COMPANY NOTE

Estimate Change

USA | Healthcare | Biotechnology

August 12, 2014

Jefferies

Trevena, Inc. (TRVN)

Q2: TRVN Rich in Data Catalysts over the Next 12-18 Months

BUY
Price target $11.00
Price $6.01

EQUITY RESEARCH AMERICAS

Key Takeaway

TRVN continues to make progress on its clinical pipeline of GPCR biased ligands. TRVN has initiated Part B of the 400-pt PIIa/b bunionectomy trial for TRV130 with an adaptive design, with top-line data expected in Q1'15. The PIIb BLAST trial for TRV027 for acute heart failure is on-track to have data in Q4'15. For oral TRV734, top-line data from the multiple ascending dose PI study is expected H1'15.

TRV130 and TRV734 for Pain Management Continue to Advance: TRVN continues to move forward with the PIIa/b bunionectomy trial for TRV130, which will enroll ~400 pts and has an adaptive dose-selection design. Part A of the study evaluated TRV130 at 1, 2, 3, and 4 mg q4h v. morphine at 4 mg q4h and pbo (n=25 each). TRVN has seen early signs of analgesic efficacy and has now initiated Part B of the study, which will evaluate doses (starting w/ two adaptive regimens) in 250 pts (10 cohorts) to optimize performance characteristics based on the results from Part A. Top-line data from both Part A and B are expected in Q1'15 (data may potentially be out b/f in YE'14). TRVN is also moving forward with oral TRV734 for moderate-to-severe acute and chronic pain, and top-line data from the multiple ascending dose PI study is expected H1'15.

Top-line Data for PIIb BLAST Trial for TRV027 Expected in Q4'15: TRVN reported dosing of the first patient in the PIIb BLAST trial in acute heart failure (AHF) in Jan. It is a 500-pt trial and will evaluate effects of three dose levels of TRV027: 1.0 mg/hr, 5.0 mg/hr, and 25 mg/hr on a composite of clinically relevant outcomes: mortality, worsening heart failure, hospital readmission rate, dyspnea, and length of hospital stay. Recruitment is ongoing and topline data is expected in Q4'15 (v. prev H2'15). We believe promising PIIa data supports a favorable outlook for TRV027 in AHF.

Q2 Financials: TRVN reported Q2 EPS of $(0.44) (v. JEF: $(0.35) and cons: $(0.39)). Cash and equivs were $81.6M at end Q2, and TRVN believes should be sufficient to fund operations through to end of '15.

Valuation/Risks

Our $11 PT is DCF-based. Risks to our thesis include clinical trial failure, regulatory approval risks, and commercial launch risks.

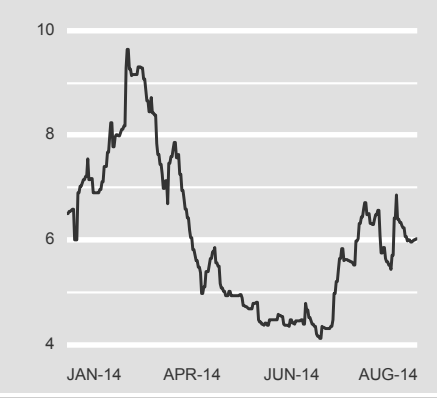
Financial Summary	
Net Debt (MM):	($81.6)
Long-Term Debt (MM):	$0.0
Cash & ST Invest. (MM):	$81.6
Cash/Share:	$3.11
Cash (MM):	$81.6

Market Data	
52 Week Range:	$9.95 - $4.07
Total Entprs. Value (MM):	$75.9
Market Cap. (MM):	$157.5
Shares Out. (MM):	26.2
Float (MM):	12.4
Avg. Daily Vol.:	85,856

Biren Amin *
Equity Analyst
(212) 284-8162 bamin@jefferies.com
Hugo Ong, Ph.D. *
Equity Associate
(212) 323-3364 hong@jefferies.com
* Jefferies LLC

USD	Prev.	2013A	Prev.	2014E	Prev.	2015E	Prev.	2016E
Rev. (MM)	--	0.1	--	0.0	--	0.0	--	42.3
EV/Rev		NM						1.8x
EPS								
Mar	--	(0.23)	--	(0.59)A	--	--	--	--
Jun	--	(0.30)	*(0.35)*	(0.44)A	--	--	--	--
Sep	--	(0.64)	*(0.36)*	(0.39)	--	--	--	--
Dec	--	(0.42)	*(0.37)*	(0.41)	--	--	--	--
FY Dec	--	(1.60)	*(1.68)*	(1.82)	*(1.66)*	(1.79)	*0.20*	0.06
FY P/E		NM		NM		NM		NM

Price Performance



Valuation

We arrive at our $11 price target based on a DCF valuation model, which assumes a 14% WACC and outstanding shares of 26.2 million, driven by royalties from TRV027 and revenues from TRV130. We expect U.S. approval for TRV027 in 2020, reaching revenues of $612 million by 2030 on an unadjusted-basis. Applying a 65% risk discount, we believe TRV027 will have U.S. revenues of $214 million by 2030, translating to royalty revenue of $41 million. We also expect ex-U.S. revenues of $126 million at peak on a risk-adjusted basis (65%), translating to royalty revenue of $24 million. For TRV130, we estimate approval in 2019 and total peak net sales for in- and out-patient surgical patients at $585 million in 2031 on an unadjusted-basis ($562 million for in-patient and $22 million for out-patient). Applying a 65% discount rate to reflect the risk associated with this early stage asset, we estimate risk-adjusted peak sales of $205 million by 2031. We expect TRVN to partner TRV130 for commercialization ex-U.S. and estimate royalty revenue of $82 million by 2031. We do not yet model TRV734 for pain management or TRVN's delta opioid program, both of which represent upside to our estimates.

Exhibit 1: DCF sensitivity analysis

Discount rate	Equity value	Price/ Share
10.0%	$404.1	$15.35
12.0%	$333.4	$12.66
14.0%	**$276.7**	**$10.51**
16.0%	$231.0	$8.77
18.0%	$193.8	$7.36

Source: Jefferies estimates

Risks

Clinical Failure: As with all companies in biotechnology and pharmaceuticals developing treatments of the future, a clinical failure can lead to delays in approval or possibly discontinuation of programs.

Regulatory Failure: The FDA could determine the Biologic Licensing Application is inadequate for one or more of TRVN's programs and could delay approval. Any delays in approval timelines could impact our earnings estimates, price target, and/or rating.

Commercial Failure: We currently project $214 million (risk-adjusted) in U.S. sales for TRV027 in 2030, translating to royalty revenue of $41 million. We also project $205 million (risk-adjusted) in U.S. sales for TRV130 in 2031. Our estimates may rely on the success of the company/partners to receive drug reimbursement from private/public payors.

Financing Risks: We expect TRVN to have adequate cash until 2016, and may need additional financing from 2014 to 2016 to fund its R&D programs, and a sales and marketing infrastructure for a potential commercial launch of TRV130 (if approved). However, the company may partner ex-U.S. licensing rights and/or other pipeline candidates to offset the need for equity financing.

Biren Amin, Equity Analyst, (212) 284-8162, bamin@jefferies.com

Exhibit 2: Key Upcoming Milestones.

Product	Indication	Event	Date
TRV027	**Acute Heart Failure (AHF)**	Enrollment completion of Phase II BLAST-AHF	H1 2015
		Topline data for Phase II BLAST-AHF	Q4 2015
		FDA AdComm Panel for Novartis' serelaxin in AHF	*Mar 27, 2014*
		Forest Laboratories' exercise of license option (JEF est)	H2 2015
		Initiation of pivotal Phase III trial	H2 2016
		Topline data for pivotal Phase III trial	2019
		U.S. approval of TRV027	2020
		EU/ROW approval of TRV027	2020
TRV130	**Post-operative pain**	*Full data of Phase Ib trial at American Pain Society*	*May 2014*
		Initiation of Phase II trial (bunionectomy model)	*Q2 2014*
		Topline data for Phase II trial (bunionectomy model) - Part A and B	Q1 2015
		Initiation of separate Phase II trial (alternative pain model)	Q4 2014
		Initiation of pivotal Phase III trial	H2 2015
		Topline data for pivotal Phase III trial	2018
		U.S. approval of TRV130	2019
		EU/ROW approval of TRV130	2020
TRV734	**Moderate-to-Severe Pain**	*Initiation of Phase I trial for TRV734 in healthy subjects*	*Feb 2014*
		Data for Phase I trial for TRV734 on oral bioavailability	*Mid-2014*
		Topline data for MAD PI study	H1 2015
Delta Opioid Program	**Parkinson's Disease, Pain, Depression**	Candidate selection for Parkinson's Disease	2014
		IND filing	Q1 2015
		Initiation of Phase I trial	2015

Source: Company estimates, Jefferies.

Biren Amin, Equity Analyst, (212) 284-8162, bamin@jefferies.com

Exhibit 3: TRVN Income Statement

Trevena, Inc.

Quarterly Income Statement

(All values in $MM except EPS and average shares)

	2012A	2013A	2014E					2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
	FY	FY	1QA	2QA	3QE	4QA	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY
Revenue:																		
TRV027 US Royalties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	6.3	12.5	17.3	23.9	26.6
TRV027 EU Royalties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	4.5	7.2	9.2	11.5	12.6
TRV027 ROW Royalties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.0	1.6	2.0	2.5	2.8
TRV130 US Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	52.6	94.0	122.3	143.3	156.3	169.6
TRV130 EU/ROW Royalties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	4.1	7.1	9.0	10.2	11.0
Grant and collaboration revenues	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	42.3	1.0	0.0	17.5	35.0	0.0	17.5	0.0	17.5	0.0
Total revenue, net	**0.8**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**42.3**	**1.0**	**0.0**	**24.8**	**95.0**	**109.8**	**168.2**	**180.8**	**221.9**	**222.5**
Costs and expenses:																		
Cost of goods sold	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	5.3	9.4	12.2	14.3	15.6	17.0
Research & development	13.3	18.8	7.6	9.0	8.2	8.6	33.5	35.0	32.0	30.0	19.0	15.0	15.8	16.5	17.4	18.2	19.0	19.5
Selling, general & administrative	3.1	4.7	2.0	2.5	2.0	2.2	8.7	8.0	8.2	8.6	9.0	20.0	21.8	23.3	24.5	25.7	26.7	27.5
Total operating expenses	**16.4**	**23.5**	**9.7**	**11.5**	**10.2**	**10.8**	**42.2**	**43.0**	**40.2**	**38.6**	**28.0**	**35.7**	**42.8**	**49.3**	**54.1**	**58.3**	**61.3**	**64.0**
Income (loss) from operations	**(15.6)**	**(23.3)**	**(9.7)**	**(11.5)**	**(10.2)**	**(10.8)**	**(42.2)**	**(43.0)**	**2.1**	**(37.6)**	**(28.0)**	**(10.9)**	**52.2**	**60.5**	**114.1**	**122.5**	**160.6**	**158.4**
Other income (expense):																		
Change in fair value of warrant liability		0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous (expense) income	(0.0)	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest income	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest expense	-	(0.1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net profit (loss) before income taxes	**(15.6)**	**(23.3)**	**(9.4)**	**(11.5)**	**(10.2)**	**(10.8)**	**(41.8)**	**(43.0)**	**2.1**	**(37.6)**	**(28.0)**	**(10.9)**	**52.2**	**60.5**	**114.1**	**122.5**	**160.6**	**158.4**
Income tax expense (benefit)										0.0	0.0	0.0	5.2	6.1	11.4	42.9	56.2	55.5
Income tax (%)										*0.0%*	*0.0%*	*0.0%*	*10.0%*	*10.0%*	*10.0%*	*35.0%*	*35.0%*	*35.0%*
Net Income (GAAP)	**(15.6)**	**(23.3)**	**(9.4)**	**(11.5)**	**(10.2)**	**(10.8)**	**(41.8)**	**(43.0)**	**2.1**	**(37.6)**	**(28.0)**	**(10.9)**	**47.0**	**54.5**	**102.7**	**79.7**	**104.4**	**103.0**
EPS, GAAP																		
Basic	(1.50)	(1.60)	(0.59)	(0.44)	(0.39)	(0.41)	(1.82)	(1.79)	0.06	(1.09)	(0.80)	(0.31)	1.32	1.51	2.83	2.17	2.82	2.75
Diluted	**$ (1.50)**	**$ (1.60)**	**$ (0.59)**	**$ (0.44)**	**$ (0.39)**	**$ (0.41)**	**$ (1.82)**	**$ (1.79)**	**$ 0.06**	**$ (1.09)**	**$ (0.80)**	**$ (0.31)**	**$ 1.32**	**$ 1.51**	**$ 2.83**	**$ 2.17**	**$ 2.82**	**$ 2.75**
Weighted average share- Basic	10.4	14.5	16.0	26.3	26.3	26.3	23.8	24.0	34.2	34.6	34.9	35.3	35.6	36.0	36.3	36.7	37.1	37.4
Weighted average share- Diluted	10.4	14.5	16.0	26.3	26.3	26.3	23.8	24.0	34.2	34.6	34.9	35.3	35.6	36.0	36.3	36.7	37.1	37.4

Source: Jefferies estimates, company data

Biren Amin, Equity Analyst, (212) 284-8162, bamin@jefferies.com

Exhibit 4: TRVN DCF Analysis

Trevena, Inc.

Discounted Cash Flow Analysis

(All values in $MM)	2013A	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Sales	0.1	0.0	0.0	42.3	1.0	0.0	24.8	95.0	109.8	168.2	180.8	221.9	222.5
Operating Expenses	23.5	42.2	43.0	40.2	38.6	28.0	35.7	42.8	49.3	54.1	58.3	61.3	64.0
EBIT	(23.3)	(42.2)	(43.0)	2.1	(37.6)	(28.0)	(10.9)	52.2	60.5	114.1	122.5	160.6	158.4
(-): Taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	6.1	11.4	42.9	56.2	55.5
EBIAT	(23.3)	(42.2)	(43.0)	2.1	(37.6)	(28.0)	(10.9)	47.0	54.5	102.7	79.7	104.4	103.0
(+):Depreciation	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0
(+):FAS-123 Options	0.0	0.3	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.7	1.0	1.0	1.0
Unlevered free cash flow	***(22.8)***	***(41.3)***	***(42.0)***	***3.1***	***(36.6)***	***(27.0)***	***(9.9)***	***48.3***	***55.7***	***103.9***	***81.2***	***105.4***	***104.0***

Source: Jefferies estimates, company data

Biren Amin, Equity Analyst, (212) 284-8162, bamin@jefferies.com

Please see important disclosure information on pages 6 - 9 of this report.

Company Description

Trevena Inc. a clinical stage biopharmaceutical company, headquartered in King of Prussia, PA, and is the leader in the discovery and development of G-protein coupled receptors (GPCR) biased ligands. Trevena's lead pipeline program, TRV-027, is currently in Phase IIb trials in acute heart failure. Trevena is also developing novel therapeutics for pain with TRV-130 in Phase II trials in patients with post-surgical pain.

Analyst Certification

I, Biren Amin, certify that all of the views expressed in this research report accurately reflect my personal views about the subject security(ies) and subject company(ies). I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this research report.

I, Hugo Ong, Ph.D., certify that all of the views expressed in this research report accurately reflect my personal views about the subject security(ies) and subject company(ies). I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this research report.

As is the case with all Jefferies employees, the analyst(s) responsible for the coverage of the financial instruments discussed in this report receives compensation based in part on the overall performance of the firm, including investment banking income. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Aside from certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgement.

Company Specific Disclosures

Jefferies Group LLC makes a market in the securities or ADRs of Trevena, Inc..

Within the past 12 months, Jefferies Group LLC, its affiliates or subsidiaries has received compensation from investment banking services from Trevena, Inc..

Within the past twelve months, Trevena, Inc. has been a client of Jefferies LLC and investment banking services are being or have been provided.

Meanings of Jefferies Ratings

Buy - Describes stocks that we expect to provide a total return (price appreciation plus yield) of 15% or more within a 12-month period.

Hold - Describes stocks that we expect to provide a total return (price appreciation plus yield) of plus 15% or minus 10% within a 12-month period.

Underperform - Describes stocks that we expect to provide a total negative return (price appreciation plus yield) of 10% or more within a 12-month period.

The expected total return (price appreciation plus yield) for Buy rated stocks with an average stock price consistently below $10 is 20% or more within a 12-month period as these companies are typically more volatile than the overall stock market. For Hold rated stocks with an average stock price consistently below $10, the expected total return (price appreciation plus yield) is plus or minus 20% within a 12-month period. For Underperform rated stocks with an average stock price consistently below $10, the expected total return (price appreciation plus yield) is minus 20% within a 12-month period.

NR - The investment rating and price target have been temporarily suspended. Such suspensions are in compliance with applicable regulations and/or Jefferies policies.

CS - Coverage Suspended. Jefferies has suspended coverage of this company.

NC - Not covered. Jefferies does not cover this company.

Restricted - Describes issuers where, in conjunction with Jefferies engagement in certain transactions, company policy or applicable securities regulations prohibit certain types of communications, including investment recommendations.

Monitor - Describes stocks whose company fundamentals and financials are being monitored, and for which no financial projections or opinions on the investment merits of the company are provided.

Valuation Methodology

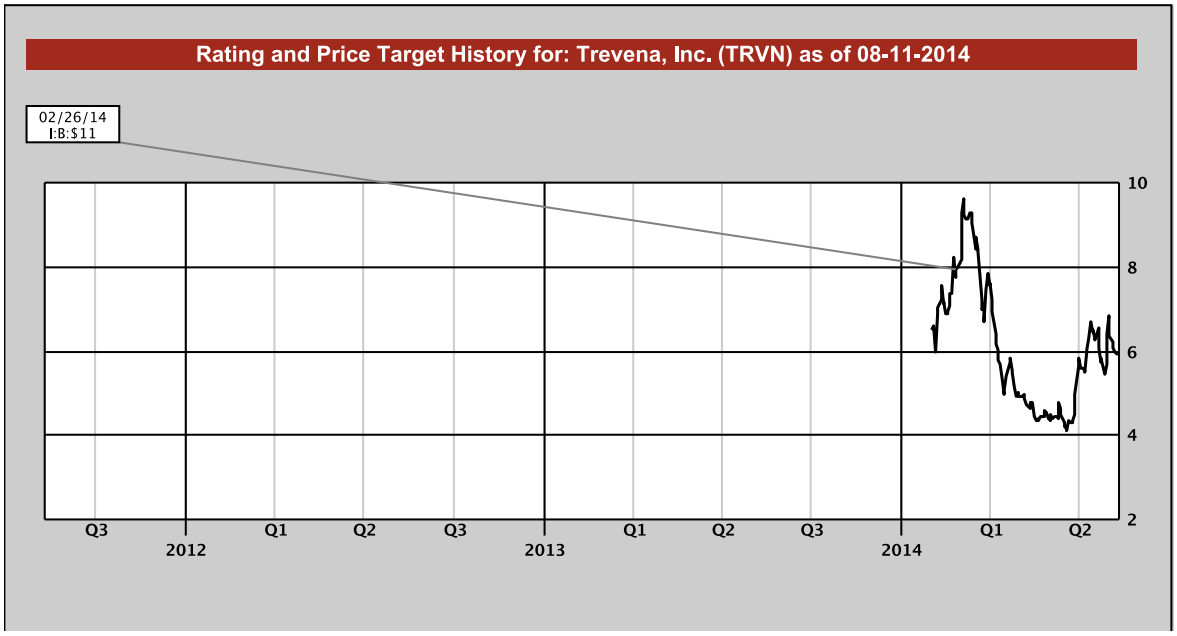
Jefferies' methodology for assigning ratings may include the following: market capitalization, maturity, growth/value, volatility and expected total return over the next 12 months. The price targets are based on several methodologies, which may include, but are not restricted to, analyses of market risk, growth rate, revenue stream, discounted cash flow (DCF), EBITDA, EPS, cash flow (CF), free cash flow (FCF), EV/EBITDA, P/E, PE/growth, P/CF, P/FCF, premium (discount)/average group EV/EBITDA, premium (discount)/average group P/E, sum of the parts, net asset value, dividend returns, and return on equity (ROE) over the next 12 months.

Jefferies Franchise Picks

Jefferies Franchise Picks include stock selections from among the best stock ideas from our equity analysts over a 12 month period. Stock selection is based on fundamental analysis and may take into account other factors such as analyst conviction, differentiated analysis, a favorable risk/reward ratio and investment themes that Jefferies analysts are recommending. Jefferies Franchise Picks will include only Buy rated stocks and the number can vary depending on analyst recommendations for inclusion. Stocks will be added as new opportunities arise and removed when the reason for inclusion changes, the stock has met its desired return, if it is no longer rated Buy and/or if it underperforms the S&P by 15% or more since inclusion. Franchise Picks are not intended to represent a recommended portfolio of stocks and is not sector based, but we may note where we believe a Pick falls within an investment style such as growth or value.

Risk which may impede the achievement of our Price Target

Biren Amin, Equity Analyst, (212) 284-8162, bamin@jefferies.com



Distribution of Ratings

Rating	Count	Percent	IB Serv./Past 12 Mos. Count	IB Serv./Past 12 Mos. Percent
BUY	970	51.65%	254	26.19%
HOLD	761	40.52%	123	16.16%
UNDERPERFORM	147	7.83%	7	4.76%

Biren Amin, Equity Analyst, (212) 284-8162, bamin@jefferies.com

Other Important Disclosures

Jefferies Equity Research refers to research reports produced by analysts employed by one of the following Jefferies Group LLC ("Jefferies") group companies:

United States: Jefferies LLC which is an SEC registered firm and a member of FINRA.

United Kingdom: Jefferies International Limited, which is authorized and regulated by the Financial Conduct Authority; registered in England and Wales No. 1978621; registered office: Vintners Place, 68 Upper Thames Street, London EC4V 3BJ; telephone +44 (0)20 7029 8000; facsimile +44 (0)20 7029 8010.

Hong Kong: Jefferies Hong Kong Limited, which is licensed by the Securities and Futures Commission of Hong Kong with CE number ATS546; located at Suite 2201, 22nd Floor, Cheung Kong Center, 2 Queen's Road Central, Hong Kong.

Singapore: Jefferies Singapore Limited, which is licensed by the Monetary Authority of Singapore; located at 80 Raffles Place #15-20, UOB Plaza 2, Singapore 048624, telephone: +65 6551 3950.

Japan: Jefferies (Japan) Limited, Tokyo Branch, which is a securities company registered by the Financial Services Agency of Japan and is a member of the Japan Securities Dealers Association; located at Hibiya Marine Bldg, 3F, 1-5-1 Yuraku-cho, Chiyoda-ku, Tokyo 100-0006; telephone +813 5251 6100; facsimile +813 5251 6101.

India: Jefferies India Private Limited (CIN - U74140MH2007PTC200509), which is licensed by the Securities and Exchange Board of India as a Merchant Banker (INM000011443) and a Stock Broker with Bombay Stock Exchange Limited (INB011491033) and National Stock Exchange of India Limited (INB231491037) in the Capital Market Segment; located at 42/43, 2 North Avenue, Maker Maxity, Bandra-Kurla Complex, Bandra (East) Mumbai 400 051, India; Tel +91 22 4356 6000.

This material has been prepared by Jefferies employing appropriate expertise, and in the belief that it is fair and not misleading. The information set forth herein was obtained from sources believed to be reliable, but has not been independently verified by Jefferies. Therefore, except for any obligation under applicable rules we do not guarantee its accuracy. Additional and supporting information is available upon request. Unless prohibited by the provisions of Regulation S of the U.S. Securities Act of 1933, this material is distributed in the United States ("US"), by Jefferies LLC, a US-registered broker-dealer, which accepts responsibility for its contents in accordance with the provisions of Rule 15a-6, under the US Securities Exchange Act of 1934. Transactions by or on behalf of any US person may only be effected through Jefferies LLC. In the United Kingdom and European Economic Area this report is issued and/or approved for distribution by Jefferies International Limited and is intended for use only by persons who have, or have been assessed as having, suitable professional experience and expertise, or by persons to whom it can be otherwise lawfully distributed. Jefferies International Limited has adopted a conflicts management policy in connection with the preparation and publication of research, the details of which are available upon request in writing to the Compliance Officer. Jefferies International Limited may allow its analysts to undertake private consultancy work. Jefferies International Limited's conflicts management policy sets out the arrangements Jefferies International Limited employs to manage any potential conflicts of interest that may arise as a result of such consultancy work. For Canadian investors, this material is intended for use only by professional or institutional investors. None of the investments or investment services mentioned or described herein is available to other persons or to anyone in Canada who is not a "Designated Institution" as defined by the Securities Act (Ontario). In Singapore, Jefferies Singapore Limited is regulated by the Monetary Authority of Singapore. For investors in the Republic of Singapore, this material is provided by Jefferies Singapore Limited pursuant to Regulation 32C of the Financial Advisers Regulations. The material contained in this document is intended solely for accredited, expert or institutional investors, as defined under the Securities and Futures Act (Cap. 289 of Singapore). If there are any matters arising from, or in connection with this material, please contact Jefferies Singapore Limited, located at 80 Raffles Place #15-20, UOB Plaza 2, Singapore 048624, telephone: +65 6551 3950. In Japan this material is issued and distributed by Jefferies (Japan) Limited to institutional investors only. In Hong Kong, this report is issued and approved by Jefferies Hong Kong Limited and is intended for use only by professional investors as defined in the Hong Kong Securities and Futures Ordinance and its subsidiary legislation. In the Republic of China (Taiwan), this report should not be distributed. The research in relation to this report is conducted outside the PRC. This report does not constitute an offer to sell or the solicitation of an offer to buy any securities in the PRC. PRC investors shall have the relevant qualifications to invest in such securities and shall be responsible for obtaining all relevant approvals, licenses, verifications and/or registrations from the relevant governmental authorities themselves. In India this report is made available by Jefferies India Private Limited. In Australia this information is issued solely by Jefferies International Limited and is directed solely at wholesale clients within the meaning of the Corporations Act 2001 of Australia (the "Act") in connection with their consideration of any investment or investment service that is the subject of this document. Any offer or issue that is the subject of this document does not require, and this document is not, a disclosure document or product disclosure statement within the meaning of the Act. Jefferies International Limited is authorised and regulated by the Financial Conduct Authority under the laws of the United Kingdom, which differ from Australian laws. Jefferies International Limited has obtained relief under Australian Securities and Investments Commission Class Order 03/1099, which conditionally exempts it from holding an Australian financial services licence under the Act in respect of the provision of certain financial services to wholesale clients. Recipients of this document in any other jurisdictions should inform themselves about and observe any applicable legal requirements in relation to the receipt of this document.

This report is not an offer or solicitation of an offer to buy or sell any security or derivative instrument, or to make any investment. Any opinion or estimate constitutes the preparer's best judgment as of the date of preparation, and is subject to change without notice. Jefferies assumes no obligation to maintain or update this report based on subsequent information and events. Jefferies, its associates or affiliates, and its respective officers, directors, and employees may have long or short positions in, or may buy or sell any of the securities, derivative instruments or other investments mentioned or described herein, either as agent or as principal for their own account. Upon request Jefferies may provide specialized research products or services to certain customers focusing on the prospects for individual covered stocks as compared to other covered stocks over varying time horizons or under differing market conditions. While the views expressed in these situations may not always be directionally consistent with the long-term views expressed in the analyst's published research, the analyst has a reasonable basis and any inconsistencies can be reasonably explained. This material does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this report is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of the investments referred to herein and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange

Biren Amin, Equity Analyst, (212) 284-8162, bamin@jefferies.com

rates could have adverse effects on the value or price of, or income derived from, certain investments. This report has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of securities. None of Jefferies, any of its affiliates or its research analysts has any authority whatsoever to make any representations or warranty on behalf of the issuer(s). Jefferies policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis. Any comments or statements made herein are those of the author(s) and may differ from the views of Jefferies.

This report may contain information obtained from third parties, including ratings from credit ratings agencies such as Standard & Poor's. Reproduction and distribution of third party content in any form is prohibited except with the prior written permission of the related third party. Third party content providers do not guarantee the accuracy, completeness, timeliness or availability of any information, including ratings, and are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, or for the results obtained from the use of such content. Third party content providers give no express or implied warranties, including, but not limited to, any warranties of merchantability or fitness for a particular purpose or use. Third party content providers shall not be liable for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including lost income or profits and opportunity costs) in connection with any use of their content, including ratings. Credit ratings are statements of opinions and are not statements of fact or recommendations to purchase, hold or sell securities. They do not address the suitability of securities or the suitability of securities for investment purposes, and should not be relied on as investment advice.

Jefferies research reports are disseminated and available primarily electronically, and, in some cases, in printed form. Electronic research is simultaneously available to all clients. This report or any portion hereof may not be reprinted, sold or redistributed without the written consent of Jefferies. Neither Jefferies nor any officer nor employee of Jefferies accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this report or its contents.

For Important Disclosure information, please visit our website at https://javatar.bluematrix.com/sellside/Disclosures.action or call 1.888.JEFFERIES

Biren Amin, Equity Analyst, (212) 284-8162, bamin@jefferies.com