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NRx Pharmaceuticals, Inc. (NRXP) – Buy

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Study May Proceed (letter) – A New Way to Treat Pain

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NRx Pharmaceuticals announced further alignment with the FDA Division of Anesthesiology, Addiction Medicine, and Pain Medicine in connection with the development of NRX-101 for treatment of Chronic Pain. The communication took the form of a "Study May Proceed" letter, authorizing NRx to proceed with opening a pharmacokinetic study under the newly-established Investigational New Drug file for treatment of Chronic Pain. This is a formal letter that generally follows clearance of an IND and outlines nonclinical and clinical requirements suggested by the review division.

Investment Highlights

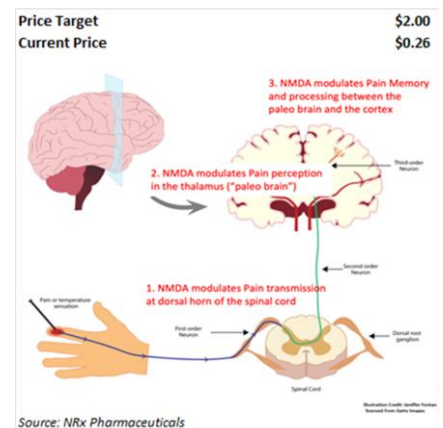
NRX-101 for Pain: Academic and Pre-clinical data indicate that pain perception is modulated by the NMDA receptor as it travels through the peripheral nervous system to the central nervous system, and up to the brain. New academic and pre-clinical research shows that NMDA receptors are active at each step of the pain pathway: From the focal point of our pain, through the peripheral nervous system, up our spinal cord to the brain. D-Cycloserine (DCS), an active ingredient of NRX-101, is a potent NMDA antagonist at high-enough doses. The company is hoping to develop NRX-101 to treat chronic pain by modulating the NMDA receptor at every step of the pain pathway.

NRX-101 Remains the Key Driver: What is it? It is a fixed dose combination of D-cycloserine and lurasidone. It has been granted Fast Track Designation, Breakthrough Therapy Designation, It has a Special Protocol Agreement, and a Biomarker Letter of Support from the FDA for Severe Bipolar Depression with Acute Suicidal Ideation. In June, the Company announced an agreement with Alvogen Pharmaceuticals and Lotus Pharmaceuticals to fund the late-stage clinical trials of NRX-101 and to bring it to a global patient population with suicidality. Upon payment of the first \$10 million milestone, triggered by positive clinical data from the ongoing trial and FDA comments, Alvogen will be responsible for all development, regulatory and commercial costs of NRX-101 in this indication.

Milestones: NRx is entitled to receive \$10 million upon a successful Phase 2b/3 data readout and completion of an FDA Type B meeting. NRx is eligible to receive payment of \$5 million upon receipt of FDA approval for NRX-101 from the recent partnership deal (June 2023).

Valuation: We project our model out to 2033. We apply a 30% risk cut to our projected revenues in our product model in addition to our 30% risk rate applied in our Free Cash Flow to the Firm (FCFF), discounted EPS (dEPS), and Sum-of-the-Parts (SOP) models. We do assume additional capital raises. We also assume the company repurchases stock in its outyears, (or we may even see a license deal that brings in non-dilutive capital and reduces our assumed development expenses. The result is equal-weighted and averaged and rounded to the nearest whole number to derive our 12-month projected price target of \$2.0.

Risks to our thesis include: 1. Regulatory Approvals; 2. Clinical Science 3. Intellectual Capital 4. Dilution.



| Stock Data | | |
|---|-------------|--------|
| 52-Week Range | \$0.22 | \$1.54 |
| Shares Outstanding (mil.) | 83.2 | |
| Market Capitalization (mil.) | \$22 | |
| Enterprise Value (mil.) | \$7 | |
| Debt to Capital | 0% | |
| Book Value/Share | \$7.69 | |
| Price/Book | 10.0 | |
| Average Three Months Trading Volume (K) | 442 | |
| Insider Ownership | 33.0% | |
| Institutional Ownership | 11.5% | |
| Short interest (mil.) | 2.3% | |
| Dividend / Yield | \$0.00/0.0% | |



Valuation: Our valuation for NRx Pharmaceuticals is based on revenue projections out to 2033. We know the markets are quite large for depression, PTSD, and related disorders. Success in one area leads to other indications. Our model assumes the company does raise additional capital. We remove the prior assumption that with success, the company can repurchase stock (in the out-years). We have previously assumed a license deal (which occurred in June 2023) and this should bring in non-dilutive capital but we also factor in additional raises near term. As a result, we are returning to our original assumptions, and as such our target valuation falls back to \$2.0 (which was based on a fully diluted share count in 2033). In our model, we assume a rising SG&A and R&D as the company commercializes its products and expands its pipeline, coupled with an improving cost of goods sold (COGS) initially at 20% and at scale falling to just 10%. Our valuation models: Free Cash Flow to the Firm (FCFF), discounted EPS (dEPS), and Sum-of-the-Parts (SOP), use a 30% discount rate. We select 30% for micro-capitalized growth companies, and this represents our highest risk rate. The result of these three models is then equal-weighted and averaged, and rounded to the nearest whole number to provide a 12-month target price.

Exhibit 1. Free Cash Flow Model

| | | |
|--------------|----|------|
| Average | \$ | 2 |
| Price Target | \$ | 2 |
| Year | | 2024 |

DCF Valuation Using FCF (mln):

| units ('000) | 2022E | 2023E | 2024E | 2025E | 2026E | 2027E | 2028E | 2029E | 2030E | 2031E | 2032E | 2033E |
|------------------------|-----------|----------|----------|----------|-------|---------|---------|---------|---------|---------|---------|---------|
| EBIT | (39,816) | (48,076) | (27,920) | (28,199) | 9,519 | 131,234 | 216,946 | 310,656 | 480,362 | 531,066 | 594,126 | 688,204 |
| Tax Rate | 0% | 0% | 0% | 0% | 5% | 8% | 10% | 18% | 24% | 28% | 30% | 31% |
| EBIT(1-t) | (39,816) | (48,076) | (27,920) | (28,199) | 9,043 | 120,735 | 195,252 | 254,738 | 365,075 | 382,367 | 415,889 | 474,861 |
| CapEx | | | | | | | | | | | | |
| Depreciation | | | | | | | | | | | | |
| Change in NWC | | | | | | | | | | | | |
| FCF | (39,816) | (48,076) | (27,920) | (28,199) | 9,043 | 120,735 | 195,252 | 254,738 | 365,075 | 382,367 | 415,889 | 474,861 |
| PV of FCF | (67,289) | (62,499) | (27,920) | (21,692) | 5,351 | 54,955 | 68,363 | 68,608 | 75,635 | 60,936 | 50,984 | 44,779 |
| Discount Rate | 30% | | | | | | | | | | | |
| Long Term Growth Rate | 1% | | | | | | | | | | | |
| Terminal Cash Flow | 1,653,826 | | | | | | | | | | | |
| Terminal Value YE2033 | 155,955 | | | | | | | | | | | |
| NPV | 473,455 | | | | | | | | | | | |
| NPV-Debt | - | | | | | | | | | | | |
| Shares out (thousands) | 269,006 | 2033E | | | | | | | | | | |
| NPV Per Share | \$ | 1.76 | | | | | | | | | | |

Source: Dawson James estimates

Exhibit 2. Discounted EPS Model

| | |
|-------------------|---------|
| Current Year | 2024 |
| Year of EPS | 2033 |
| Earnings Multiple | 15 |
| Discount Factor | 30% |
| Selected Year EPS | \$ 2.16 |
| NPV | \$ 3.06 |

Source: Dawson James estimates

| | | Discount Rate and Earnings Multiple Varies, Year is Constant | | | | | | |
|-------------------|---------|--|---------|---------|---------|--------|--------|--------|
| | | 2033 EPS | | | | | | |
| Earnings Multiple | | 3.1 | 5% | 10% | 15% | 20% | 25% | 30% |
| | | 5 | \$6.97 | \$4.58 | \$3.07 | \$2.10 | \$1.45 | \$1.02 |
| 10 | \$13.94 | \$9.17 | \$6.15 | \$4.19 | \$2.90 | \$2.04 | | |
| 15 | \$20.91 | \$13.75 | \$9.22 | \$6.29 | \$4.35 | \$3.06 | | |
| 20 | \$27.87 | \$18.34 | \$12.29 | \$8.38 | \$5.80 | \$4.08 | | |
| 25 | \$34.84 | \$22.92 | \$15.37 | \$10.48 | \$7.25 | \$5.10 | | |
| 30 | \$41.81 | \$27.51 | \$18.44 | \$12.57 | \$8.71 | \$6.12 | | |
| 35 | \$48.78 | \$32.09 | \$21.51 | \$14.67 | \$10.16 | \$7.14 | | |
| 40 | \$55.75 | \$36.68 | \$24.58 | \$16.76 | \$11.61 | \$8.16 | | |

Exhibit 3. Sum-of-the-Parts Model

| NRx Pharmaceuticals | LT Gr | Discount Rate | Yrs. to Mkt Peak | % Success | Peak Sales MM's | Term Val |
|---------------------|-------|---------------|------------------|-----------|-----------------|----------|
| NRX-101 for BPD | 1% | 30% | 5 | 80% | \$800 | \$2,759 |
| NPV | | | | | | \$1.77 |
| PTSD / Pain | 1% | 30% | 5 | 0% | \$800 | \$2,759 |
| NPV | | | | | | \$0.00 |
| NPV | | | | | | |
| | | | | | | 80% |
| MM Shrs OS (2030E) | | | | | | 269 |
| Total | | | | | | \$1.77 |

Source: Dawson James estimates

Risks to our thesis include 1. Regulatory Approvals; 2. Clinical Science; 3. Intellectual Capital 4. Dilution

- **Regulatory Approvals.** The company's products require regulatory approvals, and there can be no assurances that the requirements to achieve these approvals can be met. Furthermore, even if a drug product is approved, the regulators may impose limitations on the use or marketing of such product.
- **Clinical Science:** The company will need to demonstrate to its "sophisticated" clients (doctors and other physicians) that the product is effective, reliable, accessible, and marketable.
- **The Competitive Landscape & IP.** The company does have intellectual properties and knows how to protect the utility of its drugs; however, our patent position is highly uncertain.
- **Dilution:** The company is likely to incur losses for the foreseeable future until it is able to generate sufficient revenue from product sales. Our model assumes a rising share count. There can be no assurances that the company can successfully raise the capital required to execute its business strategy.

Exhibit 4. Income Statement

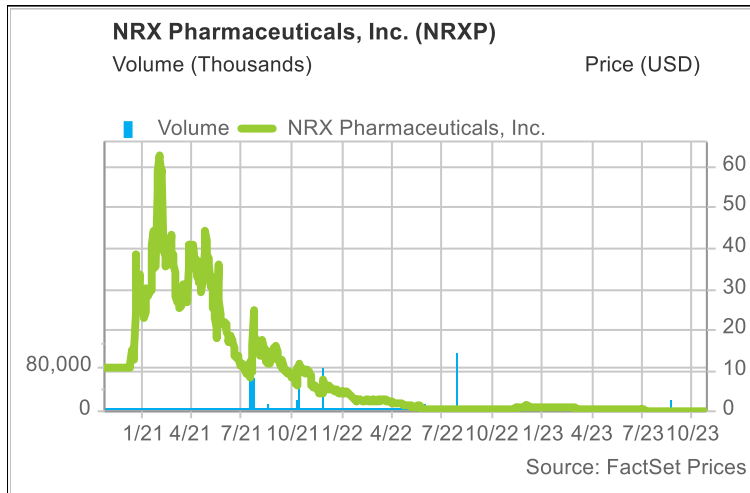
| NRx Pharmaceuticals: Income Statement | | | | | | | | | | | | | | | | |
|--|-----------------|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 000 : YE December 31 | 2022A | 1Q23A | 2Q23A | 3Q23E | 4Q23E | 2023E | 2024E | 2025E | 2026E | 2027E | 2028E | 2029E | 2030E | 2031E | 2032E | 2033E |
| Product sales | - | - | - | - | - | - | - | - | 50,000 | 200,000 | 300,000 | 400,000 | 600,000 | 660,000 | 726,000 | 798,600 |
| NRX-101 for BPD | - | - | - | - | - | - | - | - | 50,000 | 200,000 | 300,000 | 400,000 | 600,000 | 660,000 | 726,000 | 798,600 |
| PTSD / Pain | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Product Sales | - | - | - | - | - | - | - | - | 50,000 | 200,000 | 300,000 | 400,000 | 600,000 | 660,000 | 726,000 | 798,600 |
| Expenses | | | | | | | | | | | | | | | | |
| COGS | | | | | | | | | 12,000 | 40,000 | 54,000 | 60,000 | 90,000 | 99,000 | 101,640 | 79,860 |
| COGS % | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 24% | 20% | 18% | 15% | 15% | 15% | 14% | 10% |
| Research and Development | 17,027 | 3,650 | 3,873 | 5,108 | 7,801 | 20,432 | 24,519 | 29,423 | 23,538 | 18,830 | 19,019 | 20,921 | 25,105 | 30,126 | 30,427 | 30,731 |
| General and Administrative | 27,370 | 5,785 | 4,065 | 6,911 | 10,883 | 27,644 | 27,920 | 28,199 | 28,481 | 28,766 | 29,054 | 29,344 | 29,638 | 29,934 | 30,234 | 30,536 |
| Settlement Expense | - | - | 250 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Reimbursement of expenses from Relief Therapeutics | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Operating Expenses | 44,397 | 9,435 | 8,188 | 12,019 | 18,684 | 48,076 | 27,920 | 28,199 | 40,481 | 68,766 | 83,054 | 89,344 | 119,638 | 128,934 | 131,874 | 110,396 |
| Loss from Operations | (44,397) | (9,435) | (8,188) | (12,019) | (18,684) | (48,076) | (27,920) | (28,199) | 9,519 | 131,234 | 216,946 | 310,656 | 480,362 | 531,066 | 594,126 | 688,204 |
| Other (income) Expenses | | | | | | | | | | | | | | | | |
| Gain on extinguishment of debt | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Interest income | (249) | (156) | (145) | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Interest expense - Convertible note | 505 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Change in fair value of warrant liability | (255) | 1,772 | 663 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Change in fair value of Earnout Cash liability | (4,582) | (12) | 11 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Total other (income) expense | (4,581) | | | | | | | | | | | | | | | |
| Net Loss | (39,816) | (11,039) | (8,717) | (12,019) | (18,684) | (48,076) | (27,920) | (28,199) | 9,519 | 131,234 | 216,946 | 310,656 | 480,362 | 531,066 | 594,126 | 688,204 |
| Tax Rate | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 5% | 8% | 10% | 18% | 24% | 28% | 30% | 31% |
| GAAP Net Income (loss) | (39,816) | (10,933) | (8,845) | (12,019) | (18,684) | (48,098) | (27,920) | (28,199) | 9,043 | 120,735 | 195,252 | 254,738 | 365,075 | 382,367 | 415,889 | 474,861 |
| GAAP-EPS | (0.61) | (0.16) | (0.12) | (0.11) | (0.14) | (0.54) | (0.19) | (0.15) | 0.04 | 0.56 | 0.91 | 1.18 | 1.68 | 1.75 | 1.90 | 2.16 |
| GAAP EPS (dil) | (0.61) | (0.13) | (0.09) | (0.10) | (0.12) | (0.42) | (0.16) | (0.12) | 0.03 | 0.46 | 0.74 | 0.96 | 1.37 | 1.75 | 1.90 | 2.16 |
| Wgtd Avg Shrs (Bas) '000 | 65,767 | 67,454 | 73,221 | 109,313 | 130,406 | 95,099 | 150,062 | 194,209 | 213,881 | 214,738 | 215,598 | 216,462 | 217,329 | 218,200 | 219,074 | 219,622 |
| Wgtd Avg Shrs (Dil) '000 | 65,767 | 82,897 | 103,726 | 124,763 | 151,011 | 115,599 | 176,225 | 234,097 | 261,975 | 263,024 | 264,078 | 265,136 | 266,198 | 267,264 | 268,335 | 269,006 |

Source: Dawson James estimates, company reports

Companies mentioned in this report:

Important Disclosures:

Price Chart:



Price target and ratings changes over the past three years:

- Initiated – Buy – March 17, 2023 – Price Target \$3.0
- Update Report – March 27, 2023 – Price Target \$3.0
- Update Report – March 31, 2023 – Price Target \$3.0
- Price Target Change- April 3, 2023 Price Target goes from \$3.0 to \$9.0
- Update Report – April 5, 2023 – Price Target \$9.0
- Update Report – May 17, 2023 – Price Target \$9.0
- Update Report – June 5, 2023 – Price Target \$9.0
- Update Report – August 7, 2023 – Price Target \$9.0
- Update Report – August 15, 2023 – Price Target \$9.0
- Price Target Change – September 7, 2023 – Price Target goes from \$9.0 to \$2.0
- Update Report – October 2, 2023 – Price Target \$2.0
- Update Report – October 16, 2023 – Price Target \$2.0
- Update Report – October 26, 2023 – Price Target \$2.0

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- 1) **Buy:** The analyst believes the price of the stock will appreciate and produce a total return of at least 20% over the next 12-18 months.
- 2) **Neutral:** The analyst believes the price of the stock is fairly valued for the next 12-18 months.
- 3) **Sell:** The analyst believes the price of the stock will decline by at least 20% over the next 12-18 months and should be sold.

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Current as of 27-Sep-23

| | Company Coverage | | Investment Banking | |
|-----------------------------|-------------------------|-------------|---------------------------|---------------|
| Ratings Distribution | # of Companies | % of Total | # of Companies | % of Totals |
| Market Outperform (Buy) | 22 | 64.70% | 3 | 8.80% |
| Market Perform (Neutral) | 12 | 35.30% | 3 | 8.80% |
| Market Underperform (Sell) | 0 | 0% | 0 | 0.00% |
| Total | 34 | 100% | 6 | 17.60% |

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