Kite Pharma

Equity Research

Quick Take: Company Update

May 6, 2015

Price: $54.28 (05/4/2015)

Price Target: NA

OUTPERFORM (1)

Eric Schmidt, Ph.D.
646.562.1345
eric.schmidt@cowen.com

Marc Frahm, Ph.D.
646.562.1394
marc.frahm@cowen.com

Key Data

Symbol	NASDAQ: KITE
Market Cap (MM)	$2,430.3

Leading The Way In DLBCL And So Much More

The Cowen Insight

We hosted investor meetings with Dr. Arie Belldegrun (Chairman and CEO) and Dr. David Chang (CMO). Kite remains on-track to generate potentially pivotal data for KTE-C19 in DLBCL during 2016. Through its multiple BD transactions Kite has also significantly broadened its platform and pipeline to become the leader in engineered T cells. We remain at Outperform.

Corporate Mission Is To Become The Leading Producer Of T Cell Therapies...

While much investor attention has been focused on Kite and its competitors' CD19 directed CAR therapies, Kite has quietly assembled what it believes is (1) the best platform from which new CAR/TCR based therapies can be developed and (2) the broadest pipeline of engineered T cell therapies. Kite has worked with the NCI to optimize T cell production methods, completed tech transfer to an external CMO, and is now the only company with an FDA cleared, corporately held CAR T cell IND (KTE-C19). Kite is also in the process of building commercial scale (5000 patients/yr capacity) and clinical scale (300 patients/yr capacity) manufacturing facilities in Los Angeles from which to rapidly move promising preclinical product candidates into the clinic and ultimately market without the need for external tech transfer. This will also form a platform to quickly test emerging engineered T cell technologies (e.g. gene editing, switches, etc.) as needed. Through its CRADA with the National Cancer Institute (NCI), Kite has active clinical programs utilizing two CAR constructs (CD19 and EGFRvIII) and four TCR constructs (NY-ESO-1, MAGE A3, MAGE A6, and HPV-16 E6). NCI is also working on additional clinical and preclinical constructs to which Kite has development rights including a mesothelin CAR and HPV-16 E7, SSX2, and personalized neo-antigen TCRs. In addition, Kite has gained access to multiple oncology targets through a 50:50 partnership with Amgen. Finally, the recent acquisition of T Cell Factory (TCF) has given Kite a proprietary high-throughput method for identifying and cloning rare TCR sequences from patient samples. Following this acquisition, Kite possesses many of the leading minds in engineered T cells and immune-therapy as internal employees (Drs. Margo Roberts and Ton Schumacher), collaborators (Dr. Steven Rosenberg), or scientific advisors (Drs. Ron Levy, Toni Ribas, and Owen Witte). Presentations from many of these people will be featured when Kite reviews its platform, pipeline, and future directions at an R&D day in NYC on June 23, 2015.

...And Leverage This To Become The Partner Of Choice

Kite intends to leverage its leading platform (and IP) to become the partner of choice as new T cell modifications prove themselves necessary in the clinic. In January, Amgen partnered with Kite. In return for access to Kite's expertise, Amgen provided Kite with multiple oncology targets and 50% economics on the proposed products. We believe the Amgen partnership in January provides the first validation of this approach. Management described currently proposed T cell modifications such as combination therapies, cytokine secretion, gene editing, suicide genes, and switches as nice theories deserving of study but possessing no clinical data. Due to

the often poor translatability of preclinical models to human immune-therapy, Kite plans to generally wait on clinical data before partnering its platform with outside technologies. However, its seminal IP in the CAR space could become important sooner as competitors move towards planned 2016 BLA filings in ALL.

2014 Was And 2015 Is All About Execution

At the time of its 2014 IPO, Kite management outlined a plan to (1) work with NCI to identify an ideal conditioning regimen and cell dose for KTE-C19 in DLBCL, (2) transfer manufacturing outside of NCI to enable multicenter trials and (3) file a corporate IND for KTE-C19 in order to support (4) initiating a potentially pivotal DLBCL trial in H1:15, (5) generating pivotal data in 2016, and (6) potentially gaining FDA approval in 2017. While simultaneously expanding Kite's breadth, management has successfully executed on the first three tasks. Kite's management reports that its tech transfer process has been completed, the FDA has granted an IND, a conditioning regimen and cell dose has been settled, and a potentially pivotal Phase I/II trial protocol is "fully active". Management has completed IRB approval and contract negotiations with at least three clinical trial sites (City of Hope, Moffitt, and Washington University). Kite has also conducted multiple "dummy runs" with these clinical sites and its contract manufacturer (PCT). With these three sites now activated (and MD Anderson to join soon), management expects to dose the first patient in the 6 patient Phase I portion of the trial during Q2:15. This landmark event is expected to be press released. For competitive reasons management does not plan to disclose the conditioning regimen or cell dose until it presents the full Phase I dataset (anticipated for ASH 2015). The Phase I portion is designed to ensure that T cell production outside of NCI is not generating vastly different results. Management intends to progress to the pivotal Phase II portion if grade 3 or greater AEs (primarily CRS) are seen in no more than two of the six Phase I patients. Kite also expects to begin pivotal trials of KTE-C19 in MCL, ALL, and CLL during 2015. Finally, Kite plans to file its first corporate IND for a TCR therapy (likely HPV-16 E6) by YE:15.

2016 Will Be A Year Of Data In Liquid And Solid Tumors

The Phase II portion of the initial pivotal KTE-C19 trial will utilize ~25 sites to enroll a 72 patient DLBCL cohort (cohort 1) and a 40 patient PMBCL and TFL cohort (cohort 2). The primary endpoint of the trial is ORR and a potentially pivotal efficacy analysis will be conducted on the first 50 DLBCL patients (H2:16). Kite believes historical data indicates a <20% ORR and 4-5month mOS would be expected. Therefore, an ORR of at least 40% with a mOS of at least 6 months is expected to be approvable. If the interim analysis is successful, Kite expects to file for a BLA by YE:16. As a result, approval for KTE-C19 in DLBCL could come in 2017. Kite's partner NCI has also dosed patients in clinical trials for multiple Kite owned engineered T cell constructs in solid tumors. These include an (1) EGFRvIII specific CAR for glioblastoma and head and neck cancers (2) NY-ESO-1 TCR for urothelial carcinoma, sarcoma, and NSCLC, (3) HPV-16 E6 TCR in anal, cervical, and head and neck cancers (4) MAGE A3/A6 TCR and (5) MAGE A3 TCR both for NSCLC, breast, gastric, ovarian, pancreatic, and prostate cancers. Data from all five solid tumor programs is expected to be presented in 2016. Kite appeared particularly excited by the HPV-16 E6 program. This excitement stems from HPV's central role in ~5% of all cancers and HPV antigen expression being restricted to tumor cells. Importantly, management cautions that Penn/NVS's recent mesothelin CAR T cell presentation is far from definitive for the solid tumor opportunity. First, Kite believes the patient cohort is too small to draw significant conclusions from. Second and likely far more important, the researchers did not utilize a conditioning regimen. Kite/NCI's extensive work on conditioning regimens with the CD19 product have demonstrated that conditioning intensity can impact efficacy. In

addition, the only publicly disclosed responses from engineered T cell therapy in solid tumors (NY-ESO-1 TCR) utilized a preconditioning regimen.

Building For The Future With T Cell Factory And Neo-Antigens

Emerging clinical data from TIL and checkpoint therapies indicates that a major correlate of efficacy in immune-therapy is the presence of T cells that recognize tumor neo-antigens. As a result, Dr. Steven Rosenberg used his plenary presentation at ASH 2014 to present an initial proof of concept and set the goal of commercializing engineered TCR therapies for a patient's specific neo-antigens. We initially thought this goal was admirable but a long way from becoming practical. Dr. Chang admits that his initial reaction over a year ago was much the same. However, Kite revealed that Dr. Rosenberg is currently able to conduct the neo-antigen sequencing, TCR isolation, and T cell production processes within 10 weeks. Through the recent acquisition of T cell Factory (TCF) and its high throughput TCR screening technology, as well as other streamlining efforts, Dr. Chang believes Kite and NCI can shorten the process to 6 weeks in the near future. He believes this timeframe is commercially viable. TCF will be leveraged to fill out Kite's TCR pipeline with neo-antigen (including KRAS) products as well as TCRs specific for cancer testis antigen and viral antigens from oncogenic viruses.

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

Kite Pharma is unprofitable, has no approved products, and will likely need to raise additional capital from the public markets prior to turning profitable. There is limited clinical trial experience on lead candidate KTE-C19, and eACT's more broadly. Moreover, KTE-C19 faces a number of clinical, regulatory, and commercial hurdles prior to becoming successful, and projecting any future sales for KTE-C19 is inherently difficult.

We make investment recommendations on early stage (pre-commercial) biotechnology companies based upon a 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 it there are any good methodologies for assigning a specific target price to such stocks.

Addendum

Stocks Mentioned In Important Disclosures

Ticker	Company Name
KITE	Kite Pharma

Analyst Certification

Each author of this research report hereby certifies that (i) the views expressed in the research report accurately reflect his or her personal views about any and all of the subject securities or issuers, and (ii) no part of his or her compensation was, is, or will be related, directly or indirectly, to the specific recommendations or views expressed in this report.

Important Disclosures

Cowen and Company, LLC and or its affiliates make a market in the stock of Kite Pharma securities.

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

Kite Pharma 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 Kite Pharma.

Cowen and Company, LLC and/or its affiliates managed or co-managed a public offering of Kite Pharma within the past twelve months.

Cowen and Company, LLC compensates research analysts for activities and services intended to benefit the firm's investor clients. Individual compensation determinations for research analysts, including the author(s) of this report, are based on a variety of factors, including the overall profitability of the firm and the total revenue derived from all sources, including revenues from investment banking. Cowen and Company, LLC does not compensate research analysts based on specific investment banking transactions.

Disclaimer

This research is for our clients only. Our research is disseminated primarily electronically and, in some cases, in printed form. Research distributed electronically is available simultaneously to all Cowen and Company, LLC clients. All published research can be obtained on the Firm's client website, https://cowenlibrary.bluematrix.com/client/library.jsp.

Further information on any of the above securities may be obtained from our offices. This report is published solely for information purposes, and is not to be construed as an offer to sell or the solicitation of an offer to buy any security in any state where such an offer or solicitation would be illegal. Other than disclosures relating to Cowen and Company, LLC, the information herein is based on sources we believe to be reliable but is not guaranteed by us and does not purport to be a complete statement or summary of the available data. Any opinions expressed herein are statements of our judgment on this date and are subject to change without notice.

For important disclosures regarding the companies that are the subject of this research report, please contact Compliance Department, Cowen and Company, LLC, 599 Lexington Avenue, 20th Floor, New York, NY 10022. In addition, the same important disclosures, with the exception of the valuation methods and risks, are available on the Firm's disclosure website at https://cowen.bluematrix.com/sellside/Disclosures.action.

Price Targets: Cowen and Company, LLC assigns price targets on all covered companies unless noted otherwise. The price target for an issuer's stock represents the value that the analyst reasonably expects the stock to reach over a performance period of twelve months. The price targets in this report should be considered in the context of all prior published Cowen and Company, LLC research reports (including the disclosures in any such report or on the Firm's disclosure website), which may or may not include price targets, as well as developments relating to the issuer, its industry and the financial markets. For price target valuation methodology and risks associated with the achievement of any given price target, please see the analyst's research report publishing such targets.

Notice to UK Investors: This publication is produced by Cowen and Company, LLC which is regulated in the United States by FINRA. It is to be communicated only to persons of a kind described in Articles 19 and 49 of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005. It must not be further transmitted to any other person without our consent.

Cowen and Company, LLC. New York (646) 562-1000 **Boston** (617) 946-3700 **San Francisco** (415) 646-7200 **Chicago** (312) 577-2240 **Cleveland** (440) 331-3531 **Atlanta** (866) 544-7009 **London** (affiliate) 44-207-071-7500

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

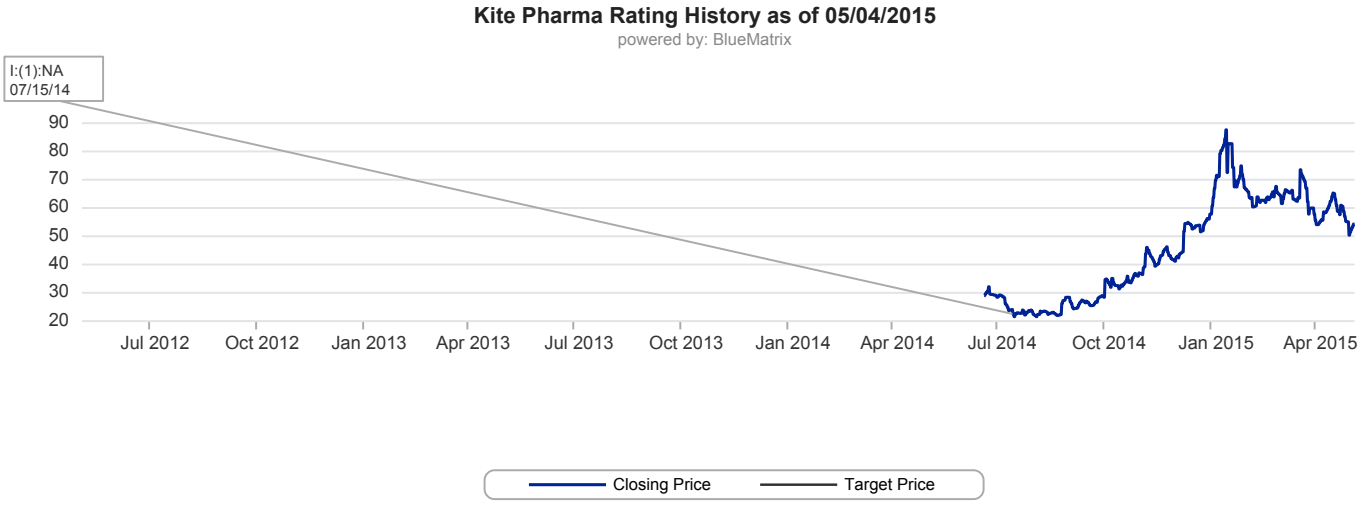
Cowen And Company Rating Definitions

Distribution of Ratings/Investment Banking Services (IB) as of 03/31/15

Rating	Count	Ratings Distribution	Count	IB Services/Past 12 Months
Buy (a)	450	58.67%	103	22.89%
Hold (b)	302	39.37%	8	2.65%
Sell (c)	15	1.96%	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

Points Of Contact

Reaching Cowen

Main U.S. Locations

New York
599 Lexington Avenue
New York, NY 10022
646.562.1000
800.221.5616

Boston
Two International Place
Boston, MA 02110
617.946.3700
800.343.7068

Cleveland
20006 Detroit Road
Suite 100
Rocky River, OH 44116
440.331.3531

San Francisco
555 California Street, 5th Floor
San Francisco, CA 94104
415.646.7200
800.858.9316

Atlanta
3399 Peachtree Road NE
Suite 417
Atlanta, GA 30326
866.544.7009

Chicago
181 West Madison Street
Suite 3135
Chicago, IL 60602
312.577.2240

International Locations

Cowen International Limited

London
1 Snowden Street - 11th Floor
London EC2A 2DQ
United Kingdom
44.20.7071.7500

Cowen and Company (Asia) Limited

Hong Kong
Suite 1401 Henley Building
No. 5 Queens Road Central
Central, Hong Kong
852 3752 2333