NRx Pharmaceuticals, Inc.
Corporate Presentation April 2022

Nasdaq: NRXP
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Overview
Multi-billion Dollar Potential in Psychiatry and Respiratory

<table>
<thead>
<tr>
<th>Psychiatry</th>
<th>Respiratory</th>
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<tbody>
<tr>
<td>NRX-101</td>
<td>ZYESAMI® (aviptadil acetate)</td>
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<tr>
<td>Bipolar depression with suicidality</td>
<td>Critical COVID-19 (ARDS)</td>
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<tr>
<td><em>Breakthrough Therapy designation &amp; SPA</em></td>
<td><em>Fast Track</em></td>
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- First “composition of matter” patented NMDA-targeted antidepressant – (oral, non-addictive)
- NRX-101 Phase 2 Trial in sub-acute suicidal bipolar depression initiated 2Q 2022
- NRX-101 SPA Phase 3 Registration Trial in acute suicidal bipolar depression expected to start 2H 2022 with commercial supply (<150 patients)
- Intravenous Critical COVID-19 ARDS
  - Completed P2b/3 trial, re-submitted for EUA Feb 2022
  - NIH pivotal trial data expected 2H 2022
- Potential in other acute and chronic lung disorders
- Enabling commercial supply

Two Phase 3 “Shots on Goal” with potential to contribute to 2023/2024 Revenue
Leadership Team
Committed to rapid, cost efficient, and impactful drug development

Robert Besthof, MIM – Interim Chief Executive Officer

Randy Guggenheimer, MBA – Chief Business Officer
25 years in Life Science Investment Banking. Senior positions at Lehman Brothers, Dresdner. Kleinwort Wasserstein. Significant experience in life sciences financings, M&A

Rick Panicucci, PhD – CMC and Technical Operations Advisor
25 years manufacturing leadership. Head of CCP, Novartis. VP of Manufacturing, WuXi Apptec

Ira Strassberg – Chief Financial Officer
30+ years of finance and accounting experience, including serving on a public company board of directors, CFO of several billion-dollar financial service companies and Deputy CFO of Cantor Fitzgerald, L.P.

Alessandra Daigneault, JD – Chief Corporate Officer, General Counsel, Secretary
30+ years of corporate and legal experience. M&A partner at leading law firms. General Counsel, Teligent and successor public companies

Molly Cogan – Senior Director of Global Communications
15 years international public affairs and communications experience in healthcare, digital health tech, transportation and real estate
### Experienced Board of Directors

**Drug development, health policy, biosecurity**

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Role</th>
<th>Experience/Biography</th>
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<tbody>
<tr>
<td>Jonathan C. Javitt, MD, MPH</td>
<td>Co-Founder</td>
<td>25 years in drug development&lt;br&gt;Participated in 6 successful drug and device launches&lt;br&gt;Blockbuster drugs at Merck, Allergan, Eyetech&lt;br&gt;President-commissioned White House health advisor&lt;br&gt;Prof. Johns Hopkins University</td>
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<tr>
<td>Patrick Flynn, MBA</td>
<td>Chair, Audit &amp; Compensation Committees</td>
<td>30 years senior executive experience&lt;br&gt;CEO Health Dialog – exit to BUPA International&lt;br&gt;Bank of America (15 years), VP World Banking and Risk Management&lt;br&gt;BS Finance, Wharton School, University of Pennsylvania</td>
</tr>
<tr>
<td>Sherry A. Glied, PhD.</td>
<td></td>
<td>Dean, NYU Wagner&lt;br&gt;Former Assistant Secretary for Health (ASPE)&lt;br&gt;Health Economist, Mental Health Policy Expert</td>
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<tr>
<td>Aaron J. Gorovitz, JD</td>
<td></td>
<td>General Counsel, AHG Group</td>
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<td>Chaim Hurvitz</td>
<td></td>
<td>Former Director and President, Teva International Group&lt;br&gt;Chairman, CH Health</td>
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<td>Lt. General H.R. McMaster</td>
<td></td>
<td>Former National Security Advisor, U.S. Army (ret.)</td>
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<tr>
<td>Daniel E. Troy, JD</td>
<td>Chair, Nominating &amp; Corporate Governance Committee</td>
<td>Former General Counsel, GSK&lt;br&gt;Former Chief Counsel, U.S. Food &amp; Drug Administration</td>
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## NRx R&D Pipeline

<table>
<thead>
<tr>
<th>Indication</th>
<th>Compound</th>
<th>Pre-clinical</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Regulatory Interactions</th>
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<tr>
<td><strong>PSYCHIATRY</strong></td>
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<tr>
<td>Bipolar Depression with Suicidal Ideation and Behavior</td>
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<tr>
<td>Severe Bipolar Depression in patients with ASIB</td>
<td>NRX-100 / NRX-101™</td>
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<td>Breakthrough Therapy Designation, SPA, Biomarker Letter of Support</td>
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<tr>
<td>Bipolar Depression in patients with SSIB</td>
<td>NRX-101™</td>
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<td><strong>RESPIRATORY/Covid-19</strong></td>
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<tr>
<td>Critical COVID-19 / Acute Respiratory Failure</td>
<td>Intravenous ZYESAMI® (Aviptadil)</td>
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<td>Fast Track</td>
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<tr>
<td>Critical COVID-19 / Acute Respiratory Failure – NIH</td>
<td>Intravenous ZYESAMI® (Aviptadil)</td>
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<tr>
<td>Severe COVID-19</td>
<td>Inhaled ZYESAMI® (Aviptadil)</td>
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<td>Study Paused</td>
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<td><strong>ARDS</strong></td>
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<tr>
<td>Acute Respiratory Distress Syndrome</td>
<td>VIP</td>
<td>Investigator Initiated Study</td>
<td></td>
<td></td>
<td>Data and rights held by The Research Foundation for the State University of New York; NRx has a license</td>
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Why target Suicidal Bipolar Depression?

Suicide kills ~50,000 Americans annually*

If you know two people with bipolar depression, one will attempt suicide
If you know five people with bipolar depression, one will succeed

*Centers for Disease Control – all suicides
NRX-101 offers a differentiated profile for Suicidal Bipolar Depression with an FDA agreed upon path to NDA
Phase 3 with FDA Breakthrough Therapy Designation

NMDA – A Validated Mechanism
• Depression & Suicidality
• Esketamine, NRX-101 Phase 2, etc.

Addresses High Unmet Need
• Treats depression and suicidality (bipolar space)
• Oral, not addictive (not scheduled), avoids hallucinations
• Outpatient

Composition of Matter Patent
• NRx has a composition of matter patent for NRX-101 and an array of NMDA+5HT2A compounds,
• Five patent families, 60+ applications, 30+ issued patents

FDA Agreed Upon Regulatory Path
• Special Protocol Agreement, Breakthrough Therapy designation

Efficient Clinical Development Path to NDA
• Seeking to replicate P2 study
• NRX-100 (144 pts.) NRX-101 (~80 pts.) pivotal study (severely depressed and acutely suicidal) to start 2H22
• Path to NDA filing in 2023

Exploring expansion in earlier population
• NRX-101 Phase 2 trial (Bipolar Depression in sub-acute suicidality) initiated 2Q 2022
The NRx Discovery

Simultaneous Blockade of NMDA and 5-HT$_{2A}$

D-Cycloserine & Lurasidone
oral & non-addictive combination

DCS (D-Cycloserine)
Blocks Akathisia

Lurasidone
Blocks Psychosis

5-HT$_{2A}$ Receptor

Psychosis

NMDA Receptor

DCS Modulates the Glycine site of the NMDA receptor

Direct NMDA channel blockers (e.g., ketamine) all cause psychosis

5-HT$_{2A}$ blockade blocks the side effects of NMDA antagonist
STABIL-B Phase 2 Data* in Patients with Severe Bipolar Depression, Acute Suicidal Ideation & Behavior (ASIB)

If Phase 2 results are replicated in Phase 3, this will meet criteria for FDA approval

- Five human studies have shown a positive effect of DCS on depression and/or suicidal ideation
- Primary endpoint is mean MADRS score over 42 days
- A clinically and statistically significant difference (p=.03) was seen on the mixed model through day 42. The mean 7.7 point difference on MADRS is similar to or larger than that seen with Esketamine
- 40% relapse in control group, no relapse in NRX-101 group
- Patients who would otherwise have been in the hospital for two weeks and gotten electroconvulsive therapy (ECT), went into remission and were discharged

*www.clinicaltrials.gov/ct2/show/NCT02974010?term=neurorx&rank=4
Though numerous drugs have been approved for MDD and Bipolar Depression, faster, more robust response, and reduction of suicidality remain the unmet need.

<table>
<thead>
<tr>
<th>Drugs for Major Depressive Disorder (“MDD”)</th>
<th>Drugs for Bipolar Depression</th>
</tr>
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<tbody>
<tr>
<td>123 and counting</td>
<td>- all antipsychotics</td>
</tr>
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</table>

### Warning
- Increased risk of Suicide

### No Suicidality

### Sub-acute Suicidality

#### Drugs for Suicidal Major Depression

#### Drugs for Suicidal Bipolar Depression
- None -
A multi-billion dollar addressable market in Bipolar Suicidal Depression and future indications including PTSD

Currently

- No drug is approved for high unmet need of Bipolar Depression with ASIB or PTSD with suicidal ideation
  - SSRI antidepressants have warning for increased suicidality
  - ECT has significant limitations and side-effects, Hospitalization + ECT costs $20,000–$49,000 per episode

Potential Change in Treatment Paradigm

- Rapid stabilization with ketamine and discharge after 1-2 days with oral non-addictive drug
- Physician/Payer studies demonstrate high receptivity

<table>
<thead>
<tr>
<th>$2-4BN</th>
<th>Market Potential for bipolar depression &amp; suicidality</th>
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<tbody>
<tr>
<td>$5 BN</td>
<td>Market Potential for PTSD</td>
</tr>
<tr>
<td>150K – 180K</td>
<td>Admitted to psych hospitals for bipolar depression with ASIB annually in the US. (2-3 times that number have bipolar depression with SSIB)</td>
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<tr>
<td>~50,000</td>
<td>Avoidable deaths per year</td>
</tr>
<tr>
<td>$20,000+</td>
<td>Per patient cost of hospitalization &amp; ECT</td>
</tr>
</tbody>
</table>
Treatment of Lung Injury from COVID-19 and other conditions
VIP believed to protect the alveolar type-II cell by:

- upregulating surfactant production
- blocking cytokine production
- inhibiting coronavirus replication in the type-II cells
ZYESAMI® Showed Benefit on Survival from COVID-19 Respiratory Failure in Patients in our Phase 2b/3 Study in Critical COVID-19

Near Statistical Significance on primary endpoint: Alive and Free of Respiratory Failure at Day 60 (P=.085)
- Statistical significance on survival alone (P=.03)

Prespecified Endpoints
- Alive and Free of Respiratory Failure at 28 and 60 days (primary)
- Alive at 60 days (secondary)

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Percentages</th>
<th>Odds Ratio (95% CI) Controlling for baseline severity and site of care</th>
</tr>
</thead>
</table>
| Alive and Free of Respiratory Failure at Day 60 | ZYESAMI 62.8%  
Placebo 50.0% | 2.621 (1.200, 5.628)  
P<.02 |
| Survival to Day 60 (may still be in Hospital) | ZYESAMI 75.5%  
Placebo 54.0% | 4.346 (1.909, 9.895)  
P<.001 |
Aviptadil Biologic effect in preventing IL-6 “Cytokine Storm” and Respiratory Distress Ratio seen in P2b/3 and open-label trials

Two Prespecified Biomarkers associated with improved clinical outcomes

**IL-6 Trajectory**

- Placebo had 5x higher mean IL-6 at day 7 vs. aviptadil (P<.03)
- Day 7 IL-6 level strongly predicted achieving primary endpoint and survival at day 60 (P<.0001)

**Respiratory Distress Ratio**

- Significant improvement in RDR vs. placebo at day 1 and over the first week (P<.02)
- Higher mean RDR predictive of achieving primary outcome and survival at day 60 across all patients and all sites (P<.001)

*Ratio of arterial oxygen partial pressure (PaO2) to fractional inspired oxygen partial pressure (FiO2), PaO2/FiO2.*
ZYESAMI® Ongoing Clinical Trials

Government and Industry Sponsorship

**ACTIV-3b Critical Care (TESICO) – sponsored by NIH**

- Patients with Critical COVID-19
- IV administration of aviptadil and remdesivir
  
  Randomization: 1) aviptadil; 2) aviptadil + remdesivir; 3) remdesivir; 4) placebo
- ZYESAMI is the sole remaining new drug candidate under investigation in ACTIV-3b Trial
- Target enrollment: 640; enrollment at end of March 2022 ~ 465 patients in aviptadil & placebo arms
- Expected readout 2H 2022

Inhaled clinical study – Phase 2/3 – currently paused
ZYESAMI® Positioned to fill a high unmet need in Critical COVID-19

Critical COVID-19

ZYESAMI is a unique addition to standard of care as the only treatment with a pleitropic mechanism that helps protect the ATII Cell (surfactant production), addresses multiple cytokines, and inhibits virus replication, that has shown survival benefit at day 60 in Critical COVID-19.

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Critical</th>
</tr>
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<tbody>
<tr>
<td>Steroids</td>
<td>ZYESAMI</td>
<td>Remdesivir</td>
<td>Tocilizumab</td>
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</table>
COVID-19 Perspective

**COVID-19 TO DATE**

- **~80 M Cases in US, 977K deaths:** Pattern of spikes – rapidly strain regional ICU capacity (~5K daily deaths in Jan 2022 peak)

- **Fast evolving treatment algorithms:** Critical COVID-19 key unmet need

- Vaccination hesitancy in US & low ex-US rates; emergence of strains

**COVID-19 FUTURE**

Likely to become endemic, similar to FLU spikes*

- ~ 200k-300K** ICU / Critical COVID-19 cases per year; 2-3 times as many Severe Cases

- Adding to already existing 200K ARDS cases

- Immunocompromised

Critical & Severe COVID Cases will require combinations of various agents

- Mortality in ICU similar to ARDS ~ 30%

Vaccination rates increasing, but breakthrough and virulence of variants key uncertainty, until global vaccination 70%+

Source: CDC Mar.31, 2022. * 2018-2019 FLU season estimated to account ~500K hospitalizations, 2017-2018 accounted for ~ 800K hospitalizations. Source CDC ** internal estimate: 300 daily deaths at 30% mortality = 1,000 new ICU cases per day ~ 300K cases per year
## ZYESAMI®

### Commercial Path to Market

<table>
<thead>
<tr>
<th>Rapidly Scalable Infrastructure</th>
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<tr>
<td>nephron</td>
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<tr>
<td>alcami</td>
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<tr>
<td>CardinalHealth™</td>
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<tr>
<td>IQVIA</td>
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</table>
## Multiple Applications for ZYESAMI® Across Respiratory Disorders

Non-COVID market opportunity may exceed COVID market opportunity

<table>
<thead>
<tr>
<th>COVID-19 &amp; Sequalae</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Critical</th>
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</thead>
<tbody>
<tr>
<td>Life Cycle COVID-19</td>
<td>Outpatient</td>
<td>Inhaled</td>
<td>IV/Inhaled</td>
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*Expect baseline COVID-19 to remain*

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<tr>
<th>Sepsis-Related ARDS</th>
<th>200,000 US cases each year&lt;sup&gt;1&lt;/sup&gt;</th>
<th>No approved drugs (synergy with COVID-19 study)</th>
<th>7 of 8 patient success in Phase 1</th>
</tr>
</thead>
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<tr>
<th>Sarcoidosis</th>
<th>185,000 US patients seek treatment each year&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Primarily people of color / no approved drugs</th>
<th>Positive Phase 2 open label POC data&lt;sup&gt;3&lt;/sup&gt;</th>
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<tr>
<th>Other</th>
<th>Checkpoint Inhibitor Pneumonitis (10%-20%)&lt;sup&gt;4&lt;/sup&gt; – positive case reports</th>
<th>COPD (subtypes)</th>
<th>Other indications</th>
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<tr>
<td></td>
<td>Delay of lung transplant</td>
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4) Frye, B.C., et. al, Vasoactive Intestinal Peptide in Checkpoint Inhibitor–Induced Pneumonitis, NEJM 2020; 382:2573-2574NEJM
Summary
Publicly traded on NASDAQ following SPAC merger completed in May 2021

<table>
<thead>
<tr>
<th>Financial Position</th>
<th>NRx Cash Position:</th>
<th>Total Shares Outstanding:</th>
<th>Potential Earnouts as disclosed in public filings</th>
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<tr>
<td>NRXP</td>
<td>$27.6 million as of 12/31/2021</td>
<td>66.4 million shares as of 3/27/2022</td>
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<td></td>
<td>$25 million raised in February 2022</td>
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NRXP Cash Position:
- $27.6 million as of 12/31/2021
- $25 million raised in February 2022

Total Shares Outstanding:
- 66.4 million shares as of 3/27/2022

Potential Earnouts as disclosed in public filings
Two Phase 3 “Shots on Goal” in Areas of Very High Unmet Need

Multi-billion Dollar Potential in Psychiatry and Respiratory

### Psychiatry – NRX-101
**Bipolar Depression with Suicidality**
- ✔ Breakthrough Therapy designation & SPA
- ✔ Oral & non-addictive NMDA
- ✔ Composition of matter patent
- ✔ Fewer than 150 patients in registrational study

### Respiratory – ZYESAMI®
**Critical COVID-19 and other Diseases**
- ✔ Fast Track designation
- ✔ NIH-funded P3 registrational study ongoing, only agent in ACTIV-3b for Critical COVID-19
- ✔ Commercial path to market

Data readouts expected in the next 12-18 months

Revenue potential in 2023/2024

Demonstrated ability to execute

Applying Innovative Science to Known Molecules