RespireRx Pharmaceuticals Inc

OTC QB: RSPI

January 2020

Forward Looking Statements

RespireRx Pharmaceuticals Inc

This presentation contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 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 "anticipates," "believes," "intends," "estimates," "expects," "plans," "contemplates," "targets," "continues," "budgets," "may," and similar expressions 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 proposed products, (iv) reorganization plans, and (v) the need for, and availability of, additional financing. The forward-looking statements included herein are based on current expectations that involve a number of risks and uncertainties. These forward-looking statements are based on assumptions regarding the Company's business and technology, which involve judgments with respect to, among other things, future scientific, economic, 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 the Company believes that the assumptions underlying the forward-looking statements are reasonable, actual results may differ materially from those set forth in the forward- looking statements. In light of the significant uncertainties inherent in the forward-looking information included herein, the inclusion of such information should not be regarded as a representation by the Company or any other person that the Company's objectives or plans will be achieved. Factors that could cause or contribute to such differences include, but are not limited to, regulatory policies or changes thereto, available cash, research and development results, competition from other similar businesses, interest of third parties in collaborations with us, and market and general economic factors. For more information about the risks and uncertainties the Company faces, see "Item 1A. Risk Factors" of the RespireRx Pharmaceuticals Inc. Annual Report of Form 10-K as of December 31, 2018. For more current information about the Company, see the Company's Quarterly Report on Form 10-Q as of September 30, 2019. 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-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.

A Wealth of Potential Products

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Dronabinol (Δ9-THC)

Synthetic Cannabinoid

- Treatment of Obstructive Sleep Apnea (OSA)
- 2 Successful Phase 2 clinical trials in OSA
- Phase 3 ready
- Development and supply agreement with Noramco, largest dronabinol manufacturer
- Potential multi-billion $ market – estimated 30 million U.S. patients, with comparable amounts in UK and Germany
- No approved drugs available

Ampakines

Novel Brain Targeting Drugs

- 3 Successful phase 2A trials for CX1739 and CX717 reversal of opioid-induced respiratory depression as proof of target engagement
- Successful Phase 2 trial for CX717 in adult ADHD
- Successful pre-clinical studies in spinal cord injury (SCI) and Phase 2 clinical trial planned with Miami Project at Univ. Miami School of Medicine
- Planning additional Phase 2 trials in ADHD and SCI

Dronabinol for Obstructive Sleep Apnea

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- **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**
  - Approximately 30 million U.S. adults suffer from OSA
  - Market potential for OSA is $3 - 9 Billion/Year
- **Current Treatments**
  - CPAP device
  - Surgery
  - Dental devices
- **Clear Market Need**
  - Poor compliance with CPAP
  - **No** drug treatment available

Dronabinol: A Breakthrough Treatment for OSA

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- **Mechanism of Action**
  - Dronabinol is ∆9-THC, a synthetic cannabinoid agonist
- **Background**
  - Schedule III generic 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
  - Positive Phase 2A & 2B studies in the treatment of OSA
  - Phase 3 ready
- **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 completed Phase 2B study in OSA

Two Successful Phase 2 Studies – Phase 3 Ready

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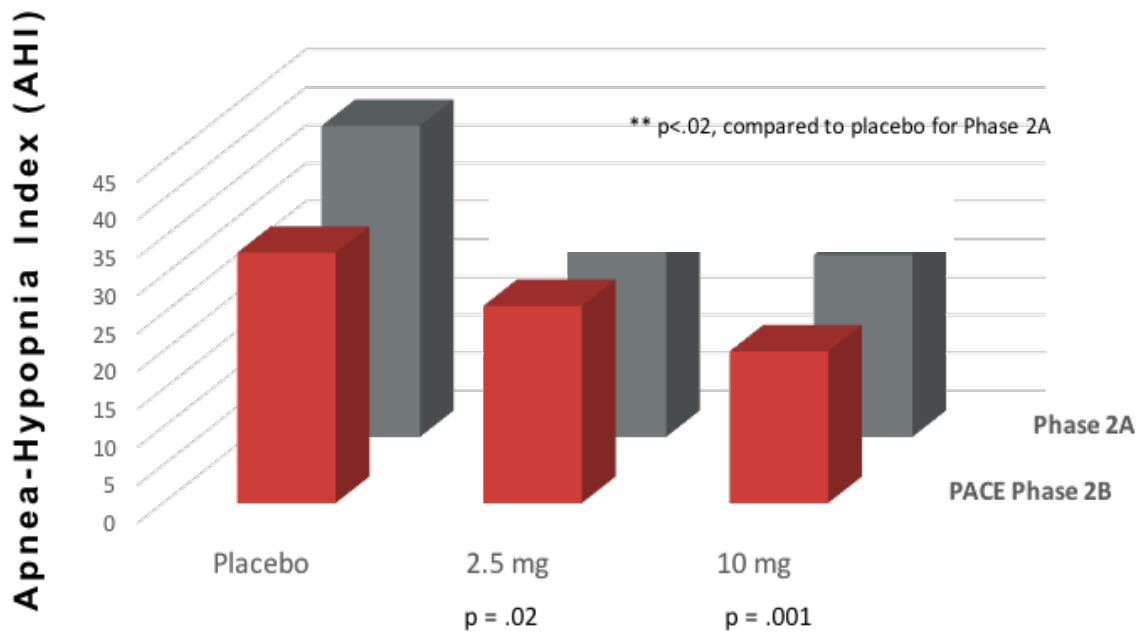

* Double blind, placebo controlled dose-ascending study in patients with OSA, n=19

Two Phase 2 Clinical Trials Have Shown That Dronabinol Treatment Results in a Statistically Significant, Dose Related Improvement in AHI, the Primary Endpoint for FDA Approval

A Clinical View of the Pace Trial Results

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Comments by David Rapoport, MD
Professor of Medicine Mount Sinai School of Medicine*

"OSA may affect….long term cardiovascular and cerebrovascular health,…..memory loss and progression of Alzheimer Disease biomarkers."

"…dronabinol is effective in lowering AHI in patients with moderate obstructive sleep apnea."

"The results of the PACE trial are among the first to show sustained effect of a drug therapy targeting the behavior of the upper airway. Dronabinol is easy to take, appears to have a low side effect profile and now has been shown to be effective."

Dronabinol… "may help address the significant medical need for alternative treatments for OSA."

*RespireRx press release, November 30, 2017

NEWCO 1 Business Plan in Place

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1. Regulatory plan developed with Camargo Pharmaceutical Services, pre-eminent advisory firm for 505(b)(2) filings
2. RespireRx and Noramco Inc. signed a joint development and supply agreement. Noramco, a leading dronabinol manufacturer, will provide at no costs API supplies prior to NDA approval in exchange for an exclusive purchase agreement for commercial API and Noramco's participation in the economic success of the commercialized Product or Products
3. Clinical plan developed with Clinilabs Drug Development Corporation, a full-service CRO, which will oversee Phase 3 trial. A draft clinical protocol, budget and timeline have been prepared
4. Clinical advisory panel composed of the major Key Opinion Leaders in OSA
5. Commercialization and marketing strategy developed
6. New, highly experienced senior management team identified

Low Impact Ampakines: Targeting Markets with High Unmet Medical Need

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- **Attention Deficit Hyperactive Disorder (ADHD) – Phase 2B Ready**
- **Spinal Cord Injury – Phase 2A Ready**
- **Orphan Diseases – Phase 2A Ready**

Translational Approach: Identify Model Systems

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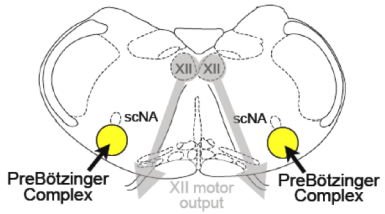

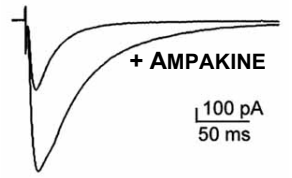

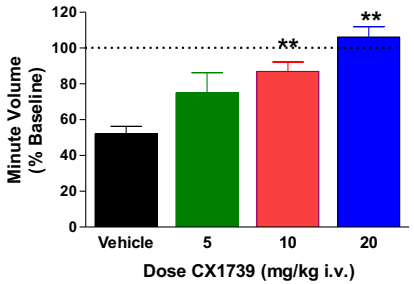

- Brain stem nuclei that regulate breathing contain opiate and AMPA glutamate receptors that inhibit and excite cell activity, respectively
- Ampakines act as positive, allosteric modulators of the AMPA-type glutamate receptor to enhance excitation and prolong and strengthen synaptic transmission
- In animal models, ampakines antagonize opioid-induced respiratory depression

Ampakines Reduce Opioid-Induced Respiratory Depression in Phase 2A Clinical Trials

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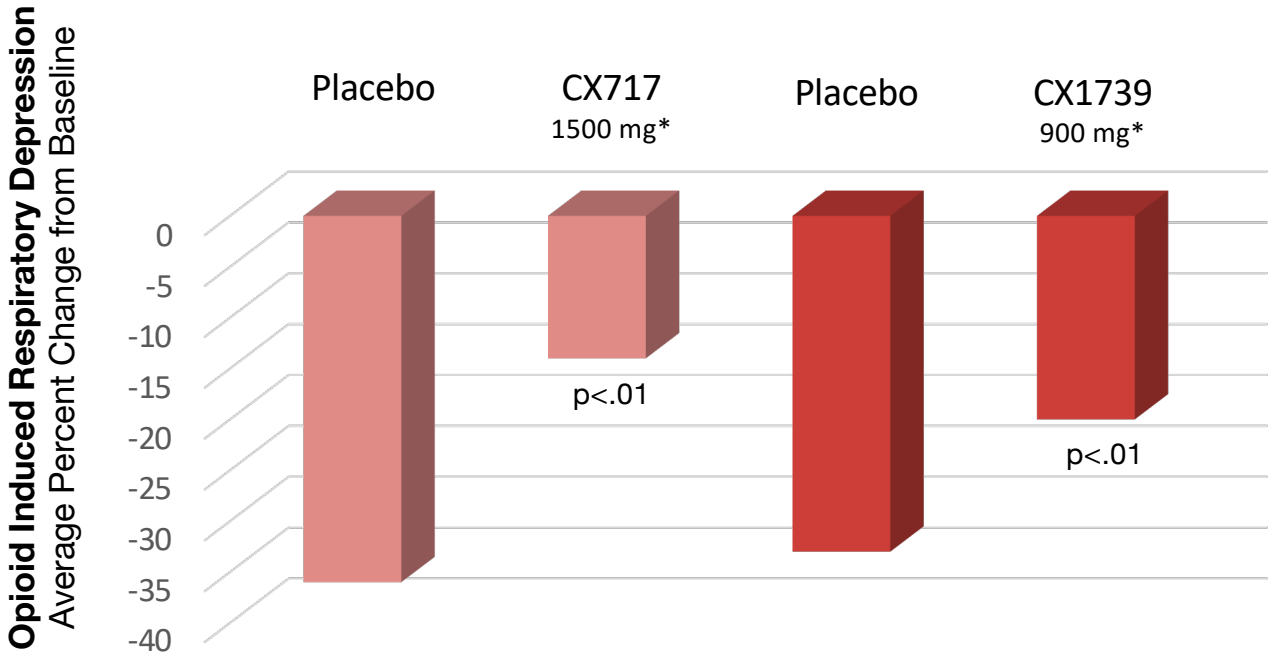

* Approximately 15 and 10 mg/kg on a weight basis, respectively; comparable to animal doses

Validation of Doses for Target Engagement

Ampakines for the Treatment of ADHD

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- Epidemiologic studies of adult ADHD have estimated the current prevalence to be 4.1% to 4.4% in the US. [1]
- An estimated 10 million adults have ADHD.
- ADHD in adults is characterized by symptoms of inattention, impulsivity, and restlessness, resulting in functional impairment.

[1] Kessler, Adler, Barkley. **The prevalence and correlates of adult ADHD in the United States: Results from the National Comorbidity Survey Replication**. American Journal of Psychiatry 2006; 163(4):724-732
[2] Pelham et al. **The economic impact of attention-deficit/hyperactivity disorder in children and adolescents.** J Pediatr Psychol. 2007 Jul;32(6):711-27. Epub 2007 Jun 7

Ampakines for the Treatment of Spinal Cord Injury (SCI)[1]

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- **Approximately 288,000 people in U.S. with SCI and 12,500 new cases per year**
- **Treatment Costs are High and Continue for Life**

  For example, ~ $3.4 million lifetime costs for low tetraplegia injury at 25 years old
- **< 1% of patients experience complete neurological recovery at time of hospital discharge**
- **Orphan drug opportunity**

  < 200,000 patients with targeted indication of incomplete SCI

National Spinal Cord Injury Statistical Center, Facts and Figures at a Glance. Birmingham, AL: University of Alabama at Birmingham, 2018.

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