



**BIG ROCK**

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P A R T N E R S  
A C Q U I S I T I O N C O R P

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Merger with  
**NeuroRx**

**December 2020**

## Disclaimer

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This presentation (this "Presentation") is provided for informational purposes only and has been prepared to assist interested parties in making their own evaluation with respect to a potential business combination between NeuroRx, Inc. ("NeuroRx" or the "Company") and Big Rock Partners Acquisition Corp. ("Big Rock") and related transactions (the "Proposed Business Combination") and for no other purpose.

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Certain statements included in this Presentation include "forward-looking statements" within the meaning of the federal securities laws with respect to the Proposed Business Combination, including statements regarding the benefits of the Proposed Business Combination, the anticipated timing of the Proposed Business Combination, the drugs under development by NeuroRx and the markets in which it operates. Big Rock's and NeuroRx's actual results may differ from its expectations, estimates and projections and consequently, you should not rely on these forward-looking statements as predictions of future events. These forward-looking statements generally are identified by the words "aspire," "expect," "estimate," "project," "budget," "forecast," "anticipate," "intend," "plan," "may," "will," "will be," "will continue," "will likely result," "could," "should," "believe(s)," "predicts," "potential," "continue," "future," "opportunity," "strategy," and similar expressions are intended to identify such forward-looking statements. These forward-looking statements include, without limitation, Big Rock's and NeuroRx's expectations with respect to future performance and anticipated financial impacts of the Proposed Business Combination.

These forward-looking statements involve significant risks and uncertainties that could cause the actual results to differ materially from the expected results. Most of these factors are outside Big Rock's and NeuroRx's control and are difficult to predict. Factors that may cause such differences include, but are not limited to: (1) the approvals, timing, and ability to complete the proposed business combination, which may adversely affect the trading price of Big Rock's securities; (2) Big Rock's ability to remain listed on the Nasdaq Capital Market prior to the closing of the proposed business combination; (3) the combined company's continued listing on the Nasdaq Capital Market after closing of the proposed business combination; (4) the benefits of the proposed business combination, including future financial and operating results of the combined company; (5) the inherent uncertainty associated with the FDA approval process; (6) the risk that the proposed transaction disrupts current plans and operations of NeuroRx as a result of the announcement and consummation of the transaction described therein and herein; (7) costs related to the proposed business combination; (8) changes in applicable laws or regulations; (9) the possibility that the combined company may be adversely affected by other economic, business, and/or competitive factors; (10) the impact of COVID-19 or other adverse public health developments; and (11) other risks and uncertainties that will be detailed in the proxy statement/consent solicitation statement/prospectus and registration statement to be filed on Form S-4 with the SEC and as indicated from time to time in Big Rock's filings with the SEC. These filings identify and address other important risks and uncertainties that could cause actual events and results to differ materially from those contained in the forward-looking statements. Big Rock and NeuroRX caution that the foregoing list of factors is not exclusive. Big Rock and NeuroRX caution readers not to place undue reliance upon any forward-looking statements, which speak only as of the date made. Neither Big Rock nor NeuroRX undertake or accept any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements to reflect any change in its expectations or any change in events, conditions or circumstances on which any such statement is based.

## Disclaimer (con't)

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### **Participants in the Solicitation**

Big Rock, NeuroRx and their respective directors and executive officers, under SEC rules, may be deemed to be participants in the solicitation of proxies of Big Rock's shareholders in connection with the proposed Transactions. Investors and securityholders may obtain more detailed information regarding the names and interests in the proposed Transactions of Big Rock's directors and officers in Big Rock's filings with the SEC, including the forthcoming proxy statement/consent solicitation statement/prospectus statement. You may obtain a free copy of these documents as described in the preceding paragraph.

### **Industry and Market Data**

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## Transaction Overview

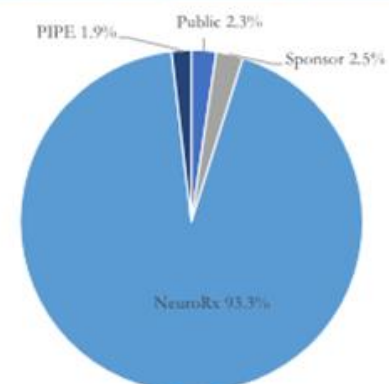
<b>Transaction Overview/Consideration</b>	<ul style="list-style-type: none"><li>• Big Rock Partners Acquisition Corp. (“Big Rock” or “BRPA”) has signed an Agreement and Plan of Merger with NeuroRx, Inc. (“NeuroRx”) in a transaction valued at approximately \$525.1 million plus approximately \$350 million in additional consideration based on projected milestones<ul style="list-style-type: none"><li>• NeuroRx is a clinical stage, small molecule pharmaceutical company which develops novel therapeutics for the treatment of central nervous system disorders and life-threatening pulmonary disease</li><li>• NeuroRx’s two main drugs are “ZYESAMI™ (aviptadil)” which is an application for COVID-related respiratory failure and other life threatening lung conditions, and “NRX-101”, which focuses on suicidal bipolar depression and PTSD</li></ul></li><li>• NeuroRx current equityholders will receive an aggregate of 50.0 million shares of BRPA (\$500 million equity consideration at \$10.00 per common share for their interests)</li><li>• An aggregate of 25 million earnout shares will also be issued to NeuroRx pre-merger equity holders if, prior to December 31, 2022, (1) RLF-100 receives emergency use authorization by the FDA and (2) the FDA accepts the Company’s filing of its application to approve RLF-100</li><li>• In addition, a \$100 million cash earnout may be issued if, prior to December 31, 2022, either (1) FDA approval of the Company’s COVID-19 Drug is obtained and the Company’s COVID-19 Drug is listed in the FDA’s “Orange Book” or (2) FDA approval of the Company’s Antidepressant Drug Regimen is obtained and the Company’s Antidepressant Drug Regimen is listed in the FDA’s “Orange Book”</li><li>• The transaction is expected to close in either Q1 or Q2 2021</li></ul>
<b>Transaction Rationale</b>	<ul style="list-style-type: none"><li>• Ability to scale and address large market opportunities</li><li>• Public interest in drugs for COVID-19 and Suicidal Depression/PTSD</li><li>• De-risked, phase 3 drugs with multi-billion dollar potential</li><li>• Validation from NIH, BARDA, and other stakeholders</li></ul>
<b>Strong Management Team and Board</b>	<ul style="list-style-type: none"><li>• <b>Jonathan C. Javitt, MD, MPH</b> - Founder, Chairman and CEO<ul style="list-style-type: none"><li>• 25 years in drug development</li><li>• Participated in 6 successful drug and device launches</li></ul></li><li>• <b>Robert Besthof, MIM</b> - Chief Commercial Officer<ul style="list-style-type: none"><li>• 25+ years of Neuroscience &amp; specialty drug development, former Commercial Lead: Pfizer Neuroscience</li></ul></li><li>• <b>Rick Panicucci, PhD</b> - Chief Technology Officer<ul style="list-style-type: none"><li>• 25 years manufacturing leadership</li></ul></li></ul>

## Transaction Overview

### Valuation At Close<sup>(1)</sup>

	At Closing
Total Shares Outstanding	53,605,492
\$ per Share	\$10.00
<b>Equity Value</b>	<b>\$536,054,920</b>
Debt	\$0
Cash	\$10,986,196
<b>Enterprise Value</b>	<b>\$525,068,724</b>

### Ownership at Close<sup>(1,2)</sup>



### Estimated Sources & Uses

Sources	
BRPA Trust Capital	\$5,986,196
Anticipated PIPE Proceeds <sup>(3)</sup>	\$10,000,000
NeuroRx Equity Rollover	\$500,000,000
<b>Total Sources</b>	<b>\$515,986,196</b>
Uses	
Estimated Fees, Expenses & Repayments	\$5,000,000
NeuroRx Equity Rollover	\$500,000,000
Cash to Balance Sheet	\$10,986,196
<b>Total Uses</b>	<b>\$515,986,196</b>

- 1 Includes shares attributable to rights; assumes no additional BRPA redemptions; does not include warrants or earnout shares
- 2 BRPA sponsor to forfeit 875,000 sponsor shares and place 125,000 sponsor shares into earnout
- 3 No PIPE has been committed and there can be no assurances that a PIPE will be available at closing

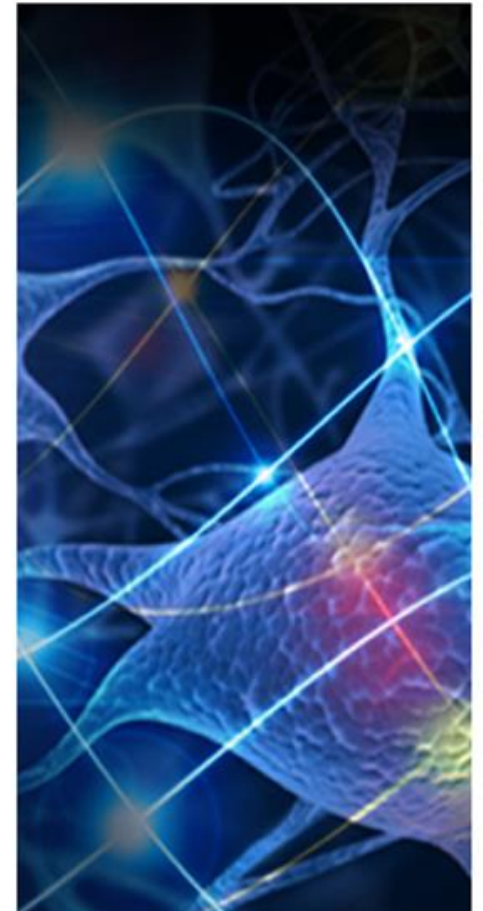


## Pipeline Overview

### An Innovator in Mental Health and Respiratory Drug Development

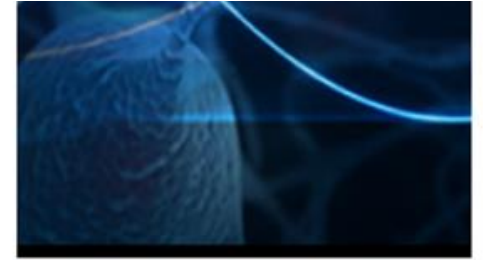
NeuroRx's two main drugs are "**ZYESAMI™ (aviptadil)**" which targets COVID-related respiratory failure and "**NRX-101**", which targets suicidal bipolar depression and PTSD

- **ZYESAMI™** is synthetic human Vasoactive Intestinal Peptide (VIP), a 28 amino-acid natural peptide with 50 years of research evidence documenting protection from Lung Injury by protecting type II epithelial cells
  - The drug is named for the late Prof. Sami Said, who discovered VIP in 1970 and dedicated his career to studying its properties. NeuroRx is the only company licensed by the Research Foundation of the State University of New York to use its IP in connection with COVID related therapies
- **NRX-101** has advanced to phase 3 with FDA Breakthrough Therapy



Designation, a Special Protocol Agreement, Biomarker Letter of Support, and Fast Track Designation. IP is based on a worldwide patent portfolio developed by Prof. Daniel Javitt, PhD, MD (co-founder of NeuroRx)

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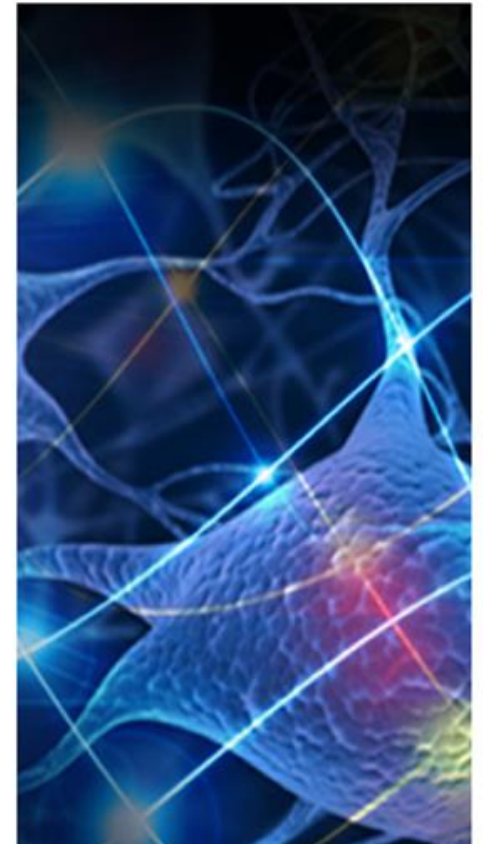


## Relief Therapeutics Partnership

### ZYESAMI™ (aviptadil) – COVID-19 Therapeutic

NeuroRx has signed a global collaboration with Relief Therapeutics Holding AG (SWX:RLF, OTCMKTS:RLFTF) (“Relief”) in September 2020 for global development and commercialization of ZYESAMI™

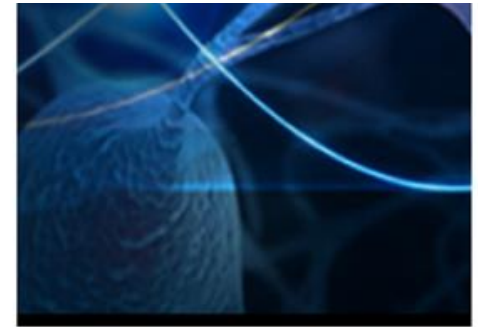
- Relief is a clinical stage biotechnology company engaged in developing treatment solutions for indications related to diabetic complications and respiratory diseases
- All development costs under the agreement are paid by Relief, providing NeuroRx with non-dilutive development capital through drug approval
- All profits from sales of Zyesami™ for all indications related to COVID-19 and potentially other respiratory indications are shared 50/50 in US, Israel, and Canada, with Relief receiving 85% of profits in Europe and 80% in the Rest of the world.



- NeuroRx will lead commercialization in the United States, Canada, and Israel, while Relief will lead commercialization in Europe and the rest of the world
- Relief is headquartered in Switzerland and has a current market capitalization of approximately \$1.247 billion USD<sup>(1)</sup>

(1) CHF/USD exchange ratio as of December 16, 2020

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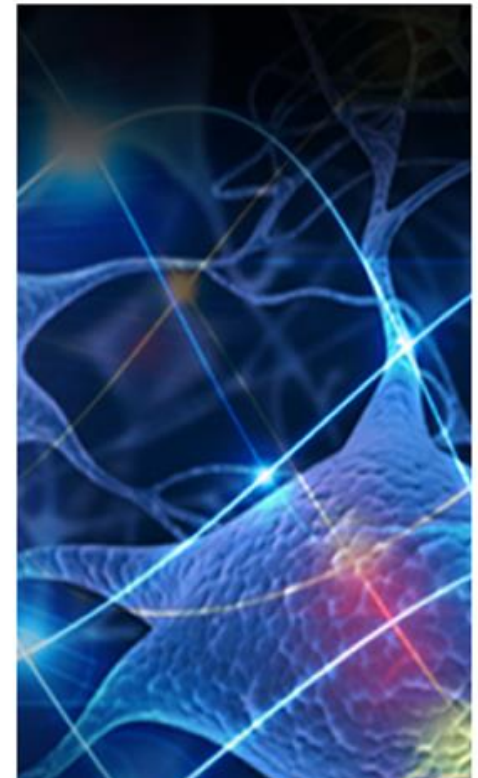


## NeuroRx Overview

### NRX 100/101 – Anti-Depressant Drug Regimen

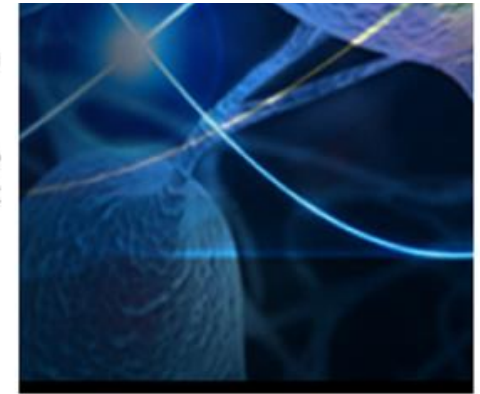
**NRX-100/101** is being developed based on Prof. Daniel Javitt, PhD, MD\* patented discovery that drugs targeting both the NMDA and 5-HT<sub>2A</sub> receptors in the brain have the potential to treat both depression and suicidality without the hallucinations caused by most NMDA inhibitors and without the potential for suicide attributable to more 5-HT<sub>2A</sub> inhibitor drugs. NeuroRx has been awarded Breakthrough Therapy and Fast Track Designations by FDA, together with a Special Protocol Agreement:

- **Specific Focus on Suicidal Bipolar Depression:** Over 50% of individuals with Bipolar Disorder attempt suicide over their lifetime. Competitors' pipeline products are focused on Major Depressive Disorder (MDD), Treatment Resistant Depression (TRD)
- **Rapid Stabilization for Patients after a single dose of NRX-100 (ketamine):** The sequential drug treatment regimen will only require a single, initial administration of NRX-100 (ketamine). In clinical studies, ketamine has already shown rapid-onset, antidepressant/anti-suicidal effects. Ketamine can cause dissociative effects (hallucinations) which may be amplified with repeated administrations







- **Convenience:** Unlike other treatments in development, NRX-101 is expected to allow treatment on an outpatient basis after an initial stabilization with NRX-100 (ketamine) in a clinical setting
- **NRX-101 Not Expected To Be a Controlled Substance:** Unlike ketamine and its derivatives, the two active ingredients of NRX-101 are not controlled substances regulated by the Drug Enforcement Administration (DEA)

\* Daniel Javitt and Jonathan Javitt are brothers



## Experienced Leadership Team

Strong track record in CNS drug development

	<p><b>Jonathan C. Javitt, MD, MPH – Founder, Chairman, CEO</b></p> <ul style="list-style-type: none"> <li>• 25 years in drug development</li> <li>• Participated in 6 successful drug and device launches</li> <li>• Blockbuster drugs at Merck, Allergan, Eyetech</li> <li>• Presidential-commissioned White House health advisor</li> <li>• Prof. Johns Hopkins University</li> </ul>		<p><b>Alessandra Daigneault, JD –Corporate Secretary</b></p> <ul style="list-style-type: none"> <li>• M&amp;A partner at leading law firms</li> <li>• Chief Counsel, Teligent and successor companies</li> <li>• COO, Quantum Governance, LLC</li> </ul>
	<p><b>Robert Besthof, MIM – Chief Commercial Officer</b></p> <ul style="list-style-type: none"> <li>• 25+ years of Neuroscience &amp; specialty drug development</li> <li>• Former Global VP (Commercial), Pfizer Neuroscience</li> <li>• Led major portfolios in Psychiatry incl. Pristiq / Zoloft</li> <li>• Affiliate &amp; global positions at Lilly, Wyeth, Pfizer</li> </ul>		<p><b>Daniel C. Javitt, MD, MPH – Chair, Scientific Advisory Board</b></p> <ul style="list-style-type: none"> <li>• Inventor, NRX-101</li> <li>• International thought leader in neurochemical basis of psychiatric conditions</li> <li>• Prof. Columbia University</li> </ul>
	<p><b>Dr. Dennis K. McBride, Ph.D. ( CAPT. USN, SES-3, Ret.)</b></p> <ul style="list-style-type: none"> <li>• Clinical Psychologist / Navy Flight Surgeon</li> </ul>		<p><b>Philip Lavin, PhD – Lead Methodologist</b></p> <ul style="list-style-type: none"> <li>• 40 years of CRO and Clinical Trials</li> </ul>



- Former DARPA Senior Program Leader
- Former Prof. National Defense University
- President Emeritus, Potomac Institute



- 40 years of CMC and Clinical Trials
- 60+ Drug and Device Approvals
- Expert Consultant to FDA
- Prof. Harvard University



**William Fricker, MBA, CPA – Chief Financial Officer**

- 30 Years of Finance Experience
- Chief Accounting Officer: Immunomedics (sale to Gilead)
- Leadership roles at: JM Huber, Tyco, J&J, Bristol Myers Squibb



**Brian J. Del Buono, PhD, JD – IP Counsel**

- 30+ years scientific & legal experience in biopharmaceuticals
- Sr. VP/Chief Legal Officer Sun Products Corporation
- Former partner Sterne, Kessler, Goldstein & Fox

## Accomplished Independent Directors & Advisors



**Chaim Hurvitz**

- Former Director and President TEVA International Group
- Chairman, CH-Health



**Lt. General HR McMaster (US Army, Ret.)**

- Former National Security Advisor



**Sherry A. Glied, PhD – Dean, NYU Wagner School**

- Former Asst Secretary for Health (ASPE)
- Health Economist, Mental Health Policy Expert



**Wayne Pines**

- Former Assoc. Commissioner, US FDA



**Daniel E. Troy, JD –Chair, Compliance Committee**

- Former General Counsel, GSK
- Former Chief Counsel US Food and Drug Administration



**Rick Panicucci, PhD – CMC and Manufacturing**

- 25 years manufacturing leadership
- Head of CCP, Novartis
- VP of Manufacturing, WuXi Apptec



**Patrick Flynn, MBA – Chair, Audit Committee**

- 30 years of Senior Executive Experience
- CEO: Health Dialog – exit to BUPA International
- Bank of America (15 yrs), VP World Banking and Risk Mgmt
- BS in Finance, Wharton School, University of Pennsylvania



**Aaron J. Gorovitz, JD**

- General Counsel, AHG Group, Melbourne FL



**Hon. Abraham D. Sofaer, JD**

- US Federal Judge (Ret.)
- Former Counsel, US Dept. of State
- George P. Schultz Fellow, Stanford University
- Extensive board service and corporate governance expertise



**Frank Sasinowski, JD, MPH - External Regulatory Counsel**

- Former counsel, FDA Division of Psychiatry and Neurology
- Contributor to Orphan Drug Act, Hatch Waxman, 21<sup>st</sup> Century Cures Act



## Clear path to FDA approval timeline





(1) NDA = New Drug Application; IND = Investigational New Drug; CRADA = Cooperative Research and Development Agreement

**RLF-100 (aviptadil)**  
is synthetic human  
**Vasoactive Intestinal Peptide (VIP)**

a 28 amino-acid natural peptide with 50 years of

research evidence documenting protection from Lung Injury by protecting type II epithelial cells.

In COVID-19, VIP:

1. Blocks SARS-CoV-2 replication
2. Blocks cytokine production
3. Blocks apoptosis (cell death)
4. Upregulates Surfactant production

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**NeuroRx**  
*Bringing Hope to Life*

## History of VIP



VIP discovered in 1970 based on the hypothesis that hypotension associated with pulmonary embolus was caused by a vasoactive neuropeptide

Not enough tissue volume could be obtained from available supplies of slaughterhouse lungs, so intestine was used to isolate VIP – a 28 amino acid peptide



**Sami Said, MD 1928 – 2013**  
Distinguished Professor  
State University of New York  
at Stony Brook

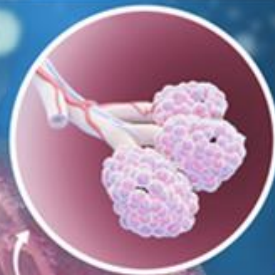
Sami wanted to name it *Very Important Peptide* but was forced to settle for Vasoactive Intestinal Peptide to achieve publication in Nature.

Over the next 50 year, more than 500 publications documented the role of VIP in protecting the lung against a wide array of injuries, from inhaling smoke to inhaling stomach acid

Said's final study, together with Georges Youssef was to treat eight patients with Acute Respiratory Distress Syndrome caused by sepsis. All 8 demonstrated improvement in oxygenation. Seven patients survived and left the ICU on room air.

The ARDS Study (NCT 00004494), sponsored by Stony Brook University is the model for current treatment of COVID-19

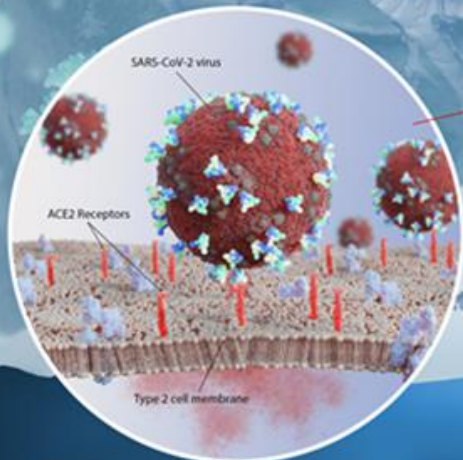
Potential mechanism of  
VIP in protecting  
pulmonary type 2  
alveolar cells from



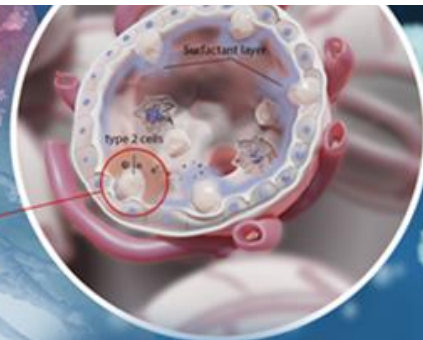
Pulmonary Alveolar Type II cells make surfactant that is essential for alveolar function and gas exchange

- All mammals can be infected with SARS-CoV-2
- Humans are known to develop COVID-19
- That is because human

## SARS-CoV-2 infection



SARS-CoV viruses bind to ACE2 receptors in order to enter the cell. Viral replication and rupture liberates inflammatory cytokines and destroys surfactant production



Type II cells have a high concentration of ACE 2 receptors on their cell membrane

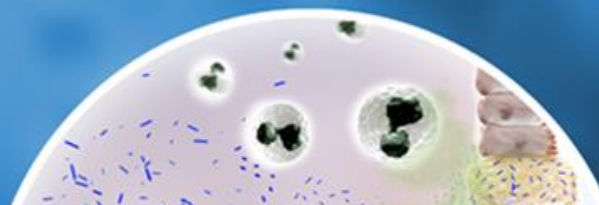
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Alveolar Type II pneumocytes exhibit ACE2 surface receptors

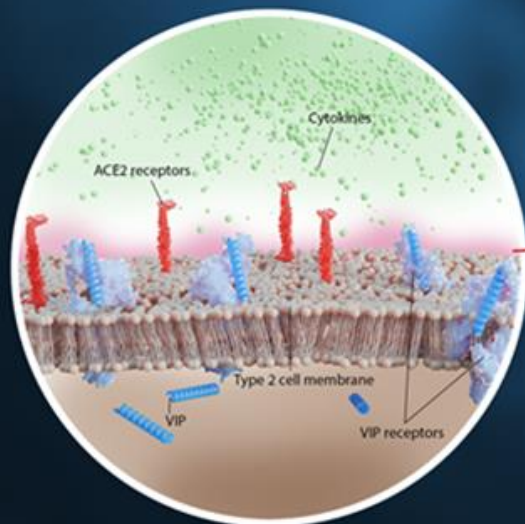
- SARS-CoV-2 binds to AII cells, but not to the rest of the pulmonary epithelium
- Once bound, the Coronavirus shuts down surfactant production, triggers cytokine production, replicates extensively, and causes cytopathy (cell death)
- **This cascade causes failure of oxygenation in the alveolus and death within days**

## Potential mechanism of VIP in protecting pulmonary type 2 alveolar cells from SARS-CoV-2 infection

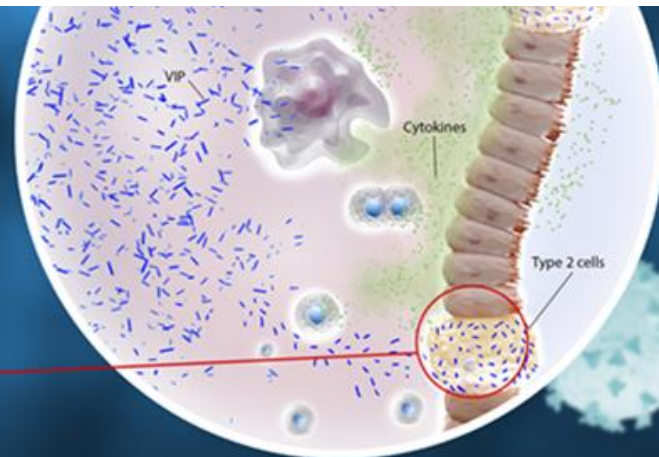


- Vasoactive Intestinal Peptide is found in all mammalian species and is 70% concentrated in the lung

## CELLS FROM SARS-COV-2 INFECTION



VIP specifically upregulates surfactant production via upregulation of C-Fos protein and protects Type II cells from cytokines



VIP binds to VPAC1 receptors on Alveolar Type II cells and

- Inhibits replication of SARS-CoV-2
- Blocks virus-induced cell death (cytopathy)
- Inhibits cytokine synthesis via Fos gene
- Upregulates surfactant production

VIP binds to nearby monocytes, causing them to secrete protective factors that further protect Alveolar Type II cells

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- VIP binds only to the ATII cell because of its VPAC1 surface receptor
- VIP has been known for 50 years to protect the ATII cell against numerous experimental and natural forms of lung injury

- **VIP may be a host immuno-modulator that improves survival and recovery from respiratory failure in COVID-19**

Recent Press on RLF-100

# Relief, NeuroRx Say Emergency Treatment With RLF-100 Helps Critically Ill Covid Patients

By Reuters

Aug. 3, 2020



TEL AVIV — Critically ill COVID-19 patients recovered rapidly from respiratory failure after three days of treatment with RLF-100, a therapy granted fast-track designation in the United States, two drug companies said on Sunday.

Geneva-based Relief Therapeutics Holdings AG has a patent for RLF-100, or aviptadil, a synthetic form of a natural peptide that protects the lung. U.S.-Israeli NeuroRx Inc partnered with Relief to develop the drug in the United States.

In June the U.S. Food and Drug Administration granted fast-track designation to RLF-100 for treatment of respiratory distress in COVID-19.

While a Phase 2/3 clinical trial with 70 patients is ongoing, RLF-100 is being administered on an emergency basis to some patients who are too ill to be admitted to the trial.

# Critically ill COVID-19 patients make quick recovery with treatment RLF-100

By Reuters August 2, 2020 1:53pm 1 Comment

**WIRE ON CORONAVIRUS**  
Young people fueling rise in coronavirus cases

**We need a vaccine for Dems' COVID lies**

**Teachers and their unions have been anything but heroes amid COVID-19**

**Scientist says she made up Twitter account for Arizona State prof who lied of COVID-19**

TEL AVIV — Critically ill COVID-19 patients recovered rapidly from respiratory failure after three days of treatment with RLF-100, a therapy granted fast-track designation in the United States, two drug companies said Sunday.

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emergency basis to some patients who are too ill to be admitted to the trial.

The first report of rapid recovery under emergency use was posted by doctors from Houston Methodist Hospital, the companies said in a joint statement.

It said a 54-year-old man who developed COVID-19 while being treated for rejection of a double lung transplant came off a ventilator within four days of treatment with RLF-100.



Similar results were subsequently seen in more than 15 patients treated under emergency use, the companies said.

The two companies also said independent researchers in a biocontainment laboratory in Brazil reported that aviptadil blocked replication of the SARS coronavirus in human lung cells and immune cells.

# Houston Methodist reports rapid recovery of COVID-19 patients with new drug



**HOUSTON** - Houston Methodist Hospital is making national headlines after doctors use a new drug to help treat COVID-19 patients.

Methodist was the first to report the rapid recovery of patients on ventilators and those with severe medical conditions after three days of treatment. The drug is called RLF-100, which has been approved by the FDA Emergency Use IND to use at multiple clinical sites.

According to a press release, independent researchers have reported that aviptadil blocked replication of the SARS coronavirus in human lung cells and monocytes.

According to a report, a 54-year-old man who contracted COVID-19 while being treated for rejection of a double lung transplant and who came off a ventilator within four days. According to the report, other similar results were seen in more than 15 patients.

# Clinical Development Path

- Intravenous Aviptadil for Critical COVID-19 on ventilation  
clinicaltrials.gov NCT04311697  
**200+ Enrollment completed in P2b/3 Dec 2020**  
**-top line data January 2021**  
**FDA-approved expanded access protocol**
- Inhaled Aviptadil for mild to severe COVID-19 to prevent respiratory failure. Possible expansion to preventing COVID-19 in those exposed to SARS-CoV-2 virus  
clinicaltrials.gov NCT0456350  
**Initiated Dec 2020 with Covance**
- Expanded Access Protocol for Critical COVID-19 with severe comorbidity clinicaltrials.gov NCT04453839  
**230 Patients enrolled.**  
**72% survival seen in the first 100 patients**  
**Additional analyses pending**

## Clinical Development Path

## New Initiatives

- Contract signed to supply drug to I-SPY clinical trial platform led by Quantum Leap Healthcare Collaborative.
- Inclusion in NIH TESICO/ACTIV3b Trial

# ZYESAMI™ (Aviptadil)

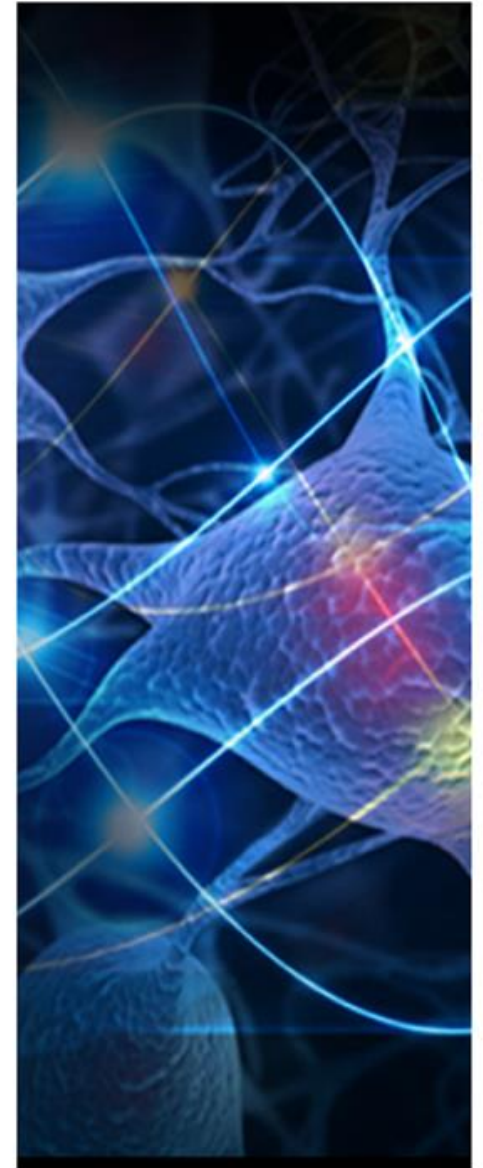
## Conclusions

- In vitro evidence of:
  - SARS virus replication inhibition
  - Increased surfactant production
  - Inhibition of cytokine synthesis
  - Upregulation of Surfactant production
- Case:Control study demonstrates association between VIP blood levels and increased survival
- Prospective clinical data in high-morbidity patients with COVID-19 Respiratory Failure demonstrates:
  - 6-fold improved survival on hazard ratio
  - 10-fold improved recovery from respiratory failure
  - 6.1 point mean difference on WHO ordinal scale
  - 4-fold improvement in PaO<sub>2</sub>:FiO<sub>2</sub> ratio

# NeuroRx NRX-101 for Suicidal Depression and PTSD

Bringing Hope to Life

- NMDA antagonist mechanism for suicidal depression is now well understood and validated by Spravato® (esketamine) approval.
- The challenge is to block NMDA with an orally-available drug that does not cause hallucinations, is not addictive, is not neurotoxic, does not cause vomiting, and does not cause blood pressure spikes.
- NeuroRx has pioneered a patented dual-targeted mechanism of action (NMDA+5HT2A antagonism) in order to achieve a high level of NMDA blockade without NMDA side effects. More than 30 patents worldwide with exclusivity to 2033.
- NRX-101 is the first NeuroRx compound to advance to phase 3 with FDA Breakthrough Therapy Designation, a Special Protocol Agreement, Biomarker letter of Support, and Fast Track Designation.
- **NeuroRx is enrolling patients who are acutely suicidal and severely depressed in the hospital emergency department and seeing treatment responders go home in 2-3 days and stay home without relapse.**
- Path to NDA filing by year end 2021



# A \$24 billion addressable market in depression, PTSD and other mood disorders with no new class of drugs in 40 years

## Unmet medical need/life-threatening condition

- We believe no previous drug has targeted Bipolar Depression or PTSD with suicidal ideation
- SSRI antidepressants are contraindicated in suicidal depression

## Payer studies demonstrate high willingness to pay

- Payers have signaled no formulary restrictions under \$10,000 per patient
- ECT may be lifesaving, but we believe alternatives are in high demand
- Hospitalization + ECT costs \$20,000–\$49,000 per episode
- Current innovative drugs cost \$1,000/month and payer surveys demonstrate willingness to pay at current levels for drugs that confer additional benefits
- Physician/hospital surveys demonstrate high receptivity

**\$2BN**

Peak sales opportunity  
for bipolar depression

**\$5 BN**

Peak sales opportunity  
for PTSD

**150,000**

Admitted to psych  
hospitals for ECT annually

**50,000**

Avoidable deaths per year


**\$20,000+**

Per patient cost of  
hospitalization & ECT

# Of the current NMDA-targeted drugs in development for depression Only NeuroRx has Composition of Matter Patent Protection

Five patent families, 60+ filed applications, 30+ issued patents in US/EU/CN/JP/KO/AU

**Composition of matter Patent for NRX-101**

  
US010583138B2

(12) <b>United States Patent</b> Javitt	(10) Patent No.: <b>US 10,583,138 B2</b> (45) Date of Patent: <b>Mar. 10, 2020</b>
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**Pharmaceutical composition for treatment of depression  
and associated suicidality with DCS / Lurasidone**

Other sponsors of NMDA-targeted drugs for depression have no known composition of matter patents. Combinations involving dextromethorphan, d-methadone, and S-ketamine are identified in the spec of US 10,583,138 and will be the subject of future patent claims

**Allowed Claims**

1. A pharmaceutical composition for treatment of depression and associated suicidality comprising:  
an NMDAR-antagonist effective amount of D-cycloserine; and  
an effective amount of an atypical antipsychotic that is a combined dopamine D2/5-HT2A receptor antagonist, wherein the NMDAR-antagonist effective amount of D-cycloserine is sufficient to produce a sustained blood plasma concentration in excess of 25 microgram/mL, but lower than 125 microgram/mL, and wherein the atypical antipsychotic is lurasidone, and wherein the effective amount of the lurasidone is between 20 mg-200 mg per day.
2. The pharmaceutical composition of claim 1, wherein the NMDAR-antagonist effective amount of D-cycloserine is in excess of 500 mg/day and less than 1000 mg.
3. The pharmaceutical composition of claim 1 wherein the NMDAR antagonist effective amount of D-cycloserine is in excess of 10 mg/kg/day, and is less than 25 mg/kg/d.
4. The pharmaceutical composition of claim 1, wherein the pharmaceutical composition is formulated for sustained release.
5. The pharmaceutical composition of claim 1, further comprising an enteric coating.
6. The pharmaceutical composition of claim 1, wherein the NMDAR-antagonist effective amount of D-cycloserine is provided as a prodrug.

\* \* \* \* \*

## Suicidal Bipolar Depression is an Unmet Medical Need

40%-60% of suicides may be linked to Bipolar Depression

- More than **5.7 million people in the US** have Bipolar Disorder<sup>1</sup>
- **28% of patients with bipolar disorder** attempt suicide over 5 years<sup>2</sup>
  - 50%-80% attempt suicide over their lifetime
  - 11%-20% of individuals with bipolar disorder succumb to suicide<sup>3</sup>
- Substance / drug abuse is high
- Individuals **20-30 x more likely** to attempt suicide than general population<sup>3</sup>
- **3,000-5,000 people each day** present with ASIB in Bipolar Depression
- USA **~25K-40K** suicides annually<sup>4</sup>, **60%**<sup>3</sup> may be linked to Bipolar Disorder
- USA 80% of ~ 175K ASIB Bipolar Dep. Pats. Receive hospital care<sup>5</sup>
- Science shows Suicidality is a treatable condition – not same as depression

**Bipolar Depression is uniquely lethal condition**  
**Patients at risk for suicide excluded from virtually all studies**

1. <http://www.nimh.nih.gov/health/statistics/prevalence/bipolar-disorder-among-adults.shtml>

2. Pallaskorpi, S. et. al. Incidence and predictors of suicide attempts....disorders: A 5-year follow-up study Bipolar Disorders 2017; 1–10


3. Pompili, M, Gonda, X, Bipolar Disorders 2013; 15: 457-490

4. Suicide, Facts at a glance," US CDC, National Center for Injury Prevention and Control

5. LEK study 2015 – data on file

## Approaches to Valuation of NeuroRx

- Value of NeuroRx should correspond to valuation of its two drug portfolios
- Public Market Valuation of the COVID/Respiratory portfolio mirrors Relief Therapeutics SWX:RLF
- NeuroRx has 50% of all US, Canada, Israel profits in ZYESAMI™, 15%-20% in EU and rest of world
- By this analysis, the merger valuation (\$850 million including earnouts is justified by the COVID portfolio alone)

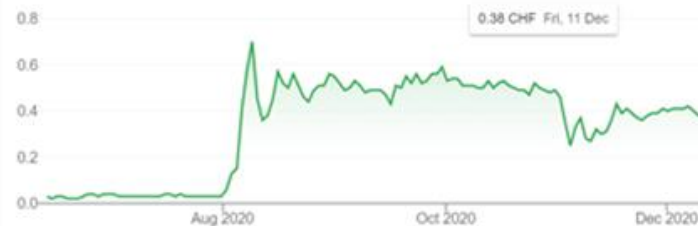
	
Ticker	SWX:RLF
Drug	RLF-100
Mechanism	Alveolar Type2 Rescue
Target	COVID-19 ARDS, Sarcoid
Stage	P2b/3
Market Cap	\$1.275 B

RELIEF THERAPEUTICS Holding SA  
SWX: RLF

0.38 CHF +0.0040 (1.05%) ↑

11 Dec, 17:30 GMT+1 · Disclaimer






1 day 5 days 1 month **6 months** YTD 1 year 5 years Max



Open	0.38	Div yield	-
High	0.38	Prev close	0.38
Low	0.37	52-wk high	0.80
Mkt cap	1.258	52-wk low	0.00080
P/E ratio	662.07		

## The Market is Welcoming New Entrants in Psychiatry

- All drugs in the new generation are old molecules
- Axsome components can be bought “off the shelf” in pharmacies, no composition of matter patent
- NeuroRx components are special-order only in pharmacies, now protected by composition of matter

					
Ticker	NasdaqGS: RLMD	NasdaqGM: AXSM	NasdaqGM: KRTX	NasdaqGM: SAGE	NYSE:BHVN
Drug	D-methadone	Dextro- methorphan + Bupropion	KarXT	Allo- pregnenalone	CGRP platform Glutamate platform
Mechanism	Channel Blocker	Channel Blocker	D2 Dopamine	GABA Inhibitor	
Target	Treatment Resistant Dep.	Treatment Resistant Dep.	Schizophrenia	Treatment Resistant Dep	Migraine Pain Impulse Control
Stage	P2 success	P3 success	P2 success	Approval	Approval
Market Cap	<b>\$566 Million</b>	<b>\$3 Billion</b>	<b>\$2.7 Billion</b>	<b>\$3.8 Billion</b>	<b>\$5.3 Billion</b>

