



OTCQB: RSPI

LIFE SCIENCES VIRTUAL INVESTOR CONFERENCE

December 2021

CAUTIONARY NOTES



FORWARD LOOKING STATEMENTS

This presentation 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 presentation.

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 in "Item 1A. Risk Factors" in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2020, as filed with the SEC on April 15, 2021 (the "2020 Form 10-K").

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 presentation. We cannot assure you that the forward-looking statements in this presentation will prove to be accurate and therefore prospective investors, as well as potential collaborators and other potential stakeholders are encouraged not to place undue reliance on forward-looking statements. You should read this presentation 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 you 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 the 2020 Form 10-K and in this presentation, 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 2020 Form 10-K and in this presentation. 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.

For more information about the risks and uncertainties the Company faces, "Item 1A. Risk Factors" in our 2020 Form 10-K and other reports filed or furnished with the SEC 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. You should consult any further disclosures we may make on related subjects in our annual reports on Form 10-K and other reports that we file with or furnish to the SEC.

CAUTIONARY NOTES (cont'd)



NOT A SECURITIES OFFERING

This presentation is being provided for informational purposes only. This presentation does not constitute an offer to sell, a solicitation of an offer to buy, or a recommendation of any security or any other product or service by RespireRx Pharmaceuticals Inc. (the "Company") or any other third party regardless of whether such security, product or service is referenced in this presentation. Furthermore, nothing in this presentation is intended to provide tax, legal, or investment advice and nothing in this presentation should be construed as a recommendation to buy, sell, or hold any investment or security or to engage in any investment strategy or transaction. We do not represent that the securities, product development opportunities or strategies, or any other features of the Company discussed in this presentation are suitable for any particular investor, collaborator or other stakeholder.

RespireRx: Capital Structure and Market Metrics



	As of September 30, 2021 (unless indicated otherwise)
Common Stock (rounded)	90,396,000
Common Stock Equivalents of all Options and Warrants Granted (rounded)*	122,918,000
Total	213,314,000

	Market Metrics at December 6, 2021
Closing price	\$0.0158
Market Capitalization (rounded) - Fully diluted	\$3,370,000
Market Capitalization (rounded) - Primary Basis	\$1,428,000

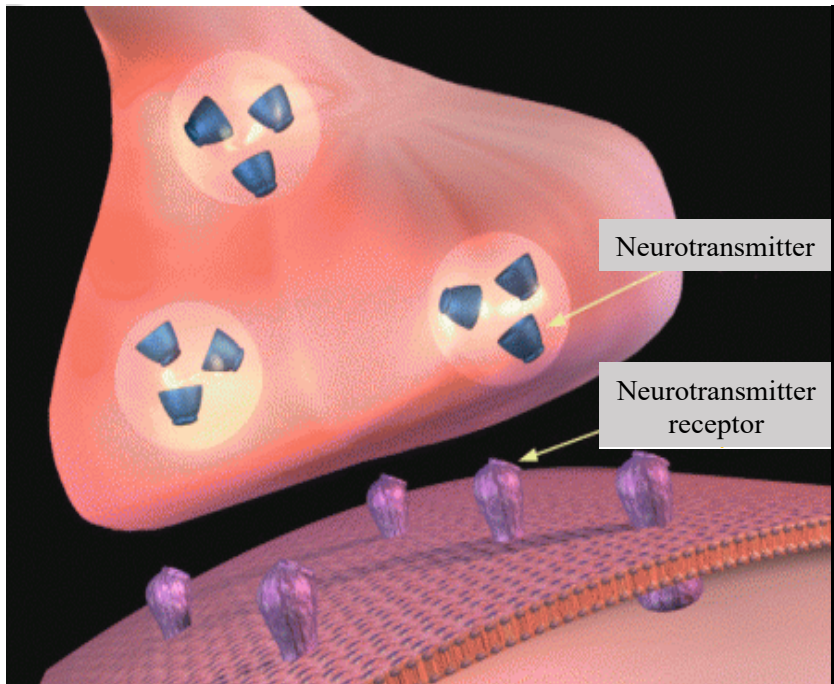
* Does not include or account for (a) shares issuable upon conversion of additional interest accrued after September 30, 2021, (b) 5,750,000 shares issuable upon conversion of a convertible promissory note issued on October 7, 2021, or 5,750,000 shares issuable upon exercise of warrants issued on the same date in connection with such convertible promissory note, (c) 4,000,000 shares issued on November 8, 2021 upon partial conversion of \$80,000 of a \$112,000 convertible note, which reduced the principal amount of such note to \$32,000 and reduced the number of shares into which such note is convertible by 4,000,000 shares, (d) the partial cashless exercise on November 8, 2021, of a warrant which reduced the number of warrants by 1,534,000 rounded and resulted in the issuance of 511,000 (rounded) shares of common stock or (e) the cashless exercise on November 22, 2021, of a warrant which reduced the number of warrants by 4,300,000 and resulted in the issuance of 1,433,000 (rounded) shares of common stock. As of November 26, 2021, there were 96,341,000 (rounded) shares of common stock outstanding.

Neurotransmission



- Neurons communicate through a process of neurotransmission in which they release chemical neurotransmitters that bind to specific receptors on adjacent neurons.
- RespireRx is developing breakthrough drugs to modify neurotransmission and create advanced treatments for disorders with high unmet needs.

Different Approaches Create Different Platforms



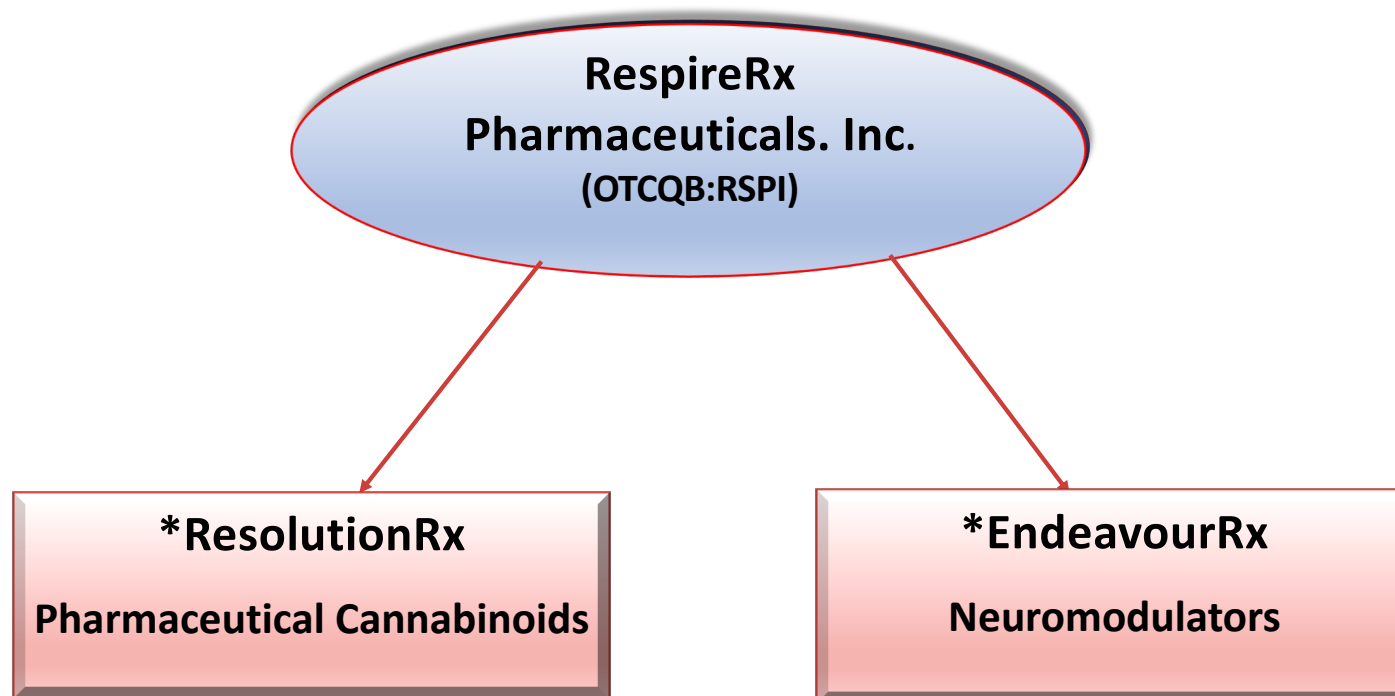
Directly Acting Agonists/Antagonists

- Act directly at the neurotransmitter binding site to either stimulate (agonist) or interfere (antagonist) with the neurotransmitter receptor.
- Cannabinoids, such as Δ^9 -THC, are direct agonists on the brain's endocannabinoid receptors

Neuromodulators

- Allosteric Modulators do not act directly at the neurotransmitter receptor binding site and have no intrinsic activity of their own, but instead act at accessory sites that enhance (positive) or reduce the actions of neurotransmitters (negative).
- AMPAkinases and GABAkinases enhance the actions of the neurotransmitters glutamate and GABA at their respective AMPA glutamate and GABA_A receptors

Separate Business Units for Different Platforms



*We are contemplating the reorganization as there are several advantages to separating these platforms formally into newly formed subsidiaries, including but not limited to optimizing their asset values through separate finance channels and making them more attractive for capital raising as well as for strategic deal making. No assurance can be provided that the reorganization will be effectuated.

Product Candidate Portfolio Summary



ResolutionRx

Pharmaceutical Cannabinoids

Dronabinol (Δ 9-THC)

- Treatment of Obstructive Sleep Apnea (OSA)
- No approved drugs available for OSA
- Potential multi-billion \$ market – estimated 30 million US patients
- Successful Phase 2B; Phase 3 ready, pending completion of new superior formulation and IND meeting
- Broad enabling patents applied for dosage and novel cannabinoid formulations applicable to other indications as well as OSA
- Clinical and commercial API supply established

EndeavourRx

Neuromodulators - Novel Brain Targeting Drugs

AMPAkines (AMPA Receptor Positive Allosteric Modulators)

- 3 Successful phase 2A trials for CX1739 and CX717
- Phase 2A ready for spinal cord injury (SCI)
- Phase 2B ready for ADHD
- Multi-kilos of clinical API on hand

GABAkines (GABA_A Receptor Positive Allosteric Modulators)

- Efficacious in multiple animal models of treatment resistant epilepsy and chronic neuropathic pain
- Efficacy in excised brain slices from epileptic patients
- Lead compound is druggable and ready for pre-clinical development
- Chemical scale-up underway for IND enabling studies

RespireRx - Product Candidate Development Status



	Preclinical	Phase 1	Phase 2	Phase 3
<i>ResolutionRx - Cannabinoids</i>				
Dronabinol – OSA	→			
Dronabinol Formulation	→			
<i>EndeavourRx - Neuromodulators</i>				
AMPAkines				
CX717 - ADHD	→			
CX1739 - Spinal Cord Injury	→			
CX1942 –follow-up compound	→			
GABAKines				
KRM-II-81 – Epilepsy/Pain	→			

The information above reflects development status only, not current activity. The Company does not have any currently active Phase 1 or Phase 2 trials at this time.

Intellectual Property



ResolutionRx

Dronabinol ($\Delta 9$ -THC)

- License to issued method-of-use patent in the US, UK and Germany for the use of dronabinol for treating OSA (expires 2025 in U.S.)
- Pending patents on broad, enabling dosage and modified release formulations with patent life through at least 2031
- New superior formulation creates opportunities for broadening patents and strengthens barriers to generic market entry
- Longevity of broader cannabinoid patent claims anticipated through 2031, extending to 2041

EndeavourRx

AMPAkines

- Broad family of patents
- Patent longevity: composition and process patents expire in 2028/9 with new patents and patent extensions anticipated through March 2037

GABAkines (GABA_A Receptor Positive Allosteric Modulators)

- Broad family of patents
- Patent longevity: current patents expire in 2032 and 2036 respectively

Global Market Opportunities



ResolutionRx

Dronabinol (Δ^9 -THC)

Obstructive Sleep Apnea (OSA):

- Potential \$ multi-billion market with no approved drugs available
- Estimated 30 million US patients and 28 million in UK and Germany combined
- New superior formulation offers potential for improved efficacy and expanded range of indications
- New proprietary formulation creates opportunities for broadening IP and strengthens barriers to generic market entry

EndeavourRx

AMPAkines

SCI (Spinal Cord Injury):

- Estimated 288,000 patients in US; \$ multi-100 million market

ADHD (Attention Deficit Hyperactivity Disorder):

- \$ multi-billion market, dominated by habit-forming scheduled drugs

GABAkines

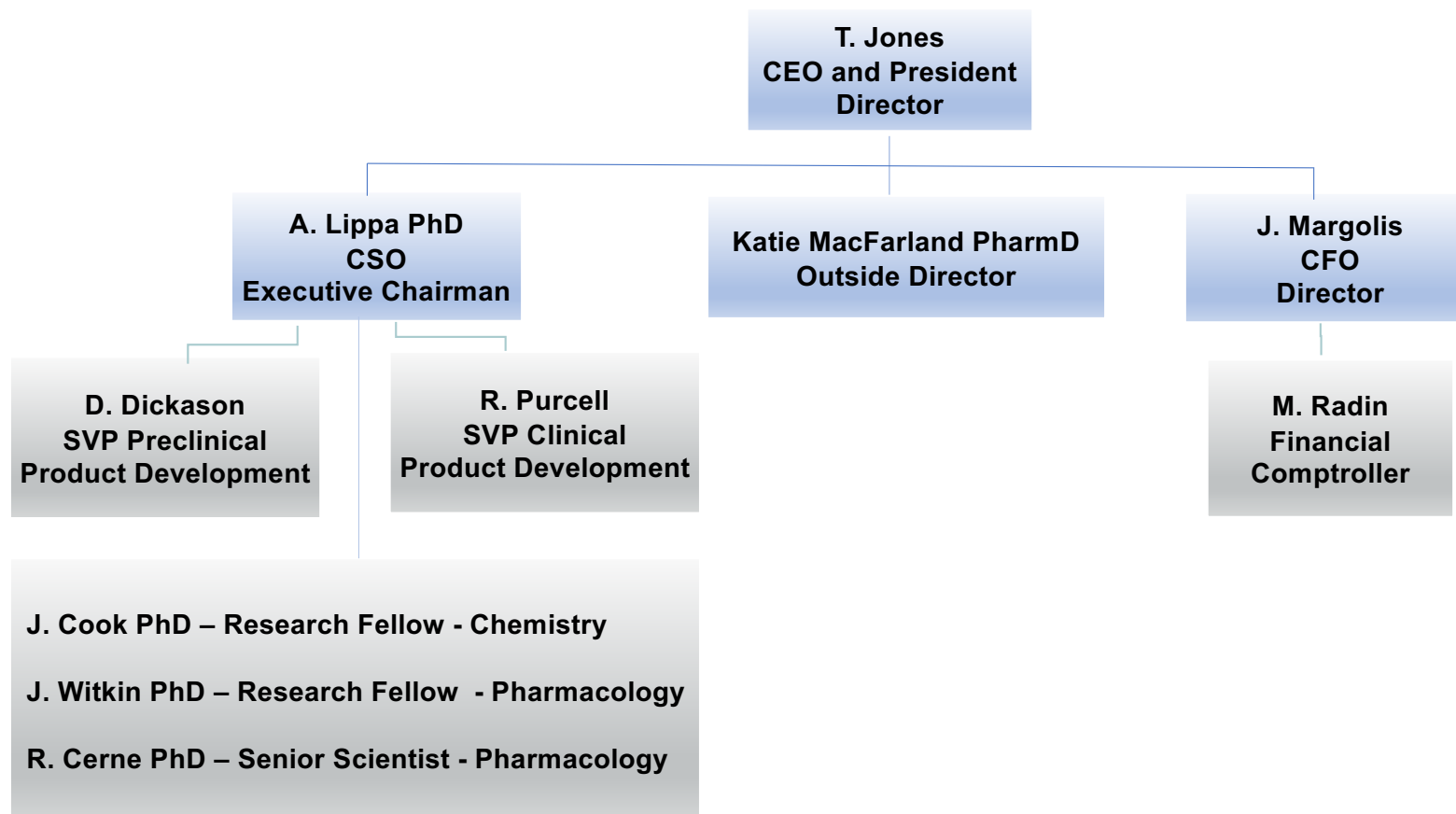
Epilepsy:

- \$ multi-billion market; patients become resistant to existing therapies that produce multiple side effects, some debilitating

Chronic Pain:

- \$ multi-billion market, dominated by controlled drugs, including opioids

RespireRx - Organizational Structure



Planned Short-Term Milestones



ResolutionRx

Dronabinol (Δ^9 -THC)

- PK studies with new formulation
- Patent filings
- Pre-IND meeting with FDA
- Phase 3 design completion

EndeavourRx

AMPAkines

- Initiate SCI phase 2A studies
- Patent filings

GABAkines

- Complete pre-clinical development of lead compound
- Commence Phase 1 studies
- Broaden patent portfolio
- Secure grant funding

The above reflects our planned, by is dependent upon adequate financing which can not be assured. We may not achieve these milestones in the near term or ever, even if financing is available.

Corporate Summary



- ✓ **Highly desirable assets – advancing clinical programs and patent estate**
- ✓ **Diverse portfolio of novel products across multiple therapeutic categories and indications**
- ✓ **Broad flexibility in identifying unique investment structures**
- ✓ **Strategic partners afforded the opportunity to share in the financial growth from early stage clinical to commercialization**
- ✓ **Highly experienced management team and Board of Directors**
- ✓ **Exemplary regulatory and financial compliance history with government agencies**
- ✓ **Key clinical supply chains established**

An investment in the Company is subject to significant risks. For more information about the risks and uncertainties the Company faces, see "Item 1A. Risk Factors" in our recent annual report on Form 10-K as of December 31, 2020. You should also consult any subsequent disclosures we have made or may make in the filings we make with the SEC.



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