

FLASH NOTE

Biotechnology

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Recommendation

Rating:	Outperform
Price Target:	\$44.00

Stock Statistics as of 10/25/2013

Price:	\$22.95
52W Range:	\$36.25-\$17.00
Shares Out (MM):	23.3
Market Cap (MM):	\$544.4
Net Debt (MM):	\$(67.0)



BLUEBIRD BIO INC (NASDAQ:BLUE)

First Patient Treated In Phase II/III CCALD Trial

This morning bluebird bio announced that it has transplanted the first boy with childhood cerebral adrenoleukodystrophy (CCALD) in its Phase II/III "Starbeam" trial, using the company's Lenti-D gene therapy. Following initiation of patient screening in August, the timing of this milestone is in line with our expectation that at least one child would be treated in 2013. We believe Starbeam is likely to succeed and lead to approval of Lenti-D. We reiterate our Outperform rating on BLUE.

The Starbeam study (a.k.a. ALD-102) will enroll up to 15 boys in the U.S. and Europe with early stage CCALD, a rare, rapidly progressive, and fatal neurological disease. The study makes use of bluebird's ex vivo lentiviral gene delivery platform. Stem cells from affected individuals are harvested, transduced with a vector containing a corrected version of the gene defect in CCALD to create the Lenti-D cells, which are then transplanted back into the child. The primary endpoint of the study is the proportion of patients with no major functional disabilities (MFD) 24 months post transplant. We think the trial could be fully enrolled by 2015.

We believe Starbeam will succeed and serve as the pivotal trial supporting registration of Lenti-D. A French academic study has already shown in four patients that the basic approach used in Lenti-D is strikingly effective at stabilizing CCALD progression over a multi-year period. We expect that the FDA will assess Lenti-D's efficacy in part by comparing the proportion of patients who are MFD-free at 2 years in Starbeam to that in bluebird's untreated natural history study. Given that the natural history study showed that 73% of untreated patients meeting Starbeam's enrollment criteria experienced an MFD within two years, while only 15% of HSCT-treated patients did, success in this trial looks quite likely. Moreover, consultants suggest that up to 30% of patients receiving unmatched HSCT die, in part due to complications of GVHD and/or immunosuppression; 5-year survival is more like 90% with matched siblings. Therefore, we believe the autologous Lenti-D approach may lead to a noticeable safety and mortality benefit vs. unmatched HSCT at two years as well, assuming it behaves like sibling matched HSCT.

We reiterate our Outperform rating on BLUE. bluebird's two lead gene therapies, Lenti-D for CCALD and LentiGlobin for beta-thalassemia and sickle cell disease, have each shown proof of concept in clinical studies, and we expect shares to appreciate as these and other programs progress.

Please see addendum of this report for important disclosures.



Valuation Methodology & Investment 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.

Company Specific Risks

bluebird bio has no approved products and limited revenue. The company may need to raise additional capital from the public markets prior to turning profitable. bluebird's two lead candidates (Lenti-D and LentiGlobin) are gene therapies with little clinical trial experience. Each faces a number of clinical, regulatory, and commercial hurdles prior to becoming successful.



Addendum

Analyst Certification

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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

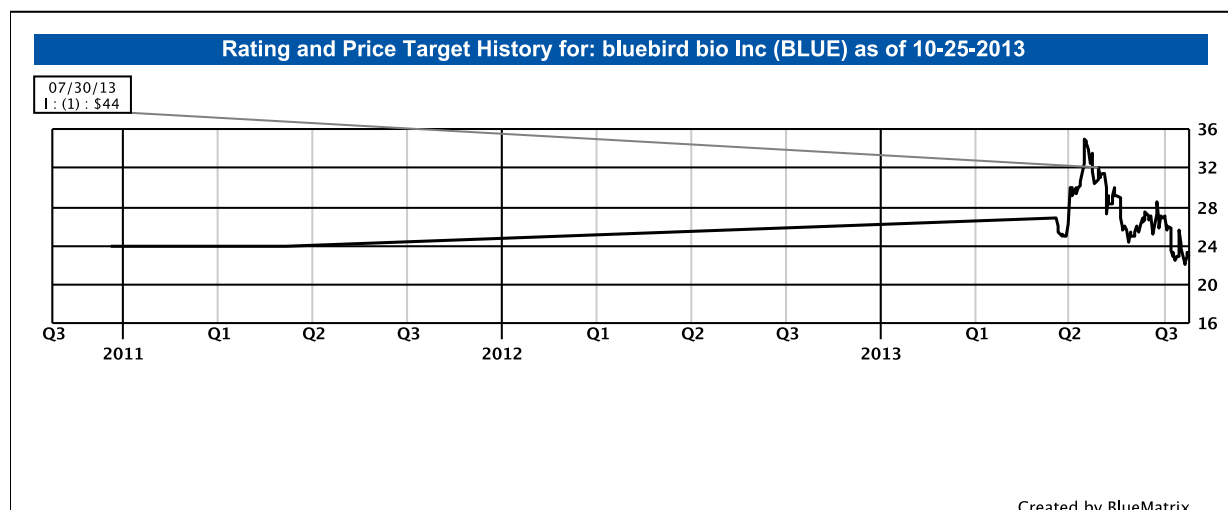
COWEN AND COMPANY RATING ALLOCATION

Distribution of Ratings/Investment Banking Services (IB) as of 09/30/13

Rating	Count	Ratings Distribution	Count	IB Services/Past 12 Months
Buy (a)	394	58.72%	54	13.71%
Hold (b)	255	38.00%	5	1.96%
Sell (c)	22	3.28%	1	4.55%

(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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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