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NRx Pharmaceuticals, Inc. (NRXP) – Buy

November 1, 2023

Ketamine Manufacturing Could be Lucrative

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NRx announced the signing of a development contract to manufacture a presentation of ketamine suitable for intravenous administration under current FDA manufacturing regulations. Existing supplies of Ketamine are not labeled for treatment of depression and suicidality and often do not conform to modern manufacturing requirements for single-dose injectable medications. We have not factored Ketamine into our revenue estimates.

Investment Highlights

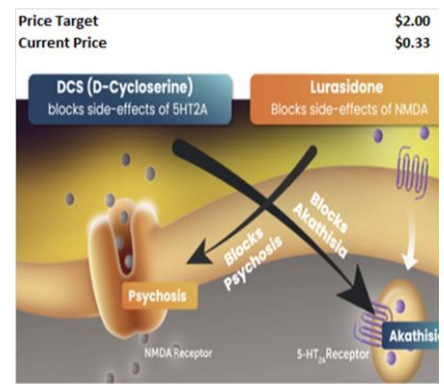
We asked management a few questions about the press release:

- What capacity and what margin (approx.)?** - “Essentially an unlimited capacity. With an API secured, sufficient for one million doses. The contractor has a unique blow-fill-seal plant capable of producing single-dose luer lock vials. In terms of margin: Cost ~ \$1.50 per dose. Johnson & Johnson (JNJ – Not Rated) is getting \$1000/dose for Esketamine.”
- Aren’t you acting as the middleman, i.e., NRXP doesn’t have its own manufacturing capability.** - “NRx is not the middleman. NRx is the pharmaceutical sponsor and will be the label-holder. For background info: Almost no biotech in the world owns a manufacturing plant. Big Pharma outsources half its manufacturing.”

The margin is in owning the label. With a label on ketamine, it becomes insurance reimbursable. Once there is a label on ketamine for psychiatry use, compounding pharmacy sources basically go-away.

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.



Source: NRx Pharmaceuticals

| Stock Data | | | |
|---|-------------|---|--------|
| 52-Week Range | \$0.22 | - | \$1.54 |
| Shares Outstanding (mil.) | 83.2 | | |
| Market Capitalization (mil.) | \$27 | | |
| Enterprise Value (mil.) | \$12 | | |
| Debt to Capital | 0% | | |
| Book Value/Share | \$7.69 | | |
| Price/Book | 10.0 | | |
| Average Three Months Trading Volume (K) | 674 | | |
| Insider Ownership | 35.6% | | |
| Institutional Ownership | 12.4% | | |
| 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

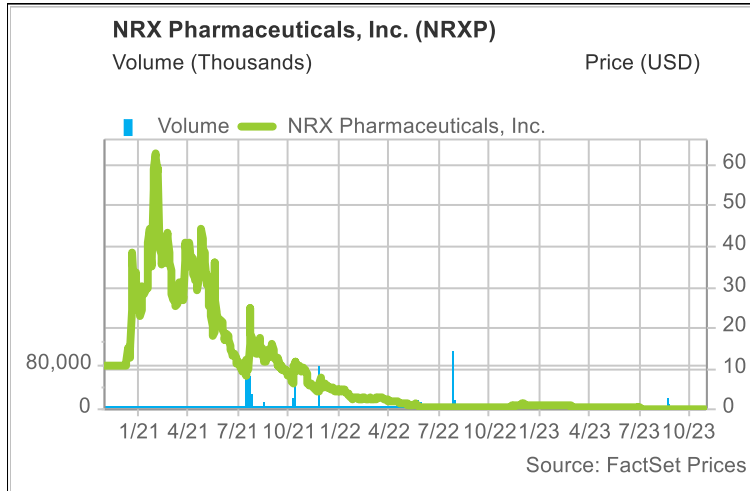
| NRx Pharmaceuticals: Income Statement | | | | | | | | | | | | | | | | |
|--|-----------------|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 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
- Update Report – November 1, 2023 – Price Target \$2.0

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- 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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