INDUSTRY NOTE
June 18, 2014

PiperJaffray.

Biopharm

CAR-T/TCR Primer, Call Tomorrow At 10am ET

CONCLUSION

Tomorrow at 10am ET we are hosting a call to provide an overview of the emerging CAR-T/TCR platforms which are generating exciting results across a variety of hematologic malignancies and which may also have utility in other settings including solid tumors. There are a number of different approaches across a few different companies, so at least having the basics to understand how programs may differentiate will be important for making investment decisions. Please contact us or your Piper Jaffray sales rep for call details.

- Key players in the field include NVS, Kite, Juno, BLUE, Lentigen, Cellectis and Adaptimmune.
- Recent partnerships validate: Cellectis just announced a partnership with PFE; Adaptimmune recently announced a partnership with GSK; BLUE has a partnership with CELG.
- Our goal: At our June 23 GenomeRx Symposium, we're hosting a CAR-T/TCR panel since this represents the best application to date of gene-altering therapies for treatment of malignancy. Ahead of that event, we wanted to profile a solid foundation for us and attendees to base further discussion. These are complex technologies that may differentiate in subtle (or not-so-subtle) ways, but the potential opportunity ahead is sizable enough to accommodate multiple winners.

Joshua E. Schimmer, MD

Sr Research Analyst, Piper Jaffray & Co. 212 284-9322, joshua.e.schimmer@pjc.com

Jerry Yang, Ph.D.

Research Analyst, Piper Jaffray & Co. 212 284-9331, jerry.n.yang@pjc.com

Kristina N. Cibor, Research Analyst 617 654-0727, kristina.n.cibor@pjc.com

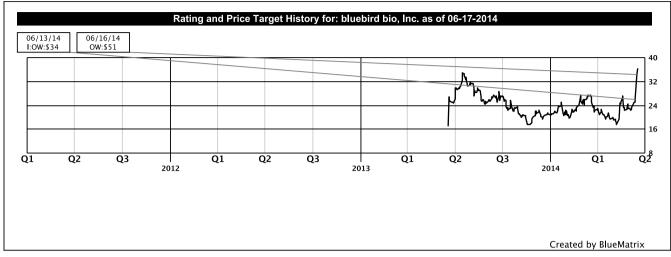
Related Companies:BLUE
36.47
CELG
Share Price:
36.47
159.87

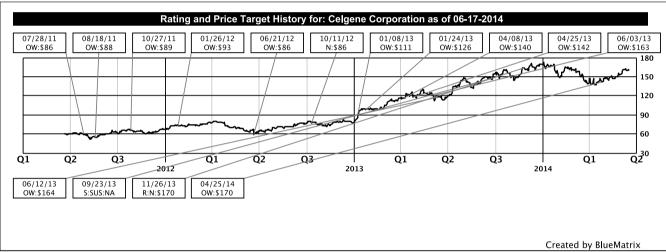
RISKS

Companies mentioned may fail to achieve development, regulatory or commercial objectives.

Piper Jaffray does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decisions. This report should be read in conjunction with important disclosure information, including an attestation under Regulation Analyst certification, found on pages 2 - 4 of this report or at the following site: http://www.piperjaffray.com/researchdisclosures

IMPORTANT RESEARCH DISCLOSURES





Notes: The boxes on the Rating and Price Target History chart above indicate the date of the Research Note, the rating, and the price target. Each box represents a date on which an analyst made a change to a rating or price target, except for the first box, which may only represent the first Note written during the past three years.

Legend:

I: Initiating Coverage

R: Resuming Coverage

T: Transferring Coverage

D: Discontinuing Coverage

S: Suspending Coverage

OW: Overweight

N: Neutral

UW: Underweight NA: Not Available

UR: Under Review

Distribution of Ratings/IB Services Piper Jaffray				
			IB Serv./Past 12 Mos.	
Rating	Count	Percent	Count	Percent
BUY [OW]	355	61.85	87	24.51
HOLD [N]	204	35.54	21	10.29
SELL [UW]	15	2.61	0	0.00

INDUSTRY NOTE
June 18, 2014



Note: Distribution of Ratings/IB Services shows the number of companies currently in each rating category from which Piper Jaffray and its affiliates received compensation for investment banking services within the past 12 months. FINRA rules require disclosure of which ratings most closely correspond with "buy," "hold," and "sell" recommendations. Piper Jaffray ratings are not the equivalent of buy, hold or sell, but instead represent recommended relative weightings. Nevertheless, Overweight corresponds most closely with buy, Neutral with hold and Underweight with sell. See Stock Rating definitions below.

Analyst Certification — Joshua E. Schimmer, MD, Sr Research Analyst

- Jerry Yang, Ph.D., Research Analyst

- Kristina N. Cibor, Research Analyst

The views expressed in this report accurately reflect my personal views about the subject company and the subject security. In addition, no part of my compensation was, is, or will be directly or indirectly related to the specific recommendations or views contained in this report.



Research Disclosures

Piper Jaffray usually provides bids and offers for the securities of bluebird bio, Inc. and will, from time to time, buy and sell bluebird bio, Inc. securities on a principal basis.

Piper Jaffray was making a market in the securities of Celgene Corporation at the time this research report was published. Piper Jaffray will buy and sell Celgene Corporation securities on a principal basis.

Piper Jaffray research analysts receive compensation that is based, in part, on overall firm revenues, which include investment banking revenues.

Rating Definitions

Stock Ratings: Piper Jaffray ratings are indicators of expected total return (price appreciation plus dividend) within the next 12 months. At times analysts may specify a different investment horizon or may include additional investment time horizons for specific stocks. Stock performance is measured relative to the group of stocks covered by each analyst. Lists of the stocks covered by each are available at www.piperjaffray.com/ researchdisclosures. Stock ratings and/or stock coverage may be suspended from time to time in the event that there is no active analyst opinion or analyst coverage, but the opinion or coverage is expected to resume. Research reports and ratings should not be relied upon as individual investment advice. As always, an investor's decision to buy or sell a security must depend on individual circumstances, including existing holdings, time horizons and risk tolerance. Piper Jaffray sales and trading personnel may provide written or oral commentary, trade ideas, or other information about a particular stock to clients or internal trading desks reflecting different opinions than those expressed by the research analyst. In addition, Piper Jaffray technical research products are based on different methodologies and may contradict the opinions contained in fundamental research reports.

- Overweight (OW): Anticipated to outperform relative to the median of the group of stocks covered by the analyst.
- Neutral (N): Anticipated to perform in line relative to the median of the group of stocks covered by the analyst.
- Underweight (UW): Anticipated to underperform relative to the median of the group of stocks covered by the analyst.

Other Important Information

The material regarding the subject company is based on data obtained from sources we deem to be reliable; it is not guaranteed as to accuracy and does not purport to be complete. This report is solely for informational purposes and is not intended to be used as the primary basis of investment decisions. Piper Jaffray has not assessed the suitability of the subject company for any person. Because of individual client requirements, it is not, and it should not be construed as, advice designed to meet the particular investment needs of any investor. This report is not an offer or the solicitation of an offer to sell or buy any security. Unless otherwise noted, the price of a security mentioned in this report is the market closing price as of the end of the prior business day. Piper Jaffray does not maintain a predetermined schedule for publication of research and will not necessarily update this report. Piper Jaffray policy generally prohibits research analysts from sending draft research reports to subject companies; however, it should be presumed that the analyst(s) who authored this report has had discussions with the subject company to ensure factual accuracy prior to publication, and has had assistance from the company in conducting diligence, including visits to company sites and meetings with company management and other representatives.

Notice to customers: This material is not directed to, or intended for distribution to or use by, any person or entity if Piper Jaffray is prohibited or restricted by any legislation or regulation in any jurisdiction from making it available to such person or entity. Customers in any of the jurisdictions where Piper Jaffray and its affiliates do business who wish to effect a transaction in the securities discussed in this report should contact their local Piper Jaffray representative. Europe: This material is for the use of intended recipients only and only for distribution to professional and institutional investors, i.e. persons who are authorised persons or exempted persons within the meaning of the Financial Services and Markets Act 2000 of the United Kingdom, or persons who have been categorised by Piper Jaffray Ltd. as professional clients under the rules of the Financial Conduct Authority. United States: This report is distributed in the United States by Piper Jaffray & Co., member SIPC, FINRA and NYSE, Inc., which accepts responsibility for its contents. The securities described in this report may not have been registered under the U.S. Securities Act of 1933 and, in such case, may not be offered or sold in the United States or to U.S. persons unless they have been so registered, or an exemption from the registration requirements is available.

This report is produced for the use of Piper Jaffray customers and may not be reproduced, re-distributed or passed to any other person or published in whole or in part for any purpose without the prior consent of Piper Jaffray & Co. Additional information is available upon request.

Copyright 2014 Piper Jaffray. All rights reserved.