Vitae Pharmaceuticals, Inc. (VTAE)

Delay in BACE Program Pushes Out Timelines

MARKET OUTPERFORM | Price: $13.28 | Target Price: $16.00

MARKET DATA

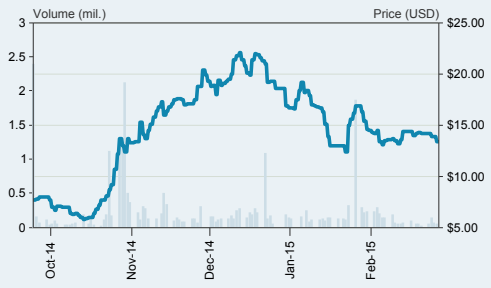
Price	$13.28
52-Week Range:	$5.41 - $23.35
Shares Out. (M):	21.4
Market Cap ($M):	$284.2
Average Daily Vol. (000):	60.0
Cash (M):	$68
Cash/Share:	$3.17
Enterprise Value (M):	$236
Float (M):	19.3
LT Debt (M):	$1

Source: Thomson Reuters and JMP Securities LLC

FY DEC		2014E	2015E	2016E
Revenue ($M)	1Q	--	$0.0	--
	2Q	--	$0.0	--
	3Q	$6.2A	$0.0	--
	4Q	$0.0	$20.0	--
	FY	**$8.5**	**$20.0**	**$0.0**
EPS	1Q	--	($0.46)	--
	2Q	--	($0.49)	--
	3Q	($1.04)A	($0.52)	--
	4Q	($0.39)	($0.54)	--
	FY	**($1.07)**	**($2.01)**	**($1.85)**

Source: Company reports and JMP Securities LLC

STOCK PRICE PERFORMANCE



INVESTMENT HIGHLIGHTS

Vitae Pharmaceuticals announces voluntary temporary clinical hold for BACE inhibitor currently in development for Alzheimer's; reiterating Market Outperform rating, but lowering price target to $16 from $21 based on changes to timelines, and a synthesis of discounted cash flow and sum-of-the-parts methodologies. Vitae reported that unanticipated skin reactions seen in the multiple dose escalation Phase I trial has prompted its partner Boehringer Ingleheim (BI) to place the development of VTP-37948/BI 1181181 on temporary clinical hold. After speaking with management, we believe that the side effect profile seen is attributable to an allergic reaction to the compound and is independent of the intended BACE inhibitory mechanism of action. We anticipate that after careful assessment of the results, BI will either continue with the compound or decide to advance a backup Phase I ready clinical compound. We expect that regardless of this decision, the timelines for the development of a BACE inhibitor will likely be pushed out, and as a result, we are adjusting our valuation to reflect such changes.

VT-39748 demonstrated exceptional early efficacy, but with unexpected side effects. Recall that Vitae previously reported a greater than 80% reduction in cerebral spinal fluid (CSF) Aβ levels during the single ascending dose study, on par with the effects seen in Phase I clinical trials for the Merck, AstraZeneca or Eisai compounds. We have learned that the current skin reaction is manifesting at higher dosages, and late in the 10-day dosing period of the trial.

Moving forward, we anticipate either a quick answer to the question of the cause of the skin reaction to VT-39748 or a rapid pivot to Phase I ready compound. After discussions with management, we believe the temporary clinical hold will delay the clinical development timeline of the VTAE BACE program by one year. The skin reaction is likely an immune reaction commonly seen in early clinical development, and is not likely due to on target effects as other BACE inhibitors in development have not demonstrated a similar side effect profile. We expect BI will likely resolve the issue with VT-39748 or advance a structurally distinct Phase I-ready backup compound in due course. In either scenario, we expect delays in development of up to one year, and as such, we are pushing back the timelines in our model to reflect the later time to revenue recognition.

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Vitae is an early stage drug discovery and development company that uses its proprietary CONTOUR structure-based drug design platform for the development of therapeutic candidates directed against validated targets that are difficult to drug. While Vitae's programs are early, they are potentially first- or best-in-class for multi-blockbuster opportunities in Alzheimer's disease and Type II diabetes. These programs have been validated scientifically and de-risked financially via separate business development agreements with German biopharmaceutical company, Boehringer Ingleheim (private). We recommend investors with a long-term investment horizon to use the anticipated weakness to accumulate the shares.

FIGURE 1. Upcoming Potential Catalysts

Timing	Program	Catalyst
1H15E	VTP-34072 (HSDβ-1)	Phase II clinical results expected in type-2 diabetes
1H15E	VTP-43742 (RORγt)	Phase I clinical trials slated to begin in psoriasis
1H15E	VTP-38543 (LXRβ)	Phase I clinical trials slated to begin in atopic dermatitis
1H16E	VTP-38443 (LXRβ)	Phase I clinical trials slated to begin in acute coronary syndrome

Source: Company Presentations

FIGURE 2. Valuation

Synthesis of Valuation Approaches	
Approach	**Valuation**
DCF Analysis	$ 15.26
SOTP	16.50
Price Target	**$ 16.00**

Source: JMP Securities LLC

FIGURE 3. Discounted Cash Flow

Vitae Pharmaceuticals (VTAE)												
Discounted Cash Flow Model	**2014E**	**2015E**	**2016E**	**2017E**	**2018E**	**2019E**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**
Total Revenues												
US Sales					**-**	**21.7**	**70.9**	**141.2**	**247.0**	**366.1**	**587.2**	**672.1**
Ex-US Sales					**-**	**-**	**33.9**	**70.9**	**263.9**	**401.4**	**555.7**	**764.4**
Milestones	6.0	20.0	-	46.0	70.0	20.0	60.0	50.0	145.0	75.0	-	107.0
Total Revenues		**$ 20.0**	**$ -**	**$ 46.0**	**$ 70.0**	**$ 41.7**	**$ 164.8**	**$ 262.1**	**$ 655.9**	**$ 842.5**	**$ 1,142.9**	**$ 1,543.5**
Gross Profit	0.0	20.0	0.0	46.0	70.0	41.7	164.8	262.1	655.9	842.5	1,142.9	1,543.5
R&D expense	19.2	23.8	26.7	29.3	58.6	65.7	82.1	105.1	120.9	139.0	159.8	183.8
R&D as a % of revenue					*84%*	*157%*	*50%*	*40%*	*18%*	*16%*	*14%*	*12%*
SG&A expense	7.7	10.8	13.0	19.4	26.2	30.2	37.7	60.4	84.5	118.3	159.7	215.6
SG&A as a % of revenue					*37%*	*72%*	*23%*	*23%*	*13%*	*14%*	*14%*	*14%*
Total operating expenses	26.9	34.6	39.6	48.8	84.9	95.9	119.8	165.4	205.4	257.3	319.5	399.4
% Margin					*121%*	*230%*	*73%*	*63%*	*31%*	*31%*	*28%*	*26%*
Operating income (EBIT)	**(26.9)**	**(14.6)**	**(39.6)**	**(2.8)**	**(14.9)**	**(54.1)**	**45.0**	**96.6**	**450.6**	**585.2**	**823.4**	**1,144.1**
Taxes	0.0	0.0	0.0	0.0	0.0	0.0	11.8	29.0	157.7	204.8	288.2	400.4
Tax rate	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*26%*	*30%*	*35%*	*35%*	*35%*	*35%*
After tax operating income	(26.9)	(14.6)	(39.6)	(2.8)	(14.9)	(54.1)	33.2	67.6	292.9	380.4	535.2	743.6
					-21%	*-130%*	*20%*	*26%*	*45%*	*45%*	*47%*	*48%*
Discount year	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00
Discount factor	1.0	1.3	1.8	2.3	3.1	4.1	5.4	7.2	9.6	12.7	16.8	22.3
PV	(26.9)	(11.0)	(22.5)	(1.2)	(4.8)	(13.2)	6.1	9.4	30.6	30.0	31.8	33.3
Residual value of cash flow	$209									**Terminal Value**		147.4
+Cash and Cash equivalents	58											
Company value	267											
-Long-term debt on 6/30/2014	2											
Value of equity	$265											
Fully diluted shares outstanding on 06/30/14	17.37											
Price/share	**$15.26**											
Blended Discount Rate	32.6%											
Terminal growth rate	10%											

Source: JMP Securities LLC

FIGURE 4. Sum-of-the-Parts

NPV Sum-of-the-Parts	WW	US	Ex-US
Diabetes VTP-37948	**$ 6.95**	$ 6.01	$ 0.94
Alzheimer's VTP-34072	**$ 4.50**	$ 1.66	$ 2.84
Milestones	**$ 1.70**		
Cash and Equivs on Hand	**$ 3.34**		
Total NPV	**$ 16.50**	**$ 7.67**	**$ 3.78**

Source: JMP Securities LLC

FIGURE 5. Sum-of-the-Parts Continued

VTP-37948, Diabetes NPV	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
US Sales ($MM)					-	174	567	823	1,342	1,946	3,175	3,453
Royalty rate					*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*
Royalty to VTAE					**0.0**	**21.7**	**70.9**	**102.8**	**167.7**	**243.3**	**396.8**	**431.6**
Contribution Margin					*100%*	*100%*	*72%*	*68%*	*58%*	*48%*	*42%*	*38%*
Operating Margin					**0.0**	**21.7**	**51.1**	**69.9**	**97.3**	**116.8**	**166.7**	**164.0**
Terminal Value												**585.7**
Discount Period					4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
PV of CF to VTAE					**0.0**	**5.9**	**10.6**	**11.1**	**11.9**	**11.0**	**12.1**	**41.8**
Discount Rate	30%											
Terminal Growth	2%											
NPV	**$ 104.43**											
# Shares outstanding (mm)	17.4											
Incremental price per share	**$ 6.01**											
Ex-US Sales ($MM)					$0	$0	$34	$154	$276	$389	$484	$585
Royalty rate					*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*
Royalty to VTAE					**0.0**	**0.0**	**4.2**	**19.2**	**34.5**	**48.6**	**60.5**	**73.2**
Contribution Margin					*100%*	*100%*	*72%*	*68%*	*58%*	*48%*	*42%*	*38%*
Operating Margin					**0.0**	**0.0**	**3.1**	**13.1**	**20.0**	**23.3**	**25.4**	**27.8**
Terminal Value												**99.3**
Discount Period					4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
PV of CF to VTAE					**0.0**	**0.0**	**0.6**	**2.1**	**2.4**	**2.2**	**1.8**	**7.1**
Discount Rate	30%											
Terminal Growth	2%											
NPV	**$ 16.30**											
# Shares outstanding (mm)	17.4											
Incremental price per share	**$ 0.94**											

VTP-34072, Alzheimer's NPV	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
US Sales ($MM)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 307	$ 634	$ 983	$ 1,523	$ 1,924
Royalty rate						*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*
Royalty to VTAE						**0.0**	**0.0**	**38.4**	**79.3**	**122.8**	**190.4**	**240.5**
Contribution Margin					*100%*	*100%*	*72%*	*68%*	*58%*	*48%*	*42%*	*38%*
Operating Margin					**0.0**	**0.0**	**0.0**	**26.1**	**46.0**	**59.0**	**80.0**	**91.4**
Terminal Value												**276.9**
Discount Period					4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
PV of CF to VTAE					**0.0**	**0.0**	**0.0**	**3.2**	**4.2**	**4.0**	**4.0**	**13.6**
Discount Rate	35%											
Terminal Growth	2%											
NPV	**$ 28.87**											
# Shares outstanding (mm)	17.4											
Incremental price per share	**$ 1.66**											
Ex-US Sales ($MM)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 937	$ 1,784	$ 2,765	$ 4,084
Royalty rate						*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*
Royalty to VTAE						**0.0**	**0.0**	**0.0**	**117.1**	**223.0**	**345.6**	**510.6**
Contribution Margin					*100%*	*100%*	*72%*	*68%*	*58%*	*48%*	*42%*	*38%*
Operating Margin					**0.0**	**0.0**	**0.0**	**0.0**	**67.9**	**107.0**	**145.2**	**194.0**
Terminal Value												**587.9**
Discount Period					4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
PV of CF to VTAE						**0.0**	**0.0**	**0.0**	**6.2**	**7.2**	**7.2**	**28.8**
Discount Rate	35%											
Terminal Growth	2%											
NPV	**$ 49.37**											
# Shares outstanding (mm)	17.4											
Incremental price per share	**$ 2.84**											

Milestone Revenue	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Milestone Payments ($MM)	$ -	$ 10.00	$ -	$ 26.00	$ -	$ 20.00	$ 60.00	$ -	$ -	$ -	$ -	$ 60.00
Contribution Margin	*100%*	*95%*	*100%*	*95%*	*100%*	*100%*	*72%*	*68%*	*58%*	*48%*	*42%*	*38%*
Operating Margin	**0.0**	**9.5**	**0.0**	**24.7**	**0.0**	**20.0**	**43.2**	**0.0**	**0.0**	**0.0**	**0.0**	**22.8**
Discount Period	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
PV of CF to VTAE	**0.0**	**7.0**	**0.0**	**10.0**	**0.0**	**4.5**	**7.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**
Discount Rate	33%											
Terminal Growth	0%											
NPV	**$ 29.51**											
# Shares outstanding (mm)	17.4											
Incremental price per share	**$ 1.70**											

Source: JMP Securities LLC

FIGURE 6. Income statement

Income Statement ($MM)	2013E	1Q-2Q14	3Q14A	4Q14E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Total Product Sales and Royalties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.7	138.8	283.0	657.8	946.0	1,353.0	1,690.3
Collaborative Revenue	22.5	2.3	0.2		2.5											
Milestone Revenue	0.0		6.0	0.0	6.0	20.0	0.0	46.0	70.0	20.0	60.0	50.0	145.0	75.0	0.0	107.0
Total Revenue	22.5	2.3	6.2	0.0	8.5	20.0	0.0	46.0	70.0	41.7	198.8	333.0	802.8	1,021.0	1,353.0	1,797.3
Cost of Goods Sold							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross Profit	22.5	2.3	6.2	0.0	8.5	0.0	0.0	46.0	70.0	41.7	198.8	333.0	802.8	1,021.0	1,353.0	1,797.3
Operating Expenses:																
Research and Development	14.9	9.4	4.8	5.0	19.2	23.8	26.7	29.3	58.6	65.7	82.1	105.1	120.9	139.0	159.8	183.8
General and administrative	5.4	2.6	3.1	2.0	7.7	10.8	13.0	19.4	26.2	30.2	37.7	60.4	84.5	118.3	159.7	215.6
Total operating expenses	20.3	12.1	7.9	7.0	26.9	34.6	39.6	48.8	84.9	95.9	119.8	165.4	205.4	257.3	319.5	399.4
Operating income (loss)	2.2	(9.7)	(1.7)	(7.0)	(18.4)	(34.6)	(39.6)	(2.8)	(14.9)	(54.1)	79.0	167.5	597.4	763.7	1,033.5	1,397.9
Other income (expense):																
Interest income	0.1	0.00	0.0	0.0	0.02	0.0	0.0	0.7	0.7	0.5	(0.0)	0.6	1.8	5.6	10.7	17.4
Interest expense	(1.4)	(0.54)	(0.23)	(0.20)	(0.97)	(0.80)										
Other income	0.3	0.22	0.13	0.4	0.74	-										
Total other income, net	(1.0)	(0.3)	(0.1)	0.2	(0.2)	(0.8)	0.0	0.7	0.7	0.5	0.0	0.6	1.8	5.7	10.7	17.4
Pretax income (loss)	1.2	(10.0)	(1.8)	(6.8)	(18.6)	(35.4)	(39.6)	(2.1)	(14.2)	(53.6)	79.0	168.1	599.2	769.3	1,044.1	1,415.4
Income tax benefit (provision)					0.0	0.0	0.0	0.0	0.0	0.0	(20.7)	(50.4)	(209.7)	(269.3)	(365.4)	(495.4)
Tax Rate					*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*26%*	*30%*	*35%*	*35%*	*35%*	*35%*
Comprehensive income (loss)	1.2	(10.0)	(1.8)	(6.8)	(18.6)	(35.4)	(39.6)	(2.1)	(14.2)	(53.6)	58.2	117.7	389.5	500.1	678.7	920.0
Accretion of redeemable convertible preferred stock																
Net income (loss) attributable to common stockholder	0.0	(10.0)	(1.8)	(6.8)	(18.6)	(35.4)	(39.6)	(2.1)	(14.2)	(53.6)	58.2	117.7	389.5	500.1	679	920
Basic EPS to common stockholder	$ -	$ (0.96)	$ (1.04)	$ (0.39)	$ (1.07)	$ (2.01)	$ (1.85)	$ (0.09)	$ (0.65)	$ (2.41)	$ 2.6	$ 5.2	$ 16.9	$ 21.4	$ 28.7	$ 38.5
Diluted EPS to common stockholder	$ -	$ (0.96)	$ (1.04)	$ (0.39)	$ (1.07)	$ (2.01)	$ (1.85)	$ (0.09)	$ (0.65)	$ (2.41)	$ 2.5	$ 5.1	$ 16.6	$ 21.0	$ 28.2	$ 37.7
Basic shares outstanding	10.1	10.5	1.7	17.4	17.4	17.6	21.5	21.7	22.0	22.2	22.5	22.8	23.1	23.3	23.6	23.9
Diluted shares outstanding	10.7	10.5	1.7	17.4	17.4	17.8	21.5	21.7	22.0	22.2	23.0	23.2	23.5	23.8	24.1	24.4

Source: JMP Securities LLC and Company Filings

Company Description

Vitae is a biotechnology company focused on leveraging a discovery and development platform for the advancement of small molecule drugs to treat important unmet clinical diseases. Utilizing the company's proprietary Contour structure based discovery platform, Vitae is able to rapidly discover novel lead molecules with desired target efficacy and biological stability that support significant derisking at very early stages of drug development. Vitae has initially focused its development on two targets that treat large patient markets: type-2 diabetes and Alzheimer's disease. The company's most advanced clinical asset is VTP-34072, an inhibitor of 11-β HSD1, a preclinically validated target in diabetes and metabolic disease that is currently in Phase II clinical trials. Data is expected from this trial in the first half of 2015.

The second asset, VTP-37948, is an inhibitor of BACE-1, a target of high interest in the treatment of Alzheimer's disease that has entered Phase I clinical trials with expected biomarker and data read-outs by the end of 2015. Both of these clinical candidates target large markets and have been partnered since discovery for further development by Boehringer Ingelheim GmBH, resulting in significant upfront and milestone payments totaling $152.4MM. The company has also used its platform to develop preclinical candidate inhibitors against difficult-to-target pathways in autoimmune disease, cardiovascular disease, and dermatological conditions. These wholly owned assets include VTP-43742, a ROR-γt inhibitor strongly implicated in autoimmune diseases such as multiple sclerosis, psoriasis, and rheumatoid arthritis. Additionally, the company has developed VTP-38443 for the treatment of acute coronary syndrome, and VTP-38543 for the treatment of atopic dermatitis, both of which stimulate the LXRβ receptor. Vitae is also developing an as-yet unnamed program to develop preclinical compounds for immune-oncology applications.

Investment Risks

Potential risks to our investment thesis and price target include, but are not limited to:

Clinical and regulatory. If either VTP-34072 in diabetes or VTP-37948 in Alzheimer's is not able to meet any of its primary outcomes or suffer from safety and tolerability issues, Vitae and Boehringer Ingelheim (BI) may choose to end development in any of its current indications. Additionally, if the FDA and EMEA do not approve VTP-34072 or VTP-37948, Vitae's stock price would likely suffer.

Partnering. Vitae has partnered with (BI) in the development of VTP-34072 in diabetes and VTP-37948 in Alzheimer's. BI is responsible for the continued clinical and commercial development of both candidates and may decide to end development for one or more indications. If it were necessary for Vitae to develop and market any of its programs due to the loss or inability to retain a partner, it may be difficult to develop an internal commercial structure. Management has limited experience in commercial and marketing activities.

Competitive. The diabetes market is crowded and saturated with low-cost generic manufacturers of metformin and sulfonylureas. It may be difficult for BI and Vitae to garner significant market share. The high bar for safety and efficacy differentiation for the diabetes primary care market may limit adoption. VTP-37948 is not the only BACE-1 inhibitor in development and will not be a first-in-class therapy if Merck/Ligand are successful in bringing their drug to market. It may be difficult to compete in a market dominated by these therapies.

Financial. Vitae currently derives revenue from research and development funding and from license or collaboration agreements. The company sold ~6,875,000 shares in September 2014, raising net proceeds of ~$51.15MM. We expect this funding to be able to carry it through to 2016. Like most non-profitable biotechnology companies, VTAE will likely need to seek additional financing, exposing current investors to dilutive risk.

JMP FACTS AND DISCLOSURES

Analyst Certification:

The research analyst(s) who prepared this report does/do hereby certify that the views presented in this report are in accordance with my/our personal views on the securities and issuers discussed in this report. As mandated by SEC Regulation AC no part of my/our compensation was, is or will be directly or indirectly related to the specific views or recommendations expressed herein. This certification is made under the obligations set forth in SEC Regulation AC. Any other person or entity may not use it for any other purpose. This certification is made based on my/our analysis on the date of this report's publication. I/We assume no obligation to update this certification to reflect any facts,circumstances or events that may subsequently come to my/our attention. Signed Michael G. King

JMP Securities Disclosures:

JMP Securities currently makes a market in the security of Vitae Pharmaceuticals, Inc.

JMP Securities was manager or co-manager of a public offering of securities for Vitae Pharmaceuticals, Inc. (VTAE) in the past 12 months, and received compensation for doing so.

JMP Securities expects to receive OR intends to seek compensation for investment banking services from Vitae Pharmaceuticals, Inc. in the next 3 months.

JMP Securities Investment Opinion Definitions:

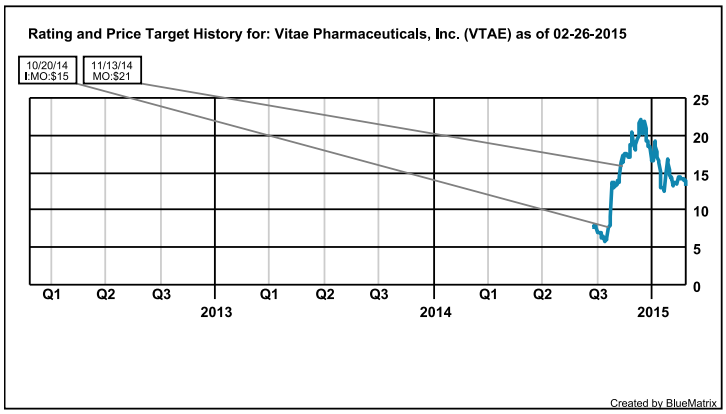
Market Outperform (MO): JMP Securities expects the stock price to outperform relevant market indices over the next 12 months.
Market Perform (MP): JMP Securities expects the stock price to perform in line with relevant market indices over the next 12 months.
Market Underperform (MU): JMP Securities expects the stock price to underperform relevant market indices over the next 12 months.

JMP Securities Research Ratings and Investment Banking Services: (as of February 27, 2015)

JMP Rating	Regulatory Equivalent	# Co's Under Coverage	*% of Total*	Regulatory Equivalent	# Co's Under Coverage	*% of Total*	# Co's Receiving IB Services in Past 12 Months	*% of Co's With This Rating*
MARKET OUTPERFORM	Buy	282	*62.95%*	Buy	282	*62.95%*	89	*31.56%*
MARKET PERFORM	Hold	155	*34.60%*	Hold	155	*34.60%*	22	*14.19%*
MARKET UNDERPERFORM	Sell	8	*1.79%*	Sell	8	*1.79%*	0	*0%*
COVERAGE IN TRANSITION		1	*0.22%*		1	*0.22%*	0	*0%*
TOTAL:		448	*100%*		448	*100%*	113	*25.22%*

Stock Price Chart of Rating and Target Price Changes:

Note: First annotation denotes initiation of coverage or 3 years, whichever is shorter. If no target price is listed, then the target price is N/A. In accordance with NASD Rule 2711, the chart(s) below reflect(s) price range and any changes to the rating or price target as of the end of the most recent calendar quarter. The action reflected in this note is not annotated in the stock price chart. Source: JMP Securities.



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