

Equity Research

May 6, 2014

**Price: \$19.44** (05/5/2014)

**Price Target: \$40.00**

**OUTPERFORM (1)**

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**Key Data**

Symbol	NASDAQ: GNCA
52-Week Range:	\$23.99 - 10.90
Market Cap (MM):	\$336.5
Net Debt (MM):	\$(65.8)
Cash/Share:	\$38.97
Dil. Shares Out (MM):	18.0
Enterprise Value (MM):	\$408.9
ROIC:	NA
ROE (LTM):	NA
BV/Share:	\$(248.44)
Dividend:	NA

FY (Dec)	2013A	2014E	2015E
<b>Revenue (MM)</b>			
Year	\$1.0	\$0.0	\$0.0
EV/S	408.9x	-	-

**Earnings Per Share**

Q1	-	\$(0.76)A	-
Prior Q1	-	\$(0.55)	-
Q2	-	\$(0.46)	-
Prior Q2	-	-	-
Q3	-	\$(0.53)	-
Prior Q3	-	-	-
Q4	-	\$(0.52)	-
Prior Q4	-	-	-
Year	\$(2.12)	\$(2.10)	\$(2.05)
Prior Year	-	\$(2.05)	-
P/E	NM	NM	NM

Earnings Update

# *Q1 Results; Pipeline Milestones On Track*

**The Cowen Insight**

Genocea reported Q1 financials and provided a pipeline update. Genocea ended the quarter with \$65.8MM in cash, sufficient to fund operations through the end of 2015. By mid-year Genocea expects to release 12-month data from the Ph. IIa of GEN-003 and the first results from the Ph. I of GEN-004. We expect GNCA to outperform the market as its pipeline makes progress

**Genocea Remains Well Financed.**

Genocea ended Q1:14 with \$65.8MM in cash which management projects to be sufficient to fund development of GEN-003 and GEN-004 through the end of 2015.

**12 Month Data From GEN-003's Phase IIa Expected In Mid-2014.**

GEN-003 is a T-cell directed therapeutic HSV-2 vaccine. GEN-003 is in the midst of a Phase I/IIa trial and has demonstrated significant reductions in both the days of viral shedding (40%) and the presence of viral lesions (72%) at 6-months post-vaccination. While management believes that the 6-month data is sufficient for commercialization, 12-month durability has the potential to further strengthen GEN-003's competitive position relative to daily antiviral administration. 12-month durability of response data for both viral shedding and lesions is expected in mid-2014. GNCA expects to initiate a Phase II dose optimization trial during Q2:14 with initial data expected in mid-2015.

**...As Is The First GEN-004 Phase I Immunogenicity Data**

Genocea is also developing a candidate universal pneumococcal vaccine (GEN-004). Academic studies have demonstrated that Th17 cells are capable of fighting off pneumococcal infection in the absence of antibodies. Therefore, GNCA designed GEN-004 to elicit a Th17 response. GEN-004 has previously been shown to be protective in animal models of pneumococcal disease. A Phase I study of GEN-004 in healthy volunteers is now fully enrolled. Safety and efficacy data is expected in Q2:14. The Phase I efficacy data will be restricted to analysis of the immune response in peripheral blood. A Phase II human challenge study is anticipated to begin in Q3:14. Patients in this trial will be challenged with serotype 6B following vaccination with GEN-004. Efficacy will be assessed by the ability of the bacteria to successfully colonize the lungs as well as the presence of mucosal resident Th17 responses following vaccination. Data is expected in mid-2015.

## At A Glance

### Our Investment Thesis

Genocea Biosciences is a clinical stage company developing sophisticated, high value vaccines and in particular is a leader in the discovery and development of T-cell vaccines. Genocea has four visible programs, including two in clinical development. GEN-003 is a therapeutic vaccine for HSV-2, the cause of genital herpes. GEN-003 has produced strong proof-of-concept Phase II data that our consultants have called "impressive". We estimate a safe and effective HSV-2 therapeutic vaccine would have \$1B+ sales potential. Genocea has also advanced a pneumococcal vaccine into early clinical development. Our analysis suggests that Genocea is undervalued just on GEN-003's potential in HSV-2, with no other contribution from Genocea's other programs or value attributed to the ATLAS platform. We expect Genocea to outperform the market over the next 12 – 24 months as GEN-003 and GEN-004 progress through development.

### Forthcoming Catalysts

- 12 month data from GEN-003's Phase I/IIa trial (mid:14)
- Initial data from GEN-004's Phase I trial (Q2:14)
- Initiation of GEN-003's Phase II dose titration trial (Q2:14)
- Initiation of GEN-004's Phase IIa trial (Q3:14)

### Base Case Assumptions

- GEN-003 is successfully developed and generates \$750MM in revenue by 2025
- GEN-004 progresses through development but does not generate substantial revenue before 2020
- Genocea's other vaccine candidates do not create significant shareholder value before 2020

### Upside Scenario

- GEN-003 is successfully developed and generates more than \$750MM in revenue by 2025
- GEN-004 progresses through development and drives significant shareholder value
- Genocea's other vaccine candidates look promising and are attributed much value

### Downside Scenario

- GEN-003 is not successfully developed and/or generates less than \$750MM in revenue by 2025
- GEN-004 does not progress
- Genocea's other vaccine candidates do not create significant shareholder value before 2020
- Genocea's ATLAS technology fails to generate new candidates or partnerships

### Price Performance



Source: Bloomberg

### Company Description

Genocea's key advantages in the competitive field of vaccine discovery and development are novel and proprietary technologies to identify and validate vaccine antigens that generate a strong cellular (T Cell derived) immune response against pathogens that are resistant to conventional antibody-eliciting vaccines. Genocea has optimized its ATLAS platform in order to screen more exhaustively than others for epitopes that initiate CD4 (helper T Cells) and CD8 (cytotoxic T Cells). Genocea has four visible programs, including two in clinical development. GEN-003 is a therapeutic vaccine for HSV-2, the cause of genital herpes. GEN-004 is a pneumococcal vaccine in early clinical development. Genocea has research programs in Chlamydial vaccines and malarial vaccines.

### Analyst Top Picks

	Ticker	Price (05/5/2014)	Price Target	Rating
BioMarin Pharmaceutical	BMRN	\$60.13	\$95.00	Outperform
Gilead Sciences	GILD	\$79.83	\$95.00	Outperform
Neurocrine Biosciences	NBIX	\$13.62	\$20.00	Outperform

## Investment Thesis

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Genocea Biosciences is a clinical stage company developing sophisticated, high value vaccines, and in particular is a leader in the discovery and development of T cell vaccines. Genocea's key advantages in this complex area of drug development are novel and proprietary technologies to identify and validate vaccine antigens that generate a strong cellular (T cell derived) immune responses against pathogens that are resistant to conventional antibody-eliciting vaccines. The company and its founders have a nearly 20-year history of identifying T cell antigens in novel ways. This experience has allowed Genocea to optimize its ATLAS platform in order to screen more rapidly and exhaustively than others for epitopes that initiate CD4 (helper T cells) and/or CD8 (cytotoxic T cells) T cell responses. ATLAS is a high throughput approach to antigen identification that allows T cells from many different patients to be screened and compared to identify not only antigens, but protective antigens. ATLAS also allows Genocea to exploit new advances in immunology - such as rapidly screening for T<sub>H</sub>17 antigens quickly after it was discovered that these newly characterized T cells were a key part of a protective response against pneumococcal disease. Genocea has four visible programs, including two in clinical development. GEN-003 is a therapeutic vaccine for HSV-2, the cause of genital herpes. GEN-003 has produced strong proof-of-concept Phase II data that our consultants have called "impressive." We estimate a safe and effective HSV-2 therapeutic vaccine would have \$1B+ sales potential. Genocea has also advanced a pneumococcal vaccine into early clinical development. In addition, the company has research programs in chlamydial and malarial vaccines. We expect the company to keep collaborating with academic and foundation scientists who wish to apply Genocea's powerful ATLAS technology to new problems in vaccine development. Our analysis suggests that Genocea is undervalued just on GEN-003's potential in HSV-2, with no other contribution from Genocea's other programs or value attributed to the ATLAS platform. We expect Genocea to outperform the market over the next 12-24 months as GEN-003 and GEN-004 progress through development.

#### Genocea - Upcoming Milestones/Events

Indication/Milestone	Timing
Initial data from GEN-004's Phase I trial in healthy volunteers	Q2:14
Initiation of GEN-003's Phase II dose titration trial	Q2:14
12 month data from GEN-003's Ph. I/IIa trial in HSV-2 patients	Mid:2014
Initiation of GEN-004's Phase II trial	Q3:14
Data from post dose 3 analysis in GEN-003's Phase II dose titration trial	Mid:15
Data from GEN-004's Phase II trial	Mid:15
Initiation of GEN-003's Phase II dose regimen trial	H2:15

Source: Cowen and Company

Genocea Quarterly P&L

	2013A	Q1:14A	Q2:14E	Q3:14E	Q4:14E	2014E
GEN-003		-				
GEN-004		-				
Contract, Grant Revenue And Other	1.0					
Total Revenue	1.0	-	-	-	-	-
COGS		-	-	-	-	-
<i>Gross Margin</i>						
R&D	14.5	4.4	5.5	7.0	7.0	23.9
SG&A	4.5	2.0	2.5	2.5	2.5	9.5
Other						
Operating Expenses	19.0	6.4	8.0	9.5	9.5	33.4
Operating Income / (Loss)	(18.0)	(6.4)	(8.0)	(9.5)	(9.5)	(33.4)
Interest Income, net	(0.7)	-	(0.2)	(0.2)	(0.2)	(0.6)
Other Income	(0.2)	(1.0)				
Pretax net income	(18.9)	(7.3)	(8.2)	(9.7)	(9.7)	(34.0)
Accretion of redeemable convertible preferred stock	(1.2)	(0.2)				
Taxes		-	-	-	-	-
<i>Tax Rate</i>		0%	0%	0%	0%	0%
GAAP Net Income	(20.1)	(7.5)	(8.2)	(9.7)	(9.7)	(34.0)
<b>GAAP EPS</b>	<b>\$ (2.12)</b>	<b>\$ (0.76)</b>	<b>\$ (0.46)</b>	<b>\$ (0.53)</b>	<b>\$ (0.52)</b>	<b>\$ (2.10)</b>
Diluted Shares Outstanding (MM)	9.5	9.9	18.0	18.2	18.6	16.2

Source: Cowen and Company

Genocea Annual P&L

	2013A	2014E	2015E	2016E	2017E	2018E	2019E	2020E
GEN-003	-	-	-	-	-	-	-	15.0
GEN-004	-	-	-	-	-	-	-	-
Contract, Grant Revenue And Other	1.0	-	-	-	-	-	-	-
Total Revenue	1.0	-	-	-	-	-	-	15.0
COGS	-	-	-	-	-	-	-	1.5
<i>Gross Margin</i>		0%	0%	0%	0%	0%	0%	90%
R&D	14.5	23.9	27.5	30.0	45.0	55.0	65.0	75.0
SG&A	4.5	9.5	11.0	12.0	15.0	25.0	50.0	115.0
Other	-	-	-	-	-	-	-	-
Operating Expenses	19.0	33.4	38.5	42.0	60.0	80.0	115.0	191.5
Operating Income / (Loss)	(18.0)	(33.4)	(38.5)	(42.0)	(60.0)	(80.0)	(115.0)	(176.5)
Interest Income, net	(0.7)	(0.6)	(1.0)	(1.0)	-	2.0	6.0	8.0
Other Income								
Pretax net income	(18.9)	(34.0)	(39.5)	(43.0)	(60.0)	(78.0)	(109.0)	(168.5)
Accretion of redeemable convertible preferred stock								
Taxes	-	-	-	-	-	-	-	-
<i>Tax Rate</i>	-	0%	0%	0%	0%	0%	0%	0%
GAAP Net Income	(20.1)	(34.0)	(39.5)	(43.0)	(60.0)	(78.0)	(109.0)	(168.5)
<b>GAAP EPS</b>	<b>(2.12)</b>	<b>(2.10)</b>	<b>(2.05)</b>	<b>(1.70)</b>	<b>(2.35)</b>	<b>(3.00)</b>	<b>(3.10)</b>	<b>(4.10)</b>
Diluted Shares Outstanding (MM)	9.5	16.2	19.3	25.3	25.5	26.0	35.2	41.1

Source: Cowen and Company

## *Valuation Methodology And Risks*

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### **Valuation Methodology**

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#### **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**

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#### **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**

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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
BMRN	BioMarin Pharmaceutical
GNCA	Genocea Biosciences
GILD	Gilead Sciences
NBIX	Neurocrine Biosciences

## Analyst Certification

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## Important Disclosures

Cowen and Company, LLC and or its affiliates make a market in the stock of Genocea Biosciences, BioMarin Pharmaceutical, Gilead Sciences and Neurocrine Biosciences securities.

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

Cowen and Company, LLC and/or its affiliates expect to receive, or intend to seek, compensation for investment banking services in the next 3 months from Neurocrine Biosciences.

Genocea Biosciences and Neurocrine 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.

Cowen and Company, LLC and/or its affiliates received in the past 12 months compensation for investment banking services from Genocea Biosciences and Neurocrine Biosciences.

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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

**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 03/31/14

Rating	Count	Ratings Distribution	Count	IB Services/Past 12 Months
Buy (a)	407	57.08%	85	20.88%
Hold (b)	288	40.39%	8	2.78%
Sell (c)	18	2.52%	1	5.56%

(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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### Genoclea Biosciences Rating History as of 05/05/2014

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### BioMarin Pharmaceutical Rating History as of 05/05/2014

powered by: BlueMatrix



### Gilead Sciences Rating History as of 05/05/2014

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### Neurocrine Biosciences Rating History as of 05/05/2014

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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

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