COWEN
AND COMPANY

Biotechnology

Fate Therapeutics, Inc.

Equity Research

Earnings Update

March 18, 2014

Price: $10.43 (03/17/2014)

Price Target: NA

OUTPERFORM (1)

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Key Data

Symbol	NASDAQ: FATE
52-Week Range:	$12.81 - 4.30
Market Cap (MM):	$340.0
Net Debt (MM):	$1.8
Cash/Share:	$2.31
Dil. Shares Out (MM):	22.6
Enterprise Value (MM):	$288.0
ROIC:	NA
ROE (LTM):	NA
BV/Share:	NA
Dividend:	NA

FY (Dec)	2013A	2014E	2015E
Earnings Per Share			
Q1	-	$(0.37)	-
Prior Q1	-	*$(0.36)*	-
Q2	-	$(0.38)	-
Prior Q2	-	-	-
Q3	$(4.81)	$(0.38)	-
Prior Q3	-	*$(0.37)*	-
Q4	$(0.29)	$(0.37)	-
Prior Q4	*$(0.30)*	-	-
Year	$(13.06)	$(1.50)	$0.41
Prior Year	*$(2.77)*	*$(1.48)*	-
P/E	NM	NM	25.4x
Consensus EPS	$(13.06)	$(1.37)	$(0.89)
Prior Year	*$(1.90)*	-	-

Consensus source: Thomson Reuters

Revenue (MM)			
Year	$1.0	$0.0	$50.0
EV/S	288.0x	-	5.8x

Fate to move ProHema in pediatric setting this year; Wnt7a in the clinic in '15

The Cowen Insight

FATE reported 4Q13 results last night and provided a corporate update. ProHema's Phase II PUMA trial in hematological malignancies is underway, with interim data in 2H14, and full data in mid-2015. Initiation of Phase I ProHema trials in pediatric patients with hematologic malignancies and LSDs is expected in 3Q14 and 2H14, respectively. The Wnt7a program is on track to enter the clinic in 2015.

Interim look in ProHema's Phase II PUMA trial expected in 2H14

The Phase II PUMA trial of ProHema in adult patients with hematological malignancies is underway; the trial's data monitoring committee (DMC) will conduct two safety reviews in the study, after the first 6 and 12 patients have been treated with ProHema. An interim update will be provided after the 12 ProHema patient review has been completed and is anticipated in 2H14, with full data on the primary efficacy endpoint expected in mid-2015. Recall that the Phase II PUMA trial will enroll 60 patients at 10 US centers who will be randomized 2:1 to receive either ProHema plus an unmanipulated CBU or two unmanipulated CBUs. The trial is 80% powered to demonstrate with statistical significance ($p<0.05$) that 70% of ProHema patients have neutrophil engraftment before the control group's median engraftment time.

ProHema in pediatric hematological malignancies and LSDs in 2H14

In March, Fate submitted a protocol with FDA for the clinical development of ProHema in pediatric patients with hematologic malignancies. The company plans to amend its existing IND application in 2Q14, and initiate a Phase I trial in pediatric patients with hematologic malignancies in 3Q14. In addition, Fate plans to file an IND for the use of ProHema in pediatric patients with demyelinating lysosomal storage disorders (LSDs), including Hurler syndrome, Krabbe disease, and certain leukodystrophies in mid-2014, and expects to initiate a Phase I trial in this setting in 2H14.

Wnt7a program on track to enter the clinic in 2015

As previously reported, Fate has selected two Wnt7a analogs for IND-enabling activities, and plans to advance one of these two compounds into clinical development in 2015. Fate has initiated cell line development to support the production of these Wnt7a analogs and has also expanded the preclinical development of its Wnt7a-based muscle regeneration program beyond Duchenne Muscular Dystrophy (DMD) to include other areas of muscle damage and trauma.

4Q13 numbers: cash "until late 2015"

Fate spent $4.9M ($3M in R&D, $1.9M in SG&A) in 4Q13 vs. the $4.7M ($3.4M in R&D, $1.3M in SG&A) spent in 4Q12, ending 4Q13 with $54M in cash, which, according to management, is sufficient to fund operations "*until late 2015*." Fate's balance sheet includes $1.8M in debt.

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 the Phase Ib trial of ProHema in pediatric patients, 3Q14
- Initiation of the Phase I trial of ProHema in LSDs, 2H14
- Interim data from Phase II PUMA trial, 2H14
- IND submission for Wnt7a analog program, YE14
- Full data from Phase II PUMA trial, 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 (03/17/2014)	Price Target	Rating
Endocyte	ECYT	$13.89	$NA	Outperform
Orexigen Therapeutics	OREX	$7.14	$10.00	Outperform
Nektar	NKTR	$13.17	$17.00	Outperform

What's next for FATE? **1)** Initiation of Phase Ib trial of ProHema in pediatric patients, 3Q14; **2)** Initiation of Phase I trial of ProHema in lysosomal storage disorders, 2H14; **3)** ***Interim data from Phase II PUMA trial, 2H14,*** **4)** IND submission for Wnt7a, YE14; **5)** Full data from Phase II PUMA trial, mid-2015; and **6)** Initiation of Wnt7a Phase I program, 2015.

Our take on FATE: Our view on FATE is based on the company's core technology and expertise in the pharmacologic modulation of adult stem cells for the development of therapeutics for the treatment of orphan diseases. If successful in its Phase II and Phase III development, 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 market 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 US/EU sales of ~$515M in 2030. These revenue numbers do not account for the upside that exists should ProHema and follow-on products manage to demonstrate utility in rare genetic disorders for which transplantation is not currently used as the standard of care, but is being used investigationally and starting to emerge as a potential treatment option. 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.

Investment Thesis

Our thesis on FATE is based on the company's core technology and expertise in the pharmacologic modulation of adult stem cells for the development of therapeutics for treatment of orphan diseases.

ProHema: better outcomes for patients undergoing stem cell transplantation. Fate's deep expertise in and understanding of stem cell biology has culminated in the development of ProHema, a cell therapy product for use in patients undergoing hematopoietic stem cell transplantation (HSCT) for hematologic malignancies. The concept behind the development of ProHema is that small molecule modulators can potentially be added to unmodulated hematopoietic stem cells (HSCs) before a HSCT, thereby improving the safety profile and the outcome of the procedure. By pharmacologically optimizing HSCs *ex vivo*, in preclinical experiments, treatment with ProHema resulted in doubling in the "homing" of transplanted cells to the marrow and quadrupling of their engraftment. Results from the first Phase I clinical trial of ProHema in 12 patients were equally promising, with improvements in median time to engraftment, % engrafted, and overall outcomes. In March 2014, the company resumed the Phase II PUMA trial of ProHema with a new, nutrient-rich media (NRM) formulation in adult patients undergoing HSCT for hematologic malignancies. In addition, the company is planning on conducting two pediatric trials in 2014: the first one in patients undergoing HSCT for hematologic malignancies, expected to start in 3Q14, and the second one in patients undergoing HSCT to treat lysosomal storage disorders (LSDs), expected to start in 2H14.

The tangible commercial opportunity for ProHema…There are approximately 8,000 allogeneic HSCTs performed in the US each year, and another 15,000 in the EU. Approximately 15-20% of these procedures use umbilical cord blood as their source, which is the setting Fate has used for its trials thus far and will be using for its Phase II trial. If successful in its Phase II and Phase III development, 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 market 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 US/EU sales of ~$515M in 2030.

…and the potential upside: These revenue numbers do not account for the upside that exists, should ProHema and follow-on products manage to demonstrate utility in rare genetic disorders for which transplantation is not currently used as the standard of care, but is being used investigationally, and is starting to emerge as a potential treatment option.

Our consultants are positive on ProHema for hematologic malignancies: In order to get a better understanding of the ProHema clinical development program and its clinical and commercial potential, we consulted with five hematologist/oncologists specializing in HSCT at major, leading transplantation centers across the US. This group included specialists in both adult and pediatric stem cell transplantation. All of our consultants had significant clinical practices including allogeneic HSCT and the use of umbilical cord blood as a cell source. Additionally, each of our experts was familiar with ProHema, and some were participants in ProHema clinical trials. Our consultants view ProHema as easy to use (*"rather straightforward," "a very simple type of technique," "practical, not at all problematic"*). With regard to the ProHema data, all of our experts noted the early nature of the results, but did feel that the data were "*interesting*" and *"promising."* In particular, they appeared to be intrigued by the

underlying strategy of ProHema modulation for homing enhancement, and differentiated this from other approaches focused on *ex vivo* expansion of cord blood cells, which were viewed generally as "*laborious,*" "*expensive,*" and "*time-consuming.*" While all our consultants did view the preliminary ProHema data to have potential, the group was somewhat split on the strength of the clinical results thus far, in particular regarding the reduction in time to neutrophil engraftment reported in the Phase I trial (compared to historical control). On the one hand, there were a couple physicians who viewed the reduction in engraftment time of 3-4 days as *"clinically meaningful,"* given that the longer amount of time a patient is neutropenic leads to an increased risk of transplant-related morbidity. They felt that this improvement would reduce length of stay in the hospital, leading to relative risk reduction for the patient, as well as potential cost savings (a meaningful economic benefit). On the other hand, there were two physicians in our group who questioned the impact, stating *"I'm not sure if 3 days is overall meaningful"* and asking, *"is it meaningful in terms of death and infections?"* Overall, our consultants felt that there is a *"reasonable"* chance of a successful ProHema clinical trial program and ultimately approval, if meaningful improvements can be demonstrated in hematopoietic recovery. One of our experts remarked that knowing Fate is working with the FDA on design of a trial which will support an approval pathway provides further confidence. In terms of potential uptake of ProHema, if approved, our physicians were aligned in expressing a reasonable chance of adoption as well.

ProHema for Rare Genetic Disorders. In addition to the use of ProHema in patients undergoing HSCT for hematologic malignancies, Fate is also pursuing the potential use of pharmacologically modulated HSCs for allogeneic HSCT treatment of rare genetic disorders. The company is planning to evaluate ProHema in an initial clinical trial of pediatric patients with demyelinating lysosomal storage disorders (LSDs). Also, an active research program is being undertaken to develop a second generation HSC therapeutic, which will be specifically designed to enhance the homing of HSCs to the central nervous system (CNS), in order to enhance delivery of essential enzymes to patients with deficiencies.

LSD consultants intrigued by ProHema approach: Our three LSD consultants had positive views on the theoretical potential for pharmacologic modulation in the setting of allogeneic HSCT for LSDs. One of our experts called ProHema *"a very good idea"* and felt that it may be relevant in LSD treatment, as *"it does work in the setting of regular homing to bone marrow…and the niche in CNS resembles the niche in bone marrow."* Our second expert agreed on the rationale of ProHema in this setting, and felt that it was a *"step in the right direction, as one of the goals of transplant is homing into the brain"* for LSDs. At the same time, while this expert noted the early ProHema data to be promising, he was also clear that *"the acceleration of engraftment was not a home run,"* referring to the Phase I trial result. He desired to see an improvement of 7 to 10 days. Our third expert agreed that the improvement in hematopoietic recovery thus far of around 3-4 days may not in and of itself be game-changing, but he was more excited about seeing a potential increase in CNS homing, which "*may open transplant up to diseases which we are not currently transplanting"* and *"could be a big deal."*

Wnt7a analog work is very early, but we believe it has the most upside potential. Fate is also using its understanding of stem cell biology to develop *in vivo* modulators of muscle satellite stem cells (SSCs). Specifically, preclinical experiments have shown that administration of a recombinant Wnt7a protein can lead to expansion of SSCs and improve the regenerative capacity of muscle. These results have obvious implications for and potential in the treatment of muscular dystrophies. Fate has selected two Wnt7a analogs and has initiated IND-enabling activities, with plans to advance one of

these compounds in clinical development in 2015. With the obvious caveat that this work is still in its very early stages, a quick look at the valuations of companies working in DMD highlights to us the commercial potential and investor interest in the space.

DMD consultant excited about Wnt7a program: Our consultant, a neurologist and neuroscientist specializing in genetic muscle disorders at a major academic medical institution, was *"optimistic"* about Wnt7a-based therapy and felt that *"it is possible it will work"* in DMD. Our expert indicated that Wnt signaling has an important role in muscle stem cell proliferation and considered the rationale of this therapy to be solid, since *"a lot of the problem in DMD is lack of muscle regeneration."* Our expert pointed out the very early nature of the preclinical data which have been produced to date, and emphasized the long path from this stage to advanced clinical development and potential approval. She described the data as *"encouraging"* and remarked that the results to date *"very convincingly"* demonstrate increase in muscle mass, force, and histopathology as a result of Wnt7a administration in the mouse model.

ProHema Hematology HSCT Revenue Model ($MM)

US ProHema Revenue Model	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
US population	319,455,250	322,266,457	325,102,401	327,963,303	330,849,380	333,760,854	336,697,950	339,660,892	342,649,907	345,665,227	348,707,081	351,775,703	354,871,329	357,994,197	361,144,546	364,322,618	367,528,657	370,762,909
Population growth	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*	*0.88%*
# of HSCT performed in the US	18,255	18,416	18,578	18,741	18,906	19,073	19,240	19,410	19,581	19,753	19,927	20,102	20,279	20,457	20,637	20,819	21,002	21,187
# of autologous HSCT	10,587	10,680	10,774	10,869	10,965	11,061	11,158	11,257	11,356	11,456	11,556	11,658	11,761	11,864	11,969	12,074	12,180	12,287
% of autologous HSCT	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*	*58%*
# of allogeneic HSCT	**7,668**	**7,736**	**7,804**	**7,872**	**7,942**	**8,012**	**8,082**	**8,153**	**8,225**	**8,297**	**8,370**	**8,444**	**8,518**	**8,593**	**8,669**	**8,745**	**8,822**	**8,900**
% of allogeneic HSCT	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*	*42%*
% of cord blood derived HSCT	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*
# of cord blood derived HSCT	1,150	1,160	1,171	1,181	1,191	1,202	1,212	1,223	1,234	1,245	1,256	1,267	1,278	1,289	1,300	1,312	1,323	1,335
% of cord blood derived HSCT performed with ProHema							*18%*	*29%*	*38%*	*45%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*
# of cord blood derived HSCT performed with ProHema	**-**	**-**	**-**	**-**	**-**	**-**	**218**	**355**	**469**	**560**	**628**	**633**	**639**	**644**	**650**	**656**	**662**	**667**
% of bone marrow derived HSCT	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*
# of bone marrow derived HSCT	1,534	1,547	1,561	1,574	1,588	1,602	1,616	1,631	1,645	1,659	1,674	1,689	1,704	1,719	1,734	1,749	1,764	1,780
% of bone marrow derived HSCT performed with ProHema							*3%*	*6%*	*9%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*
# of bone marrow derived HSCT performed with ProHema	**-**	**-**	**-**	**-**	**-**	**-**	**48**	**98**	**148**	**232**	**234**	**236**	**239**	**241**	**243**	**245**	**247**	**249**
% of peripheral blood derived HSCT	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*
# of peripheral blood derived HSCT	4,984	5,028	5,072	5,117	5,162	5,208	5,253	5,300	5,346	5,393	5,441	5,489	5,537	5,586	5,635	5,684	5,734	5,785
% of peripheral blood derived HSCT performed with ProHema							*1%*	*3%*	*6%*	*8%*	*8%*	*8%*	*8%*	*8%*	*8%*	*8%*	*8%*	*8%*
# of peripheral blood derived HSCT performed with ProHema	**-**	**-**	**-**	**-**	**-**	**-**	**53**	**159**	**321**	**431**	**435**	**439**	**443**	**447**	**451**	**455**	**459**	**463**
# of allogeneic HSCT performed with ProHema	**-**	**-**	**-**	**-**	**-**	**-**	**319**	**611**	**938**	**1,224**	**1,297**	**1,309**	**1,320**	**1,332**	**1,344**	**1,356**	**1,367**	**1,379**
% penetration in allogeneic HSCT							*4%*	*8%*	*11%*	*15%*	*16%*	*16%*	*16%*	*16%*	*16%*	*16%*	*16%*	*16%*
Price per procedure		$75,000	$76,500	$78,030	$79,591	$81,182	$82,806	$87,774	$93,041	$98,623	$104,541	$110,813	$118,570	$126,870	$135,751	$145,253	$155,421	$166,301
% price increase		*2%*	*2%*	*2%*	*2%*	*2%*	*6%*	*6%*	*6%*	*6%*	*6%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*
Total US Sales ($MM)	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$26**	**$54**	**$87**	**$121**	**$136**	**$145**	**$157**	**$169**	**$182**	**$197**	**$213**	**$229**

EU ProHema Revenue Model	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
EU population	504,393,906	504,898,300	505,403,198	505,908,601	506,414,510	506,920,925	507,427,845	507,935,273	508,443,209	508,951,652	509,460,603	509,970,064	510,480,034	510,990,514	511,501,505	512,013,006	512,525,019	513,037,544
Population growth	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*	*0.10%*
# of HSCT performed in the EU	35,731	35,767	35,803	35,839	35,874	35,910	35,946	35,982	36,018	36,054	36,090	36,126	36,162	36,199	36,235	36,271	36,307	36,344
% of autologous HSCT	21,153	21,174	21,196	21,217	21,238	21,259	21,280	21,302	21,323	21,344	21,366	21,387	21,408	21,430	21,451	21,473	21,494	21,516
# of autologous HSCT	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*
# of allogeneic HSCT	**14,578**	**14,593**	**14,607**	**14,622**	**14,637**	**14,651**	**14,666**	**14,680**	**14,695**	**14,710**	**14,725**	**14,739**	**14,754**	**14,769**	**14,784**	**14,798**	**14,813**	**14,828**
% of allogeneic HSCT	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*	*41%*
% of cord blood HSCT	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*
# of cord blood HSCT	2,187	2,189	2,191	2,193	2,195	2,198	2,200	2,202	2,204	2,206	2,209	2,211	2,213	2,215	2,218	2,220	2,222	2,224
% of cord blood HSCT performed with ProHema								*18%*	*29%*	*38%*	*45%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*
# of cord blood HSCT performed with ProHema	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**396**	**699**	**898**	**994**	**1,105**	**1,107**	**1,108**	**1,109**	**1,110**	**1,111**	**1,112**
% of bone marrow derived HSCT	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*
# of bone marrow derived HSCT	2,916	2,919	2,921	2,924	2,927	2,930	2,933	2,936	2,939	2,942	2,945	2,948	2,951	2,954	2,957	2,960	2,963	2,966
% of bone marrow derived HSCT performed with ProHema								*3%*	*6%*	*9%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*
# of bone marrow derived HSCT performed with ProHema	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**88**	**176**	**265**	**412**	**413**	**413**	**414**	**414**	**414**	**415**	**415**
% of peripheral blood derived HSCT	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*	*65%*
# of peripheral blood derived HSCT	9,476	9,485	9,495	9,504	9,514	9,523	9,533	9,542	9,552	9,561	9,571	9,581	9,590	9,600	9,609	9,619	9,629	9,638
% of peripheral blood derived HSCT performed with ProHema								*1%*	*3%*	*6%*	*8%*	*8%*	*8%*	*8%*	*8%*	*8%*	*8%*	*8%*
# of peripheral blood derived HSCT performed with ProHema	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**95**	**287**	**574**	**766**	**766**	**767**	**768**	**769**	**770**	**770**	**771**
# of allogeneic HSCT performed with ProHema	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**580**	**1,102**	**1,677**	**2,172**	**2,285**	**2,287**	**2,289**	**2,291**	**2,294**	**2,296**	**2,298**
% penetration in allogeneic HSCT								*4%*	*8%*	*11%*	*15%*	*16%*	*16%*	*16%*	*16%*	*16%*	*16%*	*16%*
Price per procedure		$56,250	$57,375	$58,523	$59,693	$60,887	$62,105	$65,831	$69,781	$73,968	$78,406	$83,110	$88,928	$95,153	$101,813	$108,940	$116,566	$124,726
% price increase		*2%*	*2%*	*2%*	*2%*	*2%*	*6%*	*6%*	*6%*	*6%*	*6%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*
Total EU Sales ($MM)	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$38**	**$77**	**$124**	**$170**	**$190**	**$203**	**$218**	**$233**	**$250**	**$268**	**$287**
Total US/EU sales ($MM)	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$26**	**$92**	**$164**	**$245**	**$306**	**$335**	**$360**	**$387**	**$416**	**$447**	**$480**	**$516**
US Sales ($MM) - Cord blood derived HSCTs	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$18**	**$31**	**$44**	**$55**	**$66**	**$70**	**$76**	**$82**	**$88**	**$95**	**$103**	**$111**
EU Sales ($MM) - Cord blood derived HSCTs	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$26**	**$45**	**$62**	**$78**	**$92**	**$98**	**$105**	**$113**	**$121**	**$130**	**$139**
Total US/EU Sales ($MM) - Cord blood derived HSCTs	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$18**	**$57**	**$88**	**$117**	**$144**	**$162**	**$174**	**$187**	**$201**	**$216**	**$232**	**$250**
US Sales ($MM) - Bone marrow derived HSCTs	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$4**	**$9**	**$14**	**$23**	**$25**	**$26**	**$28**	**$31**	**$33**	**$36**	**$38**	**$41**
EU Sales ($MM) - Bone marrow derived HSCTs	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$6**	**$12**	**$20**	**$32**	**$34**	**$37**	**$39**	**$42**	**$45**	**$48**	**$52**
Total US/EU Sales ($MM) - Bone marrow derived HSCTs	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$4**	**$14**	**$26**	**$42**	**$57**	**$60**	**$65**	**$70**	**$75**	**$81**	**$87**	**$93**
US Sales ($MM) - Peripheral blood derived HSCT	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$4**	**$14**	**$30**	**$43**	**$46**	**$49**	**$53**	**$57**	**$61**	**$66**	**$71**	**$77**
EU Sales ($MM) - Peripheral blood derived HSCT	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$6**	**$20**	**$42**	**$60**	**$64**	**$68**	**$73**	**$78**	**$84**	**$90**	**$96**
Total US/EU Sales ($MM) - Peripheral blood derived HSCT	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$4**	**$20**	**$50**	**$85**	**$106**	**$112**	**$121**	**$130**	**$139**	**$150**	**$161**	**$173**

Source: Cowen and Company

ProHema – NPV Analysis ($MM)

($MM)	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
ProHema Sales																	
Total US Sales	-	-	-	-	-	26.4	53.7	87.2	120.7	135.6	145.0	156.6	169.0	182.4	196.9	212.5	229.4
Total EU Sales	-	-	-	-	-	-	38.2	76.9	124.0	170.3	189.9	203.4	217.8	233.3	249.9	267.6	286.7
Total US/EU sales	**-**	**-**	**-**	**-**	**-**	**26.4**	**91.8**	**164.1**	**244.7**	**305.9**	**334.9**	**359.9**	**386.8**	**415.7**	**446.8**	**480.2**	**516.1**
ProHema Revenues to FATE																	
Total US Sales ($MM)	-	-	-	-	-	26.4	53.7	87.2	120.7	135.6	145.0	156.6	169.0	182.4	196.9	212.5	229.4
Total EU royalties ($MM)	-	-	-	-	-	-	6.9	14.6	24.8	35.8	41.8	44.7	47.9	53.7	57.5	61.6	65.9
Total Revenue to FATE ($MM)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**26.4**	**60.5**	**101.9**	**145.5**	**171.4**	**186.8**	**201.3**	**216.9**	**236.1**	**254.4**	**274.1**	**295.3**
Milestone payments received from partner		50			30.0	-	25.0	20.0	-	20.0	-	20.0	-	-	-	-	-
COGS	-	-	-	-	-	4.0	8.1	13.1	18.1	20.3	21.8	23.5	25.3	27.4	29.5	31.9	34.4
Less royalties paid to Institutions	-	-	-	-	-	1.3	3.0	5.1	7.3	8.6	9.3	10.1	10.8	11.8	12.7	13.7	14.8
R&D	12.2	13.0	13.3	13.3	13.3	-	-	-	-	-	-	-	-	-	-	-	-
SG&A	4.9	5.2	4.4	3.6	18.8	19.0	20.1	20.5	20.8	21.1	21.5	21.8	22.2	22.5	22.9	23.3	23.7
Tax adjusted EBIT	(17.1)	31.8	(17.7)	(16.9)	(2.1)	2.2	51.6	77.4	87.4	123.0	114.1	136.1	123.7	127.3	136.2	147.8	160.2
Tax rate	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*5%*	*7%*	*12%*	*13%*	*15%*	*18%*	*22%*	*27%*	*28%*	*28%*	*28%*
ProHema free cash flow	**(17.1)**	**31.8**	**(17.7)**	**(16.9)**	**(2.1)**	**2.2**	**51.6**	**77.4**	**87.4**	**123.0**	**114.1**	**136.1**	**123.7**	**127.3**	**136.2**	**147.8**	**160.2**
% y/y growth						*-206%*	*2253%*	*50%*	*13%*	*41%*	*-7%*	*19%*	*-9%*	*3%*	*7%*	*8%*	*8%*
Discount Period	*0.79*	*1.79*	*2.79*	*3.79*	*4.79*	*5.79*	*6.79*	*7.79*	*8.79*	*9.79*	*10.79*	*11.79*	*12.79*	*13.79*	*14.79*	*15.79*	*16.79*
Discount Factor	*0.93*	*0.84*	*0.77*	*0.70*	*0.63*	*0.58*	*0.52*	*0.48*	*0.43*	*0.39*	*0.36*	*0.33*	*0.30*	*0.27*	*0.24*	*0.22*	*0.20*
PV of ProHema FCF	**(15.8)**	**26.8**	**(13.6)**	**(11.8)**	**(1.3)**	**1.3**	**27.0**	**36.8**	**37.8**	**48.4**	**40.8**	**44.2**	**36.5**	**34.2**	**33.3**	**32.8**	**32.3**

Discount Rate	10%
Perpetual Growth Rate	0%
Final year FCF	$160
Terminal Value	$1,602
Discount Factor	0.20
Present Value of Terminal Value	**$323**
Present Value of Cash Flows	**$390**
Present Value of Total Cash Flows	**$713**
Fully Diluted Shares Outstanding	23
NPV of ProHema in Hematology	**$31.55**
Probability of Success of Phase II PUMA trial	***50%***
Probability of Success of Phase III trial	***67%***
Overall Probability of Success	***33%***
NPV of ProHema in Hematology (probability-adjusted)	**$10.52**

Source: Cowen and Company

FATE: Company sum-of-the-parts NPV analysis

ProHema in Hematology	$10.52
Technology value	$2.21
Net Cash	$2.31
Sum-of-the-parts total value for FATE	**$15.04**

Source: Cowen and Company

Fate: Quarterly P&L ($MM)

($MM)	2011A	2012A	1H13A	Q3:13A	Q4:13A	2013A	Q1:14E	Q2:14E	Q3:14E	Q4:14E	2014E	2015E
ProHema Revenues to FATE												
Total US Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total EU royalties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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**	**0.0**	**0.0**
Collaboration revenue	0.8	1.3	0.4	0.2	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Grant revenue	0.3	1.4	0.3	0.0	0.0	0.3	0.0	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	0.0	50.0
Total revenue	**1.2**	**2.7**	**0.8**	**0.2**	**0.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**50.0**
COGS	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
R&D	**9.9**	**12.0**	**5.6**	**3.4**	**3.0**	**12.0**	**5.4**	**5.7**	**5.8**	**5.7**	**22.6**	**26.5**
SG&A	**4.6**	**4.2**	**2.8**	**2.0**	**1.9**	**6.6**	**2.0**	**2.1**	**2.0**	**2.0**	**8.1**	**8.7**
Total operating expenses	**14.5**	**16.2**	**8.4**	**5.4**	**4.9**	**18.6**	**7.4**	**7.8**	**7.8**	**7.7**	**30.7**	**35.2**
Operating Income/Loss	**(13.3)**	**(13.6)**	**(7.6)**	**(5.1)**	**(4.9)**	**(17.7)**	**(7.4)**	**(7.8)**	**(7.8)**	**(7.7)**	**(30.7)**	**14.8**
Interest income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest expense	(0.1)	(0.5)	(0.2)	0.0	(0.4)	(0.6)	(0.1)	(0.1)	(0.1)	(0.1)	(0.4)	0.0
Other income (expense)	(0.0)	(0.2)	(1.3)	(0.9)	(0.5)	(2.7)	0.0	0.0	0.0	0.0	0.0	0.0
Pretax income	(13.4)	(14.2)	(9.1)	(6.1)	(5.7)	(20.9)	(7.5)	(7.9)	(7.9)	(7.8)	(31.1)	14.8
Income tax expense	0.0	0.0	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%*	*0%*	*0%*
Net loss attributable to common stock	**(13.4)**	**(14.2)**	**(9.1)**	**(6.1)**	**(5.7)**	**(20.9)**	**(7.5)**	**(7.9)**	**(7.9)**	**(7.8)**	**(31.1)**	**14.8**
EPS (basic)	**($16.16)**	**($13.06)**	**($7.41)**	**($4.81)**	**($0.28)**	**($3.54)**	**($0.37)**	**($0.38)**	**($0.38)**	**($0.37)**	**($1.50)**	**$0.44**
EPS (diluted)	**($16.16)**	**($13.06)**	**($7.41)**	**($4.81)**	**($0.29)**	**($3.54)**	**($0.37)**	**($0.38)**	**($0.38)**	**($0.37)**	**($1.50)**	**$0.41**
Basic shares	0.8	1.1	1.2	1.3	19.7	5.9	20.4	20.6	20.8	21.1	20.7	33.8
Diluted shares	0.8	1.1	1.2	1.3	22.6	8.4	22.8	23.1	23.3	23.5	23.2	36.4

Source: Cowen and Company

Fate: Annual P&L ($MM)

($MM)	2011A	2012A	2013A	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
ProHema Revenues to FATE																				
Total US Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.4	53.7	87.2	120.7	135.6	145.0	156.6	169.0	182.4	196.9	212.5	229.4
Total EU royalties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	14.6	24.8	35.8	41.8	44.7	47.9	53.7	57.5	61.6	65.9
Total ProHema revenues to FATE	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**26.4**	**60.5**	**101.9**	**145.5**	**171.4**	**186.8**	**201.3**	**216.9**	**236.1**	**254.4**	**274.1**	**295.3**
Collaboration revenue	0.8	1.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grant revenue	0.3	1.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Milestone/License fee	0.0	0.0	0.0	0.0	50.0	0.0	0.0	30.0	0.0	25.0	20.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Total revenue	**1.2**	**2.7**	**1.0**	**0.0**	**50.0**	**0.0**	**0.0**	**30.0**	**26.4**	**85.5**	**121.9**	**145.5**	**191.4**	**186.8**	**221.3**	**216.9**	**236.1**	**254.4**	**274.1**	**295.3**
COGS	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5.3**	**11.1**	**18.2**	**25.4**	**28.9**	**31.1**	**33.5**	**36.2**	**39.2**	**42.3**	**45.6**	**49.2**
R&D	**9.9**	**12.0**	**12.0**	**22.6**	**26.5**	**34.5**	**39.7**	**41.0**	**41.9**	**42.9**	**46.8**	**52.9**	**63.2**	**62.4**	**71.7**	**71.1**	**75.5**	**82.9**	**89.4**	**94.9**
SG&A	**4.6**	**4.2**	**6.6**	**8.1**	**8.7**	**8.9**	**9.1**	**25.2**	**25.5**	**26.9**	**27.3**	**27.8**	**28.3**	**28.8**	**29.2**	**29.8**	**30.3**	**30.8**	**31.3**	**31.9**
Total operating expenses	**14.5**	**16.2**	**18.6**	**30.7**	**35.2**	**43.4**	**48.8**	**66.2**	**72.8**	**80.9**	**92.3**	**106.1**	**120.4**	**122.3**	**134.5**	**137.0**	**144.9**	**156.0**	**166.3**	**176.0**
Operating Income/Loss	**(13.3)**	**(13.6)**	**(17.7)**	**(30.7)**	**14.8**	**(43.4)**	**(48.8)**	**(36.2)**	**(46.3)**	**4.7**	**29.6**	**39.4**	**71.0**	**64.5**	**86.8**	**79.9**	**91.1**	**98.4**	**107.8**	**119.4**
Interest income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest expense	(0.1)	(0.5)	(0.6)	(0.4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other income (expense)	(0.0)	(0.2)	(2.7)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pretax income	(13.4)	(14.2)	(20.9)	(31.1)	14.8	(43.4)	(48.8)	(36.2)	(46.3)	4.7	29.6	39.4	71.0	64.5	86.8	79.9	91.1	98.4	107.8	119.4
Income tax expense	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.1	4.7	9.2	9.7	15.6	17.6	24.6	27.6	30.2	33.4
Tax rate	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*5%*	*7%*	*12%*	*13%*	*15%*	*18%*	*22%*	*27%*	*28%*	*28%*	*28%*
Net loss attributable to common stock	**(13.4)**	**(14.2)**	**(20.9)**	**(31.1)**	**14.8**	**(43.4)**	**(48.8)**	**(36.2)**	**(46.3)**	**4.4**	**27.5**	**34.7**	**61.8**	**54.8**	**71.1**	**62.3**	**66.5**	**70.8**	**77.6**	**85.9**
EPS (basic)	**($16.16)**	**($13.06)**	**($3.54)**	**($1.50)**	**$0.44**	**($1.23)**	**($1.33)**	**($0.95)**	**($1.17)**	**$0.11**	**$0.64**	**$0.78**	**$1.34**	**$1.14**	**$1.42**	**$1.20**	**$1.23**	**$1.26**	**$1.33**	**$1.41**
EPS (diluted)	**($16.16)**	**($13.06)**	**($3.54)**	**($1.50)**	**$0.41**	**($1.23)**	**($1.33)**	**($0.95)**	**($1.17)**	**$0.10**	**$0.60**	**$0.72**	**$1.24**	**$1.06**	**$1.32**	**$1.11**	**$1.14**	**$1.17**	**$1.23**	**$1.31**
Basic shares	0.8	1.1	5.9	20.7	33.8	35.2	36.6	38.0	39.5	41.1	42.8	44.5	46.3	48.1	50.0	52.0	54.1	56.3	58.5	60.9
Diluted shares	0.8	1.1	8.4	23.2	36.4	37.8	39.3	40.9	42.5	44.2	46.0	47.9	49.8	51.8	53.8	56.0	58.2	60.6	63.0	65.5

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
ECYT	Endocyte
FATE	Fate Therapeutics, Inc.
NKTR	Nektar
OREX	Orexigen Therapeutics

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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

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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

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Rating	Count	Ratings Distribution	Count	IB Services/Past 12 Months
Buy (a)	415	59.20%	68	16.39%
Hold (b)	270	38.52%	4	1.48%
Sell (c)	16	2.28%	1	6.25%

(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.

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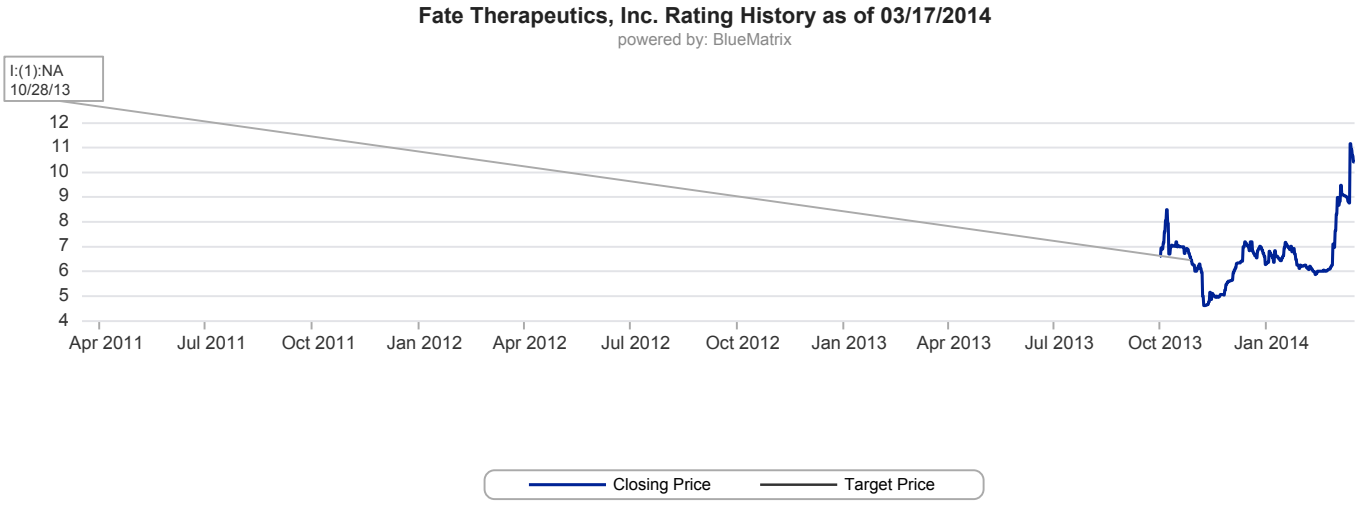

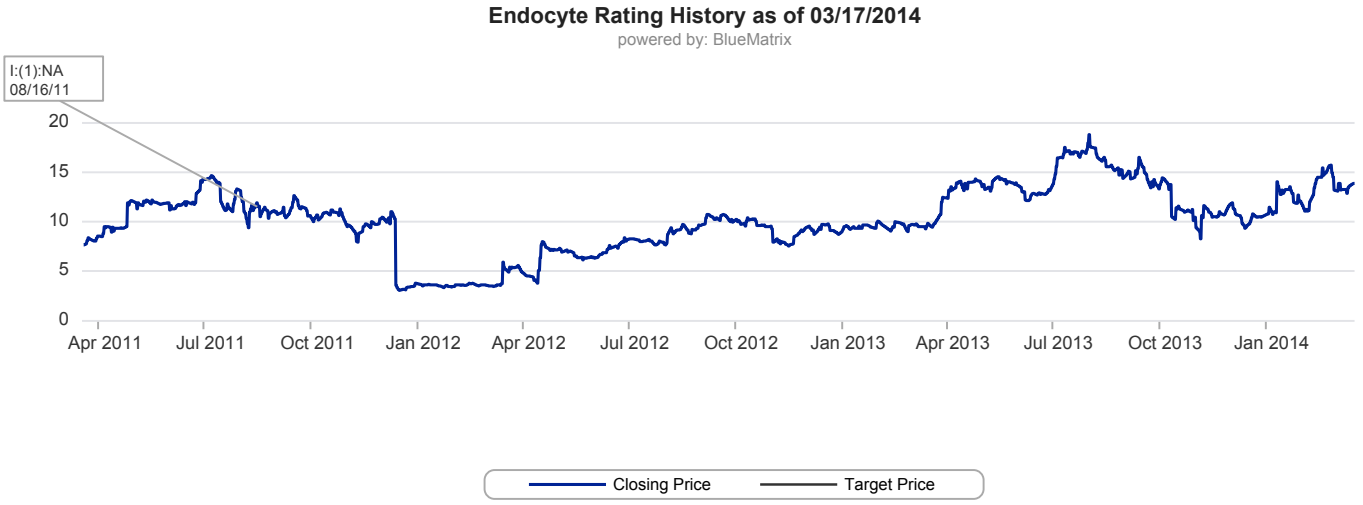

Initiated Coverage - 8/16/2011 - Rating Outperform

Nektar Rating History as of 03/17/2014

powered by: BlueMatrix

Orexigen Therapeutics Rating History as of 03/17/2014

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Legend for Price Chart:

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

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