor to assist with capital raising
- Directly manage all trials of medicines in development
- Partner/License/Sell one or more medicines in development
- Partner/License select applications of ampakine platform



OTC QB: RSPI

CANTOR FITZGERALD 2<sup>ND</sup> ANNUAL HEALTHCARE CONF.  
JULY 13, 2016

Medicines for Respiratory Diseases

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**RespireRx Pharmaceuticals Inc. to Present at the  
Cantor Fitzgerald 2<sup>nd</sup> Annual Healthcare Conference  
on July 13, 2016**

Glen Rock, N.J., July 12, 2016/Globe Newswire – RespireRx Pharmaceuticals Inc. (OTCQB: RSPI) (“RespireRx” or the “Company”), a leader in the development of medicines for respiratory disorders, including sleep apneas and drug-induced respiratory depression, announced that the Company’s President, CEO and Vice Chairman of the Board of Directors, James S. Manuso, Ph.D., will present at the Cantor Fitzgerald 2<sup>nd</sup> Annual Healthcare Conference ( [www.cantor.com](http://www.cantor.com) ) in New York, New York on Wednesday, July 13, 2016, at 9:30 a.m. Eastern Time. The Conference is being sponsored by Cantor Fitzgerald & Co. and is being held at Le Parker Meridien Hotel, New York, New York, on July 12 and July 13, 2016.

Commented Dr. Manuso, “The presentation at the Cantor Fitzgerald Conference will provide RespireRx management with the opportunity to give investors an update on RespireRx’s strategic initiatives and progress on research and development programs. I look forward to discussing the Company’s Phase 2A clinical trial testing the impact of the oral ampakine, CX-1739, on opioid-induced respiratory depression.”

Dr. Manuso will also discuss the Company’s other product pipeline candidates, including dronabinol, and the Company’s development timelines. Dr. Manuso concluded, “We are pleased to keep our shareholders and other stakeholders informed as to the continuing progress of RespireRx’s scientific, clinical and regulatory development initiatives.”

Dr. Manuso’s slide presentation will be accessible after the presentation on RespireRx’s web-site at [www.respirerx.com](http://www.respirerx.com), by clicking on the investors tab and following the links and instructions. A copy of the slide presentation being presented at the Cantor Fitzgerald Conference will be submitted in a Form 8-K filing with the U.S. Securities and Exchange Commission prior to the presentation.

**About RespireRx Pharmaceuticals Inc.**

RespireRx Pharmaceuticals Inc. is a leader in the development of medicines for respiratory disorders, with a focus on sleep apneas and drug-induced respiratory depression. The Company holds exclusive licenses and owns patents and patent applications for certain families of chemical compounds that claim the chemical structures and their use in the treatment of a variety of disorders, as well as claims for novel uses of known drugs.

RespireRx’s pharmaceutical candidates in development are derived from two platforms, as described below.

The first platform is the class of compounds known as cannabinoids, in particular, dronabinol. Under a license agreement with the University of Illinois, the Company has rights to patents claiming the use of cannabinoids for the treatment of sleep-related breathing disorders. In a double-blind, placebo-controlled, dose-ascending Phase 2A clinical study conducted by the Company, dronabinol produced a statistically significant reduction in the Apnea-Hypopnea Index, the primary therapeutic end-point, and was observed to be safe and well-tolerated in a group of patients with Obstructive Sleep Apnea (“OSA”). The University of Illinois and three other centers are currently investigating dronabinol in a potentially pivotal, six week, double-blind, placebo-controlled Phase 2B clinical trial in 120 patients with OSA. The University of Illinois has indicated that recruitment for this clinical trial was completed during the second quarter of 2016. This clinical trial is fully funded by the National Heart, Lung and Blood Institute of the National Institutes of Health. The Company is not managing or funding this ongoing clinical trial.

RespireRx Pharmaceuticals Inc., 126 Valley Road, Suite C, Glen Rock, NJ 07452  
[www.RespireRx.com](http://www.RespireRx.com)

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

Additional information about the Company and the matters discussed herein can be obtained on the Company's web-site at [www.RespireRx.com](http://www.RespireRx.com) or in the Company's filings with the U.S. Securities and Exchange Commission on EDGAR at [www.sec.gov](http://www.sec.gov).

***Special Note Regarding Forward-Looking Statements*** : Certain statements included or incorporated by reference in this news release, including information as to the future financial or operating performance of the Company and its drug development programs, constitute forward-looking statements. The words "believe," "expect," "anticipate," "contemplate," "target," "plan," "intend," "continue," "budget," "estimate," "may," "schedule" and similar expressions identify forward-looking statements. Forward-looking statements include, among other things, statements regarding future plans, targets, estimates and assumptions. Forward-looking statements are necessarily based upon a number of estimates and assumptions that, while considered reasonable by the Company, are inherently subject to significant business, economic and competitive uncertainties and contingencies. Many factors could cause the Company's actual results to differ materially from those expressed or implied in any forward-looking statements made by, or on behalf of, the Company. Due to these various risks and uncertainties, actual events may differ materially from current expectations. Investors are cautioned that forward-looking statements are not guarantees of future performance and, accordingly, investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein. Forward-looking statements are made as of the date of this news release and the Company disclaims any intent or obligation to update publicly such forward-looking statements, whether as a result of new information, future events or results or otherwise.

Company Contact:

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[www.RespireRx.com](http://www.RespireRx.com)

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