COWEN
AND COMPANY

Biotechnology

# Fate Therapeutics

Equity Research

Company Update

August 13, 2014

**Price: $6.00** (08/12/2014)
**Price Target: NA**

**OUTPERFORM (1)**

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## Key Data

| | |
|---|---|
| Symbol | NASDAQ: FATE |
| 52-Week Range: | $13.55 - 4.30 |
| Market Cap (MM): | $123.4 |
| Net Debt (MM): | $(52.3) |
| Cash/Share: | $2.64 |
| Dil. Shares Out (MM): | 22.6 |
| Enterprise Value (MM): | $76.7 |
| ROIC: | NA |
| ROE (LTM): | NA |
| BV/Share: | $2.21 |
| Dividend: | NA |

| FY (Dec) | 2013A | 2014E | 2015E |
|---|---|---|---|
| **Earnings Per Share** | | | |
| Q1 | $(2.92) | $(0.34)A | - |
| *Prior Q1* | - | *$(0.37)* | - |
| Q2 | $(4.51) | $(0.30)A | - |
| *Prior Q2* | - | *$(0.38)* | - |
| Q3 | $(4.81) | $(0.37) | - |
| *Prior Q3* | - | *$(0.38)* | - |
| Q4 | $(0.29) | $(0.37) | - |
| *Prior Q4* | - | - | - |
| Year | $(13.06) | $(1.38) | $0.41 |
| *Prior Year* | - | *$(1.50)* | - |
| P/E | NM | NM | 14.6x |
| Consensus EPS | $(13.06) | $(1.45) | $(0.91) |

Consensus source: Thomson Reuters

| | | | |
|---|---|---|---|
| **Revenue (MM)** | | | |
| Year | $1.0 | $0.0 | $50.0 |
| EV/S | 76.7x | - | 1.5x |

# *Interim Update An Incremental Positive, Mid-2015 Data Timeline Reiterated*

## The Cowen Insight

Fate reported positive interim safety review from the ongoing Phase 2 PUMA study of PROHEMA. While we can't make efficacy conclusions from this data, we believe that positive iMPC opinion is encouraging, and we await the next interim review by year end. There were no other material updates on the call in our view.

## Interim Safety An Encouraging Sign

As a reminder, the company used its novel, nutrient-rich wash buffer in the PUMA study, vs. the standard nutrient poor buffer in the prior trial of PROHEMA. While we see limited risk in switching buffers, nevertheless, there is a theoretical risk associated with any new ingredient/procedure introduced to bone marrow transplants. As such, a positive interim safety finding is encouraging. The company plans to conduct a second interim safety look at 12 patients treated on PROHEMA, which is anticipated in the second half of the year.

## Can't Conclude Efficacy From Interim Look

The interim safety look was conducted after 7 patients on PROHEMA and 3 in the control reported at least 6 engraftments (across both arms). We do not know how these engraftments were distributed across the two arms. However, the expected engraftment rate for the control arm is ~80%, therefore we can't make any conclusions based on the pre-specified engraftment trigger condition in the study design.

## Key Timeline Reiterated

Management reiterated the timeline for completion of the PUMA (adult) and PROMPT (pediatric) studies by mid-2015. At that point the company plans to commence a single pivotal trial that would enroll both adults and pediatric patients.

## Muscle Regeneration Program Moving Forward

In addition to the advances in PROHEMA clinical development, FATE also recently initiated a new program in the iPSC platform, specifically focused on muscle regeneration for muscle degenerative disease. This is an early stage project which we believe investors are not including in their valuation of FATE at this time.

# At A Glance

## Our Investment Thesis

Our thesis is based on Fate's core technology and expertise in the pharmacologic modulation of adult stem cells. If successful in Phase II and Phase III, we estimate that ProHema can gain significant share in the umbilical cord blood-derived HSCT market, along with share in the bone marrow- and peripheral blood-derived markets as well. Using conservative penetration assumptions for ProHema (16% of the overall allogeneic HSCT market), we project that it can be a $360M US/EU product in 2025, with peak sales of ~$515M in 2030. These numbers do not account for the upside that exists, should ProHema and follow-on products demonstrate utility in rare genetic disorders for which transplantation is not currently used as the standard of care. Fate is also developing Wnt7a analogs as *in vivo* modulators of muscle satellite stem cells. We believe that the combination of the ProHema opportunity with the potential upside from the Wnt7a analog program make FATE an attractive early-stage biotech play.

## Forthcoming Catalysts

- Initiation of PROMPT Phase II trial, 3Q14
- Initiation of the Phase I trial of ProHema in LSDs, 2H14
- Second interim safety data from Phase II PUMA trial, 2H14
- IND submission for Wnt7a analog program, YE14
- Full data from Phase II PUMA and PROMPT trials, mid-2015
- Initiation of the Wnt7a analog Phase I program, 2015

## Base Case Assumptions

- No significant delay in the ProHema development timelines
- Advancement of ProHema in pivotal development
- Advancement of Wnt7a analog candidate into clinical development

## Upside Scenario

- Positive ProHema clinical data in the rare genetic disorders (LSDs) trial
- Establishment of clinical proof-of-concept for Wnt7a analog in DMD
- Uptake of ProHema in bone marrow- and peripheral blood-sourced allogeneic SCTs

## Downside Scenario

- Delays and/or clinical setbacks in the development of ProHema
- Delays and/or setbacks in the development of the Wnt7a analog program
- A change in the appetite for early-stage company risk among healthcare investors

## Price Performance


Source: Bloomberg

## Company Description

Fate's hematopoietic stem cell (HSC) modulation platform is focused on the *ex vivo* optimization of HSCs used in allogeneic hematopoietic stem cell transplantation (HSCT). Its lead program ProHema, is a HSC therapeutic produced by modulation of umbilical cord blood, currently in Phase II development for adult hematologic malignancies. Fate plans pediatric ProHema studies for hematologic malignancies (3Q14) and rare, genetic lysosomal storage disorders (LSDs) (2H14). Fate is also developing an *in vivo* modulation strategy for muscle stem cells, known as satellite stem cells, using a Wnt7a analog therapeutic, with application in the treatment of muscular dystrophies, including DMD. This program is in preclinical development, with two candidates selected, IND submission anticipated by YE14, and advancement of one candidate into Phase I expected in 2015. Fate was founded in 2007 and went public in October 2013. The company is headquartered in San Diego, CA and has 33 employees.

## Analyst Top Picks

| | Ticker | Price (08/12/2014) | Price Target | Rating |
|---|---|---|---|---|
| Alimera Sciences | ALIM | $5.55 | $NA | Outperform |
| Idera Pharmaceuticals | IDRA | $2.87 | $NA | Outperform |

## Fate Quarterly P&L ($MM)

| ($MM) | Q1:13A | Q2:13A | Q3:13A | Q4:13A | 2013A | Q1:14A | Q2:14A | Q3:14E | Q4:14E | 2014E |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total ProHema revenues to FATE** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |
| Collaboration revenue | 0.2 | 0.2 | 0.2 | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Grant revenue | 0.3 | 0.1 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Milestone/License fee | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total revenue** | **0.5** | **0.3** | **0.2** | **0.0** | **1.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |
| **COGS** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |
| **R&D** | **2.5** | **3.1** | **3.4** | **3.0** | **12.0** | **4.5** | **4.0** | **5.5** | **5.7** | **19.7** |
| **SG&A** | **1.3** | **1.5** | **2.0** | **1.9** | **6.6** | **2.4** | **2.1** | **2.0** | **2.0** | **8.5** |
| **Total operating expenses** | **3.8** | **4.6** | **5.4** | **4.9** | **18.6** | **6.9** | **6.0** | **7.5** | **7.7** | **28.2** |
| **Operating Income/Loss** | **(3.4)** | **(4.3)** | **(5.1)** | **(4.9)** | **(17.7)** | **(6.9)** | **(6.0)** | **(7.5)** | **(7.7)** | **(28.2)** |
| Interest income | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Interest expense | (0.1) | (0.1) | 0.0 | (0.4) | (0.6) | (0.0) | (0.0) | (0.1) | (0.1) | (0.3) |
| Other income (expense) | (0.1) | (1.2) | (0.9) | (0.5) | (2.7) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Pretax income | (3.5) | (5.5) | (6.1) | (5.7) | (20.9) | (7.0) | (6.1) | (7.6) | (7.8) | (28.4) |
| Income tax expense | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| *Tax rate* | *0%* | *0%* | *0%* | *0%* | *0%* | *0%* | *0%* | *0%* | *0%* | *0%* |
| **Net loss attributable to common stock** | **(3.5)** | **(5.5)** | **(6.1)** | **(5.7)** | **(20.9)** | **(7.0)** | **(6.07)** | **(7.6)** | **(7.8)** | **(28.4)** |
| **EPS (basic)** | **($2.92)** | **($4.51)** | **($4.81)** | **($0.29)** | **($3.54)** | **($0.34)** | **($0.30)** | **($0.37)** | **($0.37)** | **($1.38)** |
| **EPS (diluted)** | **($2.92)** | **($4.51)** | **($4.81)** | **($0.29)** | **($3.54)** | **($0.34)** | **($0.30)** | **($0.37)** | **($0.37)** | **($1.38)** |
| Basic shares | 1.2 | 1.2 | 1.3 | 19.7 | 5.9 | 20.3 | 20.5 | 20.7 | 20.9 | 20.6 |
| Diluted shares | 1.2 | 1.2 | 1.3 | 22.6 | 5.5 | 22.7 | 23.0 | 23.2 | 23.4 | 23.1 |

Source: Cowen and Company

## Fate Annual P&L ($MM)

| ($MM) | 2012A | 2013A | 2014E | 2015E | 2016E | 2017E | 2018E |
|---|---|---|---|---|---|---|---|
| **Total ProHema revenues to FATE** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |
| Collaboration revenue | 1.3 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Grant revenue | 1.4 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Milestone/License fee | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 30.0 |
| **Total revenue** | **2.7** | **1.0** | **0.0** | **50.0** | **0.0** | **0.0** | **30.0** |
| **COGS** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |
| **R&D** | **12.0** | **12.0** | **19.7** | **26.5** | **34.5** | **39.7** | **41.0** |
| **SG&A** | **4.2** | **6.6** | **8.5** | **8.7** | **8.9** | **9.1** | **25.2** |
| **Total operating expenses** | **16.2** | **18.6** | **28.2** | **35.2** | **43.4** | **48.8** | **66.2** |
| **Operating Income/Loss** | **(13.6)** | **(17.7)** | **(28.2)** | **14.8** | **(43.4)** | **(48.8)** | **(36.2)** |
| Interest income | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Interest expense | (0.5) | (0.6) | (0.3) | 0.0 | 0.0 | 0.0 | 0.0 |
| Other income (expense) | (0.2) | (2.7) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Pretax income | (14.2) | (20.9) | (28.4) | 14.8 | (43.4) | (48.8) | (36.2) |
| Income tax expense | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| *Tax rate* | *0%* | *0%* | *0%* | *0%* | *0%* | *0%* | *0%* |
| **Net loss attributable to common stock** | **(14.2)** | **(20.9)** | **(28.4)** | **14.8** | **(43.4)** | **(48.8)** | **(36.2)** |
| **EPS (basic)** | **($13.06)** | **($3.54)** | **($1.38)** | **$0.44** | **($1.24)** | **($1.34)** | **($0.96)** |
| **EPS (diluted)** | **($13.06)** | **($3.54)** | **($1.38)** | **$0.41** | **($1.24)** | **($1.34)** | **($0.96)** |
| Basic shares | 1.1 | 5.9 | 20.6 | 33.6 | 35.0 | 36.4 | 37.8 |
| Diluted shares | 1.1 | 5.5 | 23.1 | 36.3 | 37.7 | 39.2 | 40.8 |

Source: Cowen and Company

# Valuation Methodology And Risks

## Valuation Methodology

**Biotechnology:**
In calculating our 12-month target price, we employ one or more valuation methodologies, which include a discounted earnings analysis, discounted cash flow analysis, net present value analysis and/or a comparable company analysis. These analyses may or may not require the use of objective measures such as price-to-earnings or price-to-sales multiples as well as subjective measures such as discount rates.

We make investment recommendations on early stage (pre-commercial) biotechnology companies based upon an assessment of their technology, the probability of pipeline success, and the potential market opportunity in the event of success. However, because these companies lack traditional financial metrics, we do not believe there are any good methodologies for assigning a specific target price to such stocks.

## Investment Risks

**Biotechnology:**
There are multiple risks that are inherent with an investment in the biotechnology sector. Beyond systemic risk, there is also clinical, regulatory, and commercial risk. Additionally, biotechnology companies require significant amounts of capital in order to develop their clinical programs. The capital-raising environment is always changing and there is risk that necessary capital to complete development may not be readily available.

## Risks To The Price Target

Risks to our Outperform rating on FATE shares include: 1) delays and/or clinical setbacks in the development of ProHema, 2) delays and/or setbacks in the development of the Wnt7a analog program, and 3) a change in the appetite for early-stage company risk among healthcare investors.

# *Addendum*

## Stocks Mentioned In Important Disclosures

| Ticker | Company Name |
|---|---|
| ALIM | Alimera Sciences |
| FATE | Fate Therapeutics |
| IDRA | Idera Pharmaceuticals |

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***Cowen and Company Rating System effective May 25, 2013***

**Outperform (1):** The stock is expected to achieve a total positive return of at least 15% over the next 12 months

**Market Perform (2):** The stock is expected to have a total return that falls between the parameters of an Outperform and Underperform over the next 12 months

**Underperform (3):** Stock is expected to achieve a total negative return of at least 10% over the next 12 months

**Assumption:** The expected total return calculation includes anticipated dividend yield

***Cowen and Company Rating System until May 25, 2013***

**Outperform (1):** Stock expected to outperform the S&P 500

**Neutral (2):** Stock expected to perform in line with the S&P 500

**Underperform (3):** Stock expected to underperform the S&P 500

**Assumptions:** Time horizon is 12 months; S&P 500 is flat over forecast period

***Cowen Securities, formerly known as Dahlman Rose & Company, Rating System until May 25, 2013***

**Buy** – The fundamentals/valuations of the subject company are improving and the investment return is expected to be 5 to 15 percentage points higher than the general market return

**Sell** – The fundamentals/valuations of the subject company are deteriorating and the investment return is expected to be 5 to 15 percentage points lower than the general market return

**Hold** – The fundamentals/valuations of the subject company are neither improving nor deteriorating and the investment return is expected to be in line with the general market return

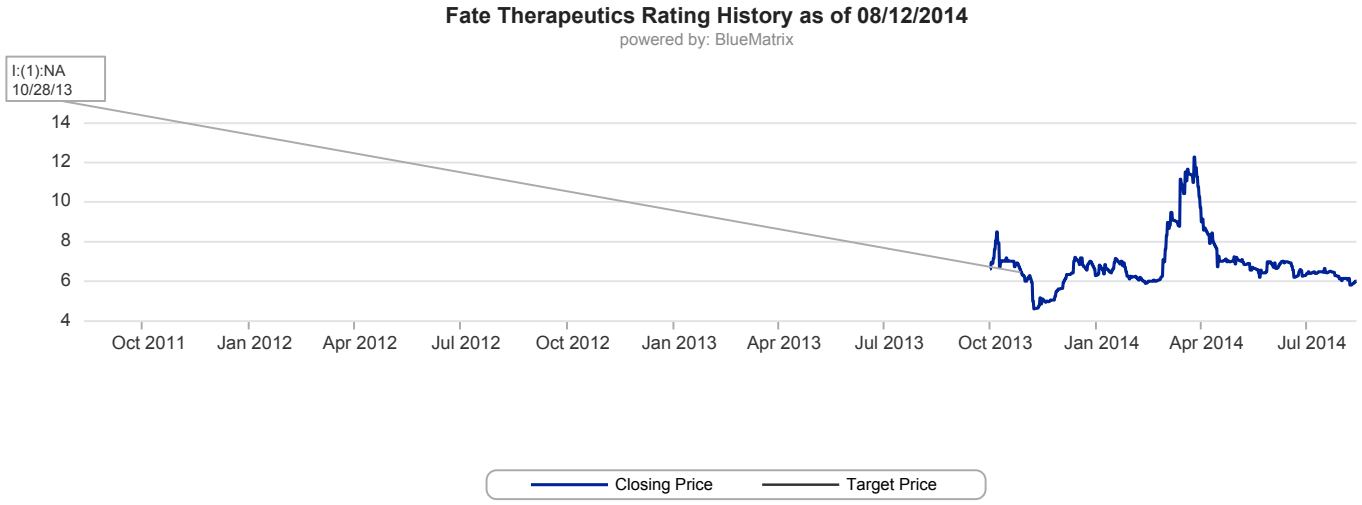
## Cowen And Company Rating Definitions

**Distribution of Ratings/Investment Banking Services (IB) as of 06/30/14**

| Rating | Count | Ratings Distribution | Count | IB Services/Past 12 Months |
|---|---|---|---|---|
| Buy (a) | 417 | 58.57% | 94 | 22.54% |
| Hold (b) | 279 | 39.19% | 7 | 2.51% |
| Sell (c) | 16 | 2.25% | 0 | 0.00% |

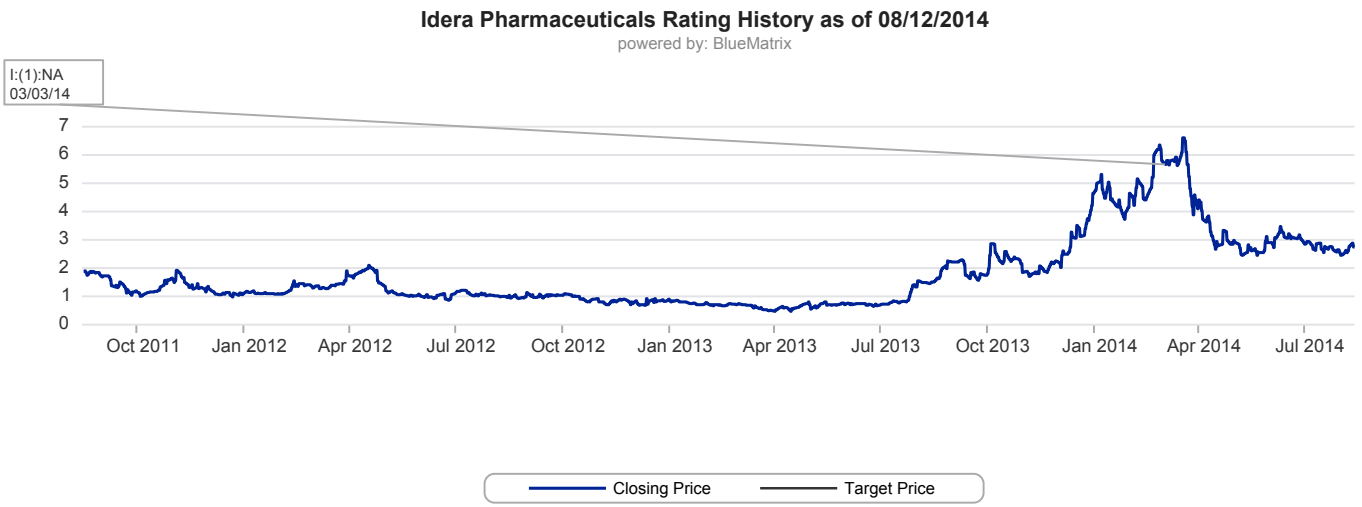
(a) Corresponds to "Outperform" rated stocks as defined in Cowen and Company, LLC's rating definitions. (b) Corresponds to "Market Perform" as defined in Cowen and Company, LLC's ratings definitions. (c) Corresponds to "Underperform" as defined in Cowen and Company, LLC's ratings definitions.

Note: "Buy", "Hold" and "Sell" are not terms that Cowen and Company, LLC uses in its ratings system and should not be construed as investment options. Rather, these ratings terms are used illustratively to comply with FINRA and NYSE regulations.





Rating Change - 11/14/11 - Rating Market Perform




**Legend for Price Chart:**

I = Initiation | 1 = Outperform | 2 = Market Perform | 3 = Underperform | UR = Price Target Under Review | T = Terminated Coverage | $xx = Price Target | NA = Not Available | S=Suspended

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