Karyopharm Therapeutics Inc. (KPTI)

Selinexor Shows Deeper AML Response Rates at ASH

MARKET OUTPERFORM | Price: $16.91 | Target Price: $25.00

MARKET DATA

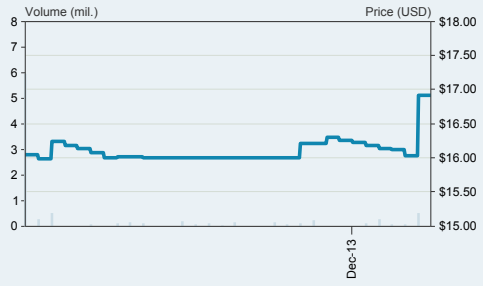
Price	$16.91
52-Week Range:	$15.50 - $19.09
Shares Out. (M):	27.6
Market Cap ($M):	$466.7
Average Daily Vol. (000):	506.0
Cash (M):	$153
Cash/Share:	$5.56
Enterprise Value (M):	$474
Float (M):	12.2
LT Debt (M):	$0

Source: Thomson Reuters and JMP Securities LLC

FY DEC		2012A	2013E	2014E
Revenue ($M)	1Q	--	--	$0.0
	2Q	--	$0.4A	$0.0
	3Q	--	$0.0	$0.0
	4Q	--	$0.0	$0.0
	FY	**$0.6**	**$0.0**	**$0.0**
EPS	1Q	--	--	($0.30)
	2Q	--	($5.39)A	($0.35)
	3Q	--	($0.31)	($0.44)
	4Q	--	($0.29)	($0.55)
	FY	**($8.95)**	**($1.22)**	**($1.64)**

EPS 2013 Q2: Results are for six months ended June 30, 2013
Revenue ($M) 2013 Q2: Results are for six months ended June 30, 2013
Source: Company reports and JMP Securities LLC

STOCK PRICE PERFORMANCE



INVESTMENT HIGHLIGHTS

Updated Phase I Selinexor data in AML show improved objective response rates over prior analysis, including two additional CRs; reiterate Market Outperform rating on Karyopharm Therapeutics and $25 price target based on DCF, SOTP and comparable valuation methodologies. From a total of 33 evaluable patients with heavily pretreated refractory AML, updated results now show selinexor achieving an objective response rate of 21%, compared to a 9% ORR reported at the end of September (Figure 2). Safety results remain consistent with prior reporting, with GI toxicities (i.e., nausea, vomiting, anorexia) constituting the most frequent side effects. Overall, the Phase I AML data, together with an incremental update in myeloma (detailed further below), are increasingly encouraging and bode well for a potential pivotal study in AML beginning 1H14.

Selinexor deepens Phase I AML response rate with longer follow up. This was primarily evidenced in a patient (040-504) whose previous best response of stable disease (SD) matured into a complete response with greater duration of therapy (Figure 3). A second additional CR was observed in a newly evaluable patient (040-122). In addition to these updates, two patients previously noted as achieving SD in September were re-qualified as partial responders in view of a completed bone marrow analysis. Importantly, we note the extent to which these patients were pretreated, with up to 82% of patients receiving ≥2 prior therapies (Figure 1), making the observed response rate all the more impressive, in our view.

Selinexor safety profile in line with prior reporting consisting primarily of GI toxicities. Nausea and anorexia remain the leading adverse events, most cases being of low grade (53% and 42% grade ≤2, respectively; Figure 4). Fatigue rates were also largely unchanged with grade ≤2 events noted in ~39% of patients and grade 3 events in another 8%. That said, current and future trial protocols have already been amended to better manage the adverse event profile with prophylactic supportive care and anti-emetics to maintain caloric intake and fluid retention.

Selinexor update shows moderately lower response rates in multiple myeloma and consistent activity in Waldenstrom's. Since the previous reporting in September, eight additional patients were treated as part of an expansion cohort at 35mg/m2 and became evaluable, bringing the total N to 25. Absolute responses have thus far held steady (including one partial response and four minor responses), with seven of eight of the expansion cohort patients achieving stable disease as best response. Two such patients continue on the study. An additional patient with Waldenstrom's macroglubulinemia treated at the expansion dose (patient 040-052) also achieved a minor response and continues on the study, maintaining a minor response rate of 100% (3/3) within the indication. Given a median of 5.4 prior therapies, we maintain our view

Michael G. King, Jr.
mking@jmpsecurities.com
(212) 906-3520

Eric Joseph, PhD
ejoseph@jmpsecurities.com
(212) 906-3514

that the current Phase I data understate the clinical potential of selinexor in multiple myeloma. That said, we ultimately foresee combinations with standard of care and treatment in support of Kyprolis and/or Pomalyst as integral to selinexor's registration strategy in the indication.

Commencement of registration-directed trials during 2014 should catapult shares to the next level of valuation. In our view, when Karyopharm enters registration-directed trials next year, the valuation of the stock should be more reflective of other late-stage oncology companies steered by management teams that have successfully demonstrated significant value creation in the space. The "elite three" we would compare KPTI to include Clovis Oncology (CLVS, NC), Puma Biotechnology (PBYI, NC) and Tesaro (TSRO, NC). While none of these companies is a perfect comparable for KPTI, we believe the valuation of the shares belongs amongst these peers based on the quality of the scientific and clinical data, as well as management's track record of value creation in the biotechnology industry.

FIGURE 1. Baseline AML Patient Demographics

Characteristic N=39	
Median Age (Range)	68 (24-89)
Male to Female	20 Males : 19 Females
ECOG PS 0:1	9 : 30
Therapy Line for Disease in Study	
AML with prior MDS	2 (5%)
2nd Line AML	9 (23%)
3rd Line AML	10 (26%)
> 3rd Line AML	13 (33%)
Unknown	5 (13%)
AML Cytogentic Risk	
Good	4 (10%)
Intermediate	15 (39%)
Poor	13 (33%)
Unknown	7 (18%)

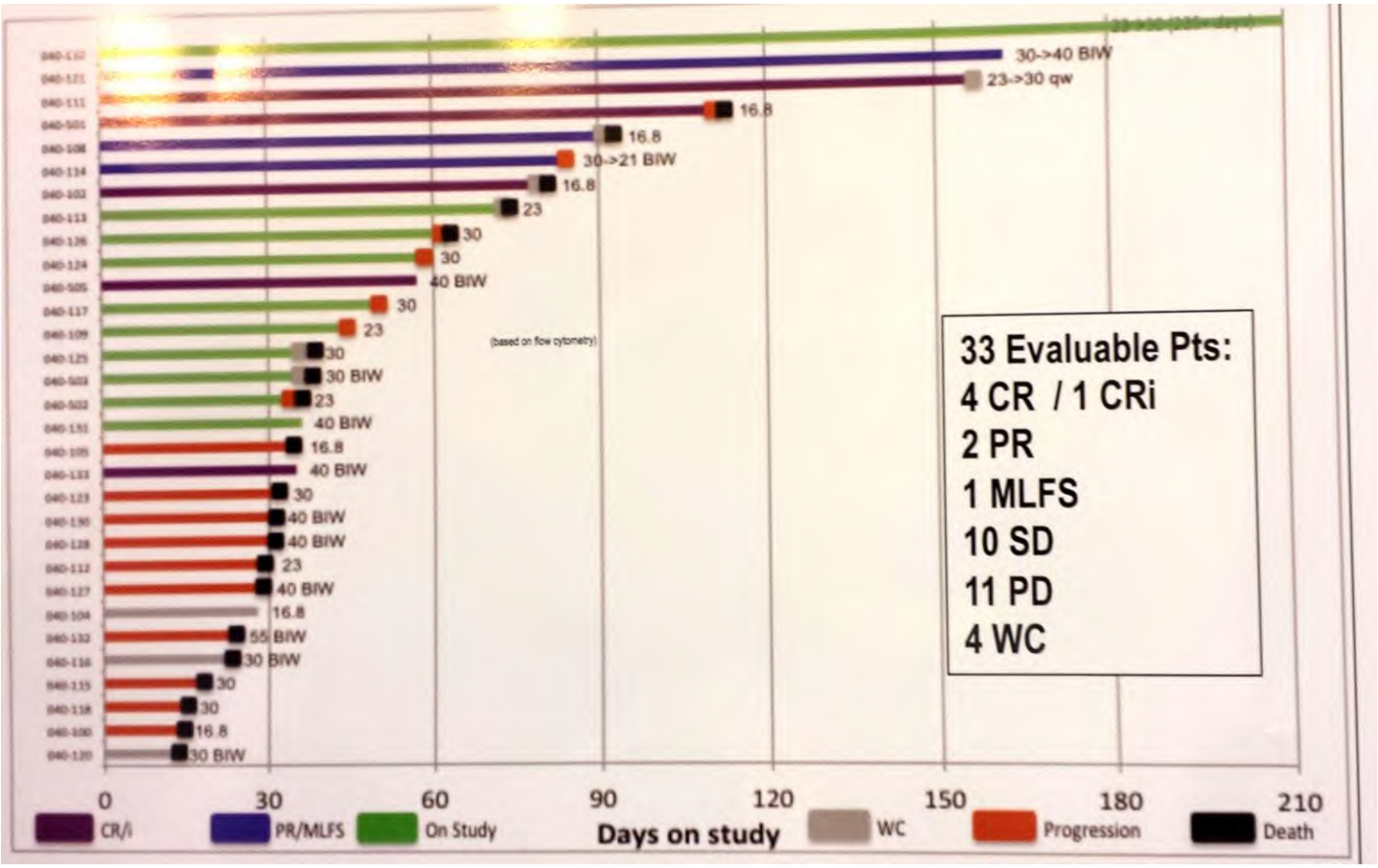
Source: Savona M, et al., ASH 2013, Abstract #1440

FIGURE 2. Comparison of Phase I Outcomes: ASH vs. September 2013

Selinexor Phase I Response in R/R AML		
	ASH 2013	Sep-13
Evaluable Pts	33	32
ORR (%)	7 (21)	3 (9)
CR (%)	4 (12)	2 (6)
CRi (%)	1 (3)	1 (3)
PR (%)	2 (6)	-
SD (%)	10 (30)	12 (38)
PD (%)	11 (33)	11 (34)

Source: Savona M, et al., ASH 2013, Abstract #1440, Karyopharm company reports and JMP Securities LLC

FIGURE 3. AML Patient Outcomes and Time on Study



Complete remission (CR), complete remission with particle count recovery (CRp), partial response (PR), and major hematologic improvement (HI)

Source: Savona M, et al., ASH 2013, Abstract #1440

FIGURE 4. Drug Related Adverse Events in AML

AE NAME	GRADE	KPT-330 Dose Levels (mg/m²)				Total All N=38
		16.8	23	30	40	
Gastrointestinal, Constitutional, and Others		N=10	N=6	N=14	N=8	
Nausea	Grade 1	3 (30%)	3 (50%)	2 (14%)	4 (50%)	31.5%
	Grade 2	2 (20%)	1 (17%)	4 (28.5%)	1 (12.5)%	21%
	Grade 3	1 (10%)	--	1 (7%)	--	5%
Anorexia	Grade 1	--	--	5 (36%)	1 (12.5)%	16%
	Grade 2	3 (30%)	3 (50%)	3 (21%)	1 (12.5)%	26%
	Grade 3	--	1 (17%)	--	--	3%
Fatigue	Grade 1	--	1 (17%)	1 (7%)	--	5%
	Grade 2	4 (40%)	3 (50%)	5 (38%)	1 (12.5%)	34%
	Grade 3	1 (10%)	--	1 (7%)	1 (12.5%)	8%
Vomiting	Grade 1	3 (30%)	3 (50%)	3 (21%)	2 (25%)	31.5%
	Grade 2	--	--	--	1 (12.5)%	3%
	Grade 3	--	--	1 (7%)	--	3%
Diarrhea	Grade 1	3 (30%)	1 (17%)	2 (14%)	2 (25%)	21%
	Grade 2	--	1 (17%)	2 (14%)	1 (12.5)%	10.5%
Weight Loss	Grade 1	2 (20%)	3 (50%)	2 (14%)	--	18%
	Grade 2	1 (10%)	1 (17%)	1 (7%)	--	8%
Dehydration	Grade 1	1 (10%)	--	1 (7%)	--	5%
	Grade 3	--	--	1 (7%)	--	3%
Taste Alteration	Grade 1	--	2 (33%)	2 (14%)	--	10.5%
	Grade 2	--	--	1 (7%)	--	3%
Asparate Aminotransferase Increase	Grade 1	--	1 (17%)	1 (7%)	--	5%
	Grade 3	1 (10%)	--	--	--	3%
Hypomagnesemia	Grade 1	--	--	2 (14%)	1 (12.5%)	8%
	Grade 2	1 (10%)	--	--	--	3%
Hypokalemia	Grade 1	--	1 (17%)	--	--	3%
	Grade 2	--	1 (17%)	--	--	3%
	Grade 3	2 (20%)	--	--	--	5%
Hypotension	Grade 1	1 (10%)	--	--	--	3%
	Grade 2	1 (10%)	--	--	--	3%
	Grade 3	1 (10%)	--	--	--	3%
Hyponatremia	Grade 1	2 (20%)	3 (50%)	--	--	13%
	Grade 3	1 (10%)	--	--	--	3%
Blurred Vision	Grade 1	--	2 (33%)	1 (7%)	--	8%
	Grade 2	--	--	--	1 (12.5%)	3%
Hematological						
Thrombocytopenia	Grade 4	1 (10%)	1 (17%)	1 (7%)	--	8%

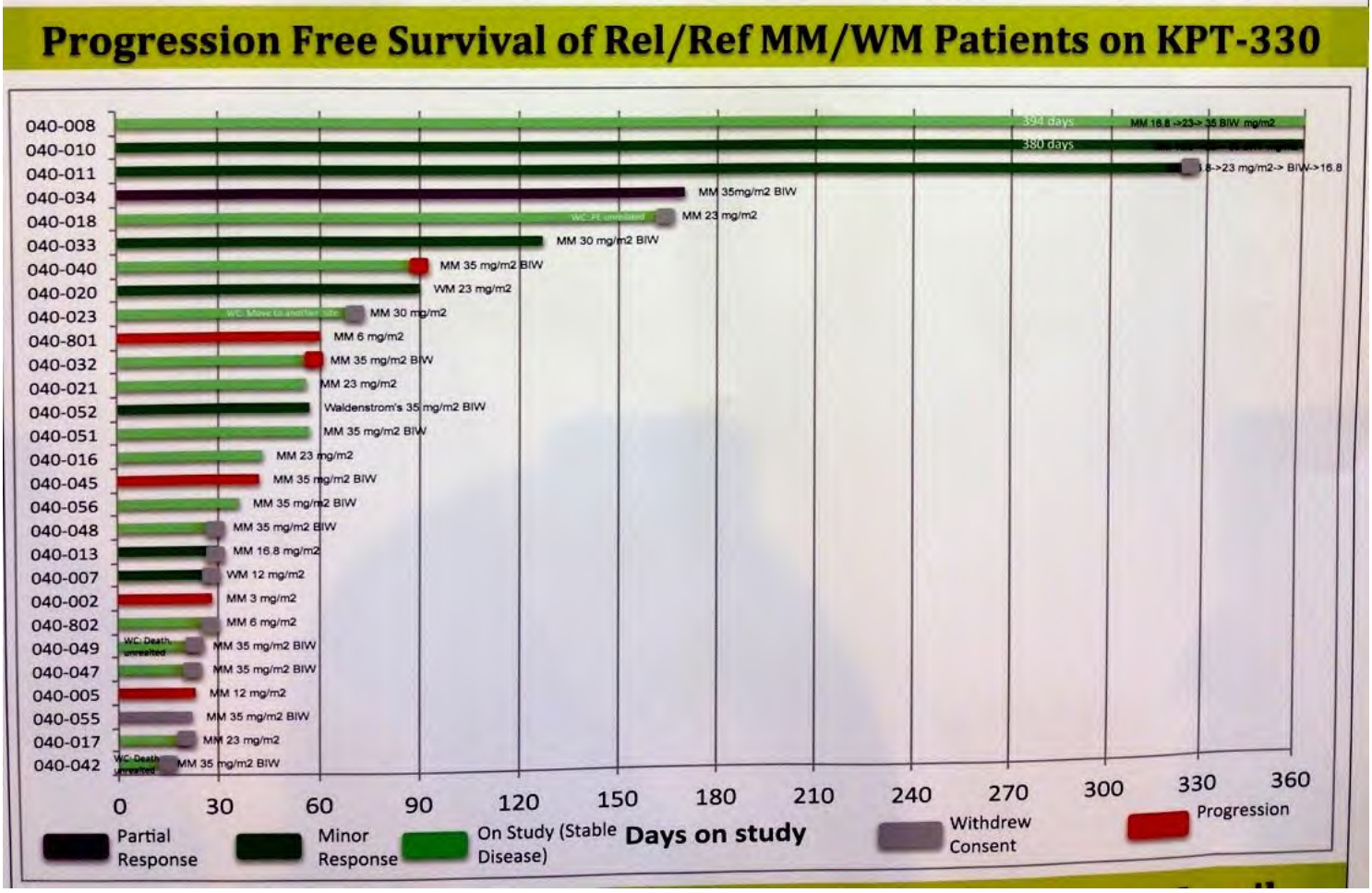
Source: Savona M, et al., ASH 2013, Abstract #1440

FIGURE 5. Myeloma and Waldenstrom's Patient Outcomes and Time on Study

Responses in Arm 1 Multiple Myeloma and Waldenstrom's Macroglobulinemia Patients as of 4-Dec-2013

Cancer	Number of Pts Evaluated	Total PRs, MRs, and SD (%)	PR (%)	MR (%)	SD (%)	PD	WC
MM (All Doses)	25	20 (80%)	1 (4%)	4 (16%)	15 (60%)	4 (16%)	1 (4%)
MM (≥16.8mg/m²)	21	19 (90%)	1 (5%)	4 (19%)	14 (66%)	1 (5%)	1 (5%)
WM	3	3 (100%)	--	3 (100%)	--	--	--

PR=Partial Response, MR=Minor Response, SD=Stable Disease, PD=Progressive Disease, WC=Withdrew Consent



Source: Chen C, ASH 2013, Abstract #1942

FIGURE 6. Upcoming Milestones

Timing	Drug	Milestones
Dec 7-10	Selinexor	Updated Phase I and pre-clinical data presentations at ASH • Oral presentation of Phase I data in CLL and NHL (#90) • Oral presentation of XPO1 inhibition in AML (#237) • Oral presentation of preclinical efficacy in MM -/+ carfilzomib (#279) • Three poster presentations of pre-clinical and Phase I AML results (#3165, #3785, #3932,)
1H14	Selinexor	Initiation of first pivotal Phase II/III study in (elderly R/R AML, DLBCL, or MM)
1H14	Selinexor	Initiation of second pivotal Phase II/III study in (second potential indication)
1H14	Selinexor	Initiation of first Phase II trial in solid tumor indication (potentially gynecological malignancies)
1H14	Selinexor	Initiation of second Phase II trial in solid tumor indication (squamous cell cancer, e.g., head and neck, lung or esophageal cancer)
2H14	KPT-350	IND completion for use in inflammation, auto-immune and anti-viral indications
2H14	PAK Inhibitor	IND completion for use in oncology indications

Source: Company reports

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 and Eric Joseph

JMP Securities Disclosures:

JMP Securities currently makes a market in the security of Karyopharm Therapeutics Inc.

JMP Securities was manager or co-manager of a public offering, and received compensation for doing so, for Karyopharm Therapeutics Inc. in the past 12 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.

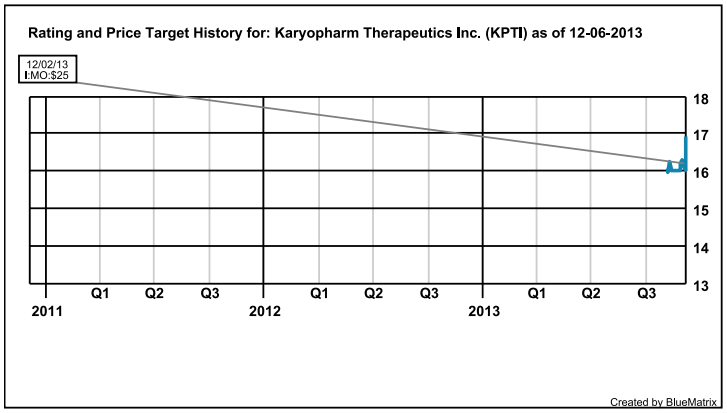
Market Underperform (MU): JMP Securities expects the stock price to underperform relevant market indices over the next 12 months.

JMP Securities Research Ratings and Investment Banking Services: (as of December 6, 2013)

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	228	*54.68%*	Buy	228	*54.68%*	89	*39.04%*
MARKET PERFORM	Hold	139	*33.33%*	Hold	139	*33.33%*	25	*17.99%*
MARKET UNDERPERFORM	Sell	5	*1.20%*	Sell	5	*1.20%*	0	*0%*
COVERAGE IN TRANSITION		45	*10.79%*		45	*10.79%*	0	*0%*
TOTAL:		417	*100%*		417	*100%*	114	*27.34%*

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.



JMP Disclaimer:

JMP Securities LLC (the “Firm”) compensates research analysts, like other Firm employees, based on the Firm’s profitability, which includes revenues from the Firm’s institutional sales, trading, and investment banking departments as well as on the quality of the services and activities performed that are intended to benefit the Firm’s institutional clients. These data have been prepared by JMP Securities LLC for informational purposes only and are based on information available to the public from sources that we believe to be reliable, but we do not guarantee their accuracy or completeness. Any opinions and projections expressed herein reflect our judgment at this date and are subject to change without notice. These data are neither intended nor should be considered as an offer to sell or a solicitation or a basis for any contract for the purchase of any security or other financial product. JMP Securities LLC, its affiliates, JMP Group LLC, Harvest Capital Strategies LLC, and their respective partners, directors, officers, and associates may have a long or short position in, may act as a market maker for, or may purchase or sell a position in the securities mentioned herein. JMP Securities LLC or its affiliates may be performing, have performed, or seek to perform investment banking, advisory, or other services and may have acted as manager or co-manager for a public offering of securities for any company mentioned herein. The reader should assume that JMP Securities LLC will solicit business from the company covered in this report. Members of our Sales and Trading Department provide oral and/or written market opinions and trading strategies to our clients that reflect their personal opinions about stocks that are the subject of the firm's research reports. Our research analysts discuss trading strategies with clients and complete surveys from clients that sometimes reflect short-term expectations for the price of the securities that are the subject of research reports. Those trading strategies and survey responses are distinct from the analysts' fundamental rating for the stock, which is based upon the analysts' view compared to other stocks under coverage for the relevant time period. JMP Securities LLC is a member of FINRA, NASDAQ, and SIPC.

Jeffrey H. Spurr
Director of Research
(415) 835-3903

RESEARCH PROFESSIONALS

FINANCIAL SERVICES

Alternative Asset Managers
Devin Ryan (212) 906-3578

Commercial & Specialty Finance
Christopher York (415) 835-8965
Hannah Kim, CFA (415) 835-8962

Consumer Finance
David M. Scharf (415) 835-8942
Jeremy Frazer (312) 768-1796

Financial Processing & Outsourcing
David M. Scharf (415) 835-8942
Jeremy Frazer (312) 768-1796

Insurance
Matthew J. Carletti (312) 768-1784
Christine Worley (312) 768-1786

Investment Banks & Brokers
Devin Ryan (212) 906-3578

Mortgage Finance
Steven C. DeLaney (404) 848-7773
Trevor Cranston, CFA (415) 869-4431
Charter Robinson (757) 613-8955
Benjamin Zucker (212) 906-3529

HEALTHCARE

Biotechnology
Liisa A. Bayko (312) 768-1785
Heather Behanna, PhD (312) 768-1795
Andrew Prigodich (312) 768-1788
Jason N. Butler, PhD (212) 906-3505
Christopher T. Radom, PhD (212) 906-3519
Caroline Palomeque (212) 906-3509
Michael G. King, Jr. (212) 906-3520
Eric Joseph, PhD (212) 906-3514
Joseph A. Knowles (212) 906-3525

Healthcare Services & Facilities
Peter L. Martin, CFA (415) 835-8904
Aaron Hecht (415) 835-3963
Arthur Kwok (415) 835-8908

Medical Devices & Supplies
David Turkaly (212) 906-3563
John Gillings (212) 906-3564

Medical Devices & Molecular Diagnostics
J. T. Haresco, III, PhD (415) 869-4477
Marie T. Casey, PhD (415) 835-3955

REAL ESTATE

Housing & Land Development
Peter L. Martin, CFA (415) 835-8904
Aaron Hecht (415) 835-3963
Bharathwajan Iyengar (415) 835-3902

Lodging
Robert A. LaFleur (212) 906-3510
Whitney Stevenson (212) 906-3538

Property Services
Mitch Germain (212) 906-3546
Peter Lunenburg (212) 906-3537

REITs: Healthcare
Peter L. Martin, CFA (415) 835-8904
Aaron Hecht (415) 835-3963
Arthur Kwok (415) 835-8908

REITs: Office, Industrial, & Diversified
Mitch Germain (212) 906-3546
Peter Lunenburg (212) 906-3537

TECHNOLOGY

Communications Equipment & Internet Security
Erik Suppiger (415) 835-3918
John Lucia (415) 835-3920

Internet & Digital Media
Ronald V. Josey III (212) 906-3528

Software
Patrick Walravens (415) 835-8943
Peter Lowry (415) 869-4418
Caitlin Schields (415) 835-8960
Greg McDowell (415) 835-3934

Wireless & Cloud Computing Technologies
Alex Gauna (415) 835-8998
Michael Wu (415) 835-8996

ADDITIONAL CONTACTS

Thomas R. Wright
Director of Equities
(212) 906-3599

Dan Wychulis
Director of Institutional Sales
(617) 235-8530

600 Montgomery Street, Suite 1100
San Francisco, CA 94111
www.jmpsecurities.com