COWEN
AND COMPANY

Biotechnology

Genocea Biosciences

Equity Research

Company Quick Take

July 1, 2014

Price: $18.75 (06/30/2014)

Price Target: $40.00

OUTPERFORM (1)

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Key Data

Symbol	NASDAQ: GNCA
Market Cap (MM)	$324.8

Genocea Reports 12 Month Data From GEN-003's Phase I/IIa

The Cowen Insight

Through 12 months GEN-003 continues to appear safe and well tolerated. At month 12 '003's effect on lesion rates remained, but patients' viral shedding reverted to baseline. We suspect that a booster dose may be necessary for patients who remain on L-T therapy. We continue to think that Genocea is undervalued based on the promise of GEN-003 and GEN-004.

Through 12 Months GEN-003 Continued To Have An Impact On Lesions, Although Its Impact On Viral Shedding Waned.

The News: This morning, Genocea reported top-line data following 12-months of follow-up in the Phase I/II trial of its candidate HSV-2 therapeutic vaccine GEN-003. At 6 months, the 30ug antigen + 50mg adjuvant dose reduced the genital lesion and viral shedding rates by 65% and 40%, respectively. At 12 months, the 30ug dose still reduced lesions (by 42%) compared to baseline, but the viral shedding rate reverted to baseline. T-cell and antibody responses to the GEN-003 are present at 12 months. Importantly, GEN-003 continues to exhibit a clean safety profile. Full data will be presented at a medical meeting in October 2014.

Our Take: Our consultants believe that GEN-003's 6 month efficacy and safety profile suggest an approvable product that will take meaningful share of the market. Today's data indicates continued but reduced efficacy at 12 months post-vaccination. Genocea has already developed plans for Phase II dose optimization study which will test a matrix of additional antigen (30 and 60mg) and adjuvant (25, 50, and 75mg) dose combinations. This trial will enroll 30 patients per treatment group and is scheduled to begin during Q3:14. Out consultants think it possible that this trial could find a dose that improves the magnitude or duration of GEN-003's effect. Nonetheless, in the worst case, should GEN-003's duration remain similar to the Phase I/II experience, patients who remain on long-term therapy with GEN-003 may simply require a booster dose at or after month 6.

Our Thesis: Genocea's ATLAS allows the company to more rapidly and exhaustively screen for protective T-cell responses. ATLAS has produced two clinical stage candidate vaccines. GEN-003 is a therapeutic vaccine for HSV-2 (genital herpes) which has produced impressive Phase II efficacy data. A safe and effective therapeutic HSV-2 vaccine would have $1B+ sales potential. GEN-004, a potential universal preventative pneumococcal vaccine, has also generated promising Phase I immunogenicity data. We believe Genocea is undervalued on GEN-003's potential alone, and expect Genocea to outperform as GEN-003 and GEN-004 progress.

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

Much of Genocea's valuation rests on the value of its ATLAS vaccine discovery technology platform, and the revenue potential of its pipeline programs. Determining the value of a technology platform is difficult. Many factors could alter the value, including competition from newer technology platforms, the success or failure of Genocea's candidate vaccines, and the attractiveness of vaccine development more generally. Projecting future sales for any product is difficult, and this is particularly the case for candidates that have yet to be approved. Genocea's stock could be impacted by changes in the regulatory, commercial, or competitive environment for its candidate vaccines or for vaccines more generally. Moreover, the market exclusivity of Genocea's vaccines is largely dependent on their patents, which could be subject to challenge.

Addendum

Stocks Mentioned In Important Disclosures

Ticker	Company Name
GNCA	Genocea Biosciences

Analyst Certification

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Genocea Biosciences has been client(s) of Cowen and Company, LLC in the past 12 months.

Genocea Biosciences is or was in the past 12 months a client of Cowen and Company, LLC; during the past 12 months, Cowen and Company, LLC provided IB services.

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COWEN AND COMPANY RATING DEFINITIONS

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

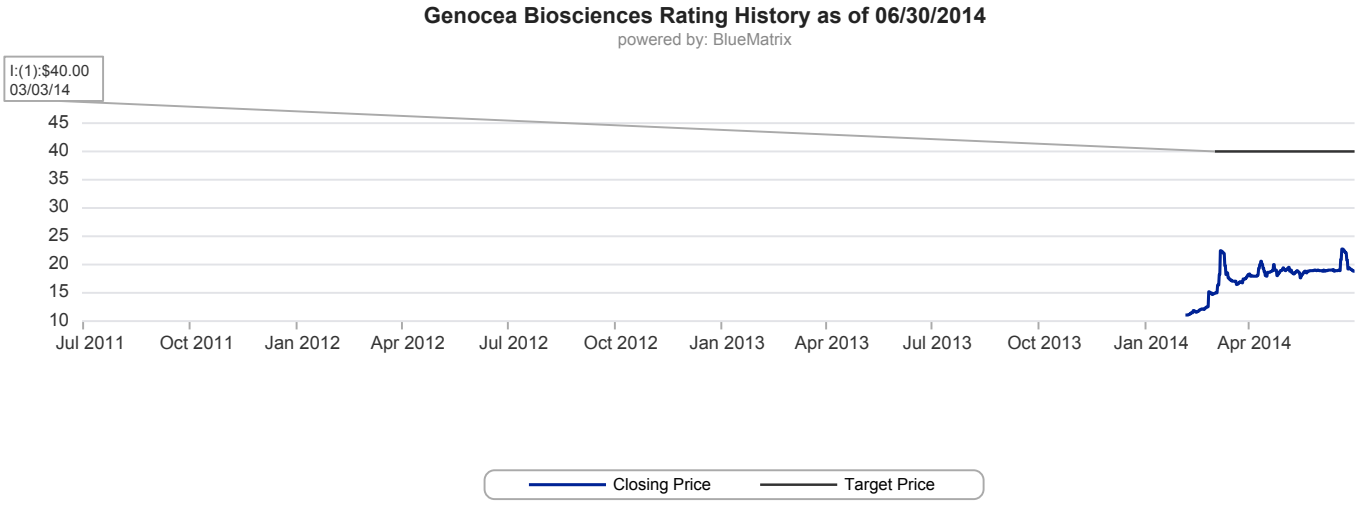
Cowen And Company Rating Definitions

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.



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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