JMP

Atara Biotherapeutics, Inc. (ATRA)

Preclinical Data Elucidate PINTA-745 Mechanism of Action

MARKET OUTPERFORM | Price: $33.12 | Target Price: $61.00

MARKET DATA

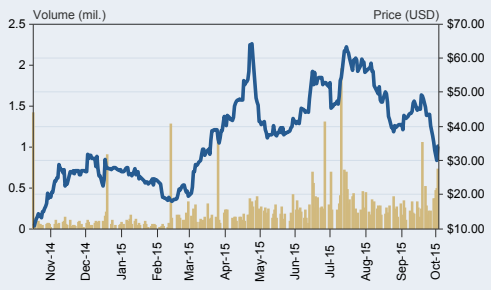
Price	$33.12
52-Week Range:	$9.66 - $65.56
Shares Out. (M):	25.6
Market Cap ($M):	$847.9
Average Daily Vol. (000):	737.0
Cash (M):	$349
Cash/Share:	$5.11
Enterprise Value (M):	$1,072
Float (M):	20.0
LT Debt (M):	$0

Source: Thomson Reuters and JMP Securities LLC

FY DEC		2014A	2015E	2016E
Revenue ($M)	1Q	$0.0	$0.0A	--
	2Q	$0.0	$0.0A	--
	3Q	$0.0	$0.0	--
	4Q	$0.0	$0.0	--
	FY	**$0.0**	**$0.0**	**$0.0**
EPS	1Q	--	($0.42)A	--
	2Q	--	($0.62)A	--
	3Q	--	($0.40)	--
	4Q	$0.00	($0.44)	--
	FY	**($1.43)**	**($1.64)**	**($2.13)**
	P/E	NM	NM	NM

Source: Company reports and JMP Securities LLC

STOCK PRICE PERFORMANCE



INVESTMENT HIGHLIGHTS

Atara Biotherapeutics collaborators have released an abstract at ASN and a publication in the *International Journal of Obesity* demonstrating the potential for PINTA-745 in chronic kidney disease and diabetes; reiterate our Market Outperform rating and a $61 price target based on a synthesis of our DCF, SOTP, and comparable companies valuation methodologies. The abstract will be featured at FR-PO537 at the American Society of Nephrology Annual Meeting, November 3-8. It describes how myostatin, which is upregulated in chronic kidney disease (CKD), stimulates the proliferation of fibrotic and adipogenic progenitor (FAP) cells leading to fibrosis. Blocking myostatin with anti-myostatin peptibody (mouse PINTA-745) in a mouse model of CKD prevents the differentiation of FAP into fibrocytes, supporting the hypothesis that PINTA-745 could help prevent muscle fibrosis in CKD. The journal publication describes how treatment with anti-myostatin peptibody stimulates muscle growth, reduces insulin resistance, suppresses inflammation, and promotes the conversion of white to brown adipose tissue in mice fed a high fat diet. PINTA-745 could have a significant effect in diabetes patients and we anticipate ATRA will initiate trials in diabetic or prediabetic patients soon.

Diabetes is the most common cause of kidney failure, accounting for nearly 40% of all new cases (U.S. Renal Data System, 2011). Skeletal muscle is the major site of glucose uptake in humans, and skeletal muscle insulin resistance is considered to be the initiating or primary defect leading to the development of type 2 diabetes. There is a substantial body of evidence indicating that increasing muscle mass through exercise can help control glucose levels, resulting in less insulin production, which in turn reduces insulin resistance. Muscle wasting due to protein energy wasting thus aggravates the underlying conditions leading to type II diabetes. In the article entitled “Inhibition of myostatin in mice improves insulin sensitivity via irisin-mediated cross talk between muscle and adipose tissues”, the authors demonstrate that myostatin is elevated in mice fed a high fat diet (HFD, Figure 2). HFD-fed mice treated with mouse PINTA-745 (myostatin inhibitor, MI) for four weeks exhibit more muscle growth than mice treated with phosphate buffered saline (PBS) as a control (Figure 3). The mice also experienced an increase in brown adipose tissue (measured by UCP1 levels), which stimulates fatty acid oxidation and increases energy expenditure (Figure 3). Myostatin inhibition increases insulin sensitivity, resulting in lower circulating serum insulin levels in HFD-fed mice (Figure 4). The paper also suggests that this effect is mediated by irisin, a hormone which is produced by muscle cells after exercise. The data look strongly suggestive that PINTA-745 could prove beneficial in pre-diabetic or diabetic patients.

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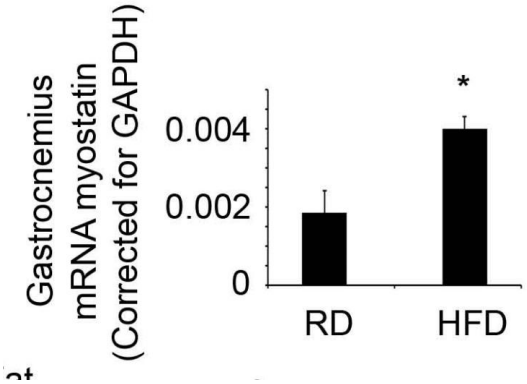
Atara represents a unique opportunity to invest in a de-risked, late-stage pipeline company. Atara is developing two highly differentiated platforms with the potential to tap into vast market segments. Atara's first platform consists of a portfolio of molecular therapeutics, in-licensed from Amgen (AMGN, NC), targeting the biology of transforming growth factor-beta (TGF-β) family members. The lead molecule from this portfolio, PINTA-745, has applications in wasting diseases, such as cancer cachexia, and protein energy wasting in dialysis patients. Atara has also recently licensed the rights to a platform of "off the shelf" cytotoxic T-cell (CTL) therapeutics from Memorial Sloan Kettering Cancer Center (MSKCC). These CTLs provide a pathway to rapid approval in rare indications such as Epstein-Barr Virus (EBV) and cytomegalovirus (CMV) mediated lymphomas in transplant patients. Furthermore, they hold the promise of broad anti-cancer activity against tumors expressing viral antigens, such as glioblastoma, and against rare tumor associated antigens such as Wilm's Tumor 1, (WT1). Researchers at MSKCC continue to generate further clinical data from the EBV-CTL and CMV-CTL programs, with further trial data anticipated before the end of the year. Also, by the end of the year, Atara expects to release top-line Phase II data from dialysis patients with PEW treated for 12 weeks with PINTA-745. If the results look positive, they will set the stage for registration directed trials to initiate in 2016. Finally, early 2016 should also bring the first data from the STM-434 program for treating solid tumors, with a focus on ovarian cancers.

FIGURE 1. Upcoming Catalysts

Timing	Drug	Milestones
2H15	EBV-CTL	Data at scientific meetings, venue not disclosed
4Q15	PINTA-745	Ph II -topline data on muscle mass and safety in ESRD PEW
1H16	STM-434	Ph I -dose escalation data in solid tumors
2H16	STM-434	Ph I -initiation of dose escalation in ovarian cancer
1H16	PINTA-745	Ph II -full data including 8 week follow up ESRD PEW
1H16	PINTA-745	Ph I -dose escalation data in solid tumors
2H16	STM-434	Ph I -initiation of dose escalation in ovarian cancer

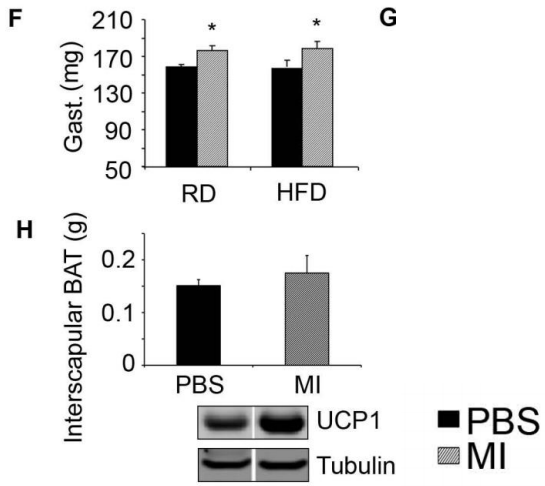
Source: JMP Securities LLC and Company Reports

FIGURE 2. Myostatin mRNA Levels are Elevated in Mice Fed a High Fat Diet (HFD)



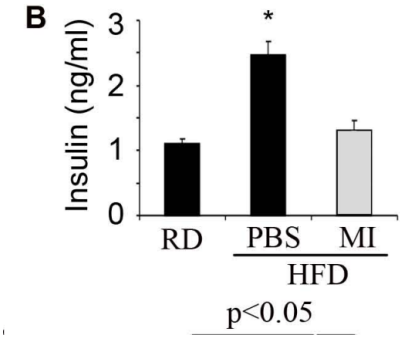
Source: Int. Journal of Obesity, 2015

FIGURE 3. Gastrocnemius Muscle Mass is Greater and Interscapular Brown Adipose Tissue Levels are Increased in Mice Treated with Myostatin Inhibitor (MI)



Source: Int. Journal of Obesity, 2015

FIGURE 4. Myostatin Inhibitor Treatment Reduces Circulating Insulin Levels in HFD-fed Mice



Source: Int. Journal of Obesity, 2015

FIGURE 5. Income Statement

Income Statement ($MM)	2014A	1Q15A	2Q15E	3Q15E	4Q15E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2033E
Product Sales and Royalties																	
Total Product Sales and Royalties	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.45	201.25	581.30	1,095.58	1,806.32	2,778.75	3,739.26	4,649.99	6,576.26
Total Revenue		0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.45	201.25	581.30	1,095.58	1,806.32	2,778.75	3,739.26	4,649.99	6,576.26
Royalties Paid																	
Total Royalties & Milestones						0.50	2.50	1.00	4.13	16.62	48.53	84.05	128.37	184.28	242.23	293.28	427.75
Cost of goods sold		0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.77	30.19	87.19	164.34	270.95	416.81	560.89	637.41	900.53
Total Costs	*0.00*	0.00	0.00	0.00	0.00	0.50	2.50	1.00	6.89	46.80	135.73	248.39	399.32	601.10	803.12	930.68	1,328.28
Gross Profit	**0.00**	0.00	0.00	0.00	0.00	(0.50)	(2.50)	(1.00)	11.56	154.45	445.57	847.19	1,407.00	2,177.65	2,936.13	3,719.31	5,247.98
Operating expenses:																	
Research and development	*14.38*	5.77	7.01	8.25	9.49	30.51	46.64	74.95	111.22	140.70	150.89	165.98	182.58	200.84	220.92	243.01	502.65
R&D as % of US Sales										74%	32%	23%	18%	14%	13%	13%	20%
R&D costs paid to Amgen	*1.07*																
R&D license acquired from MSKCC			4.50														
General and administrative	*12.71*	3.54	3.60	3.66	3.72	14.52	16.33	18.13	19.94	25.39	41.16	52.25	59.07	77.46	92.14	101.14	149.76
Total operating expenses	**28.16**	9.31	15.11	11.91	13.20	45.03	62.96	93.08	131.16	166.83	192.37	218.46	241.83	278.44	313.19	344.28	652.61
Operating income (loss)	**(28.16)**	(9.31)	(15.11)	(11.91)	(13.20)	(49.53)	(65.46)	(94.08)	(119.60)	(12.38)	253.20	628.74	1,165.18	1,899.21	2,622.94	3,375.03	4,595.37
Other income (expense):																	
Interest income (expense), net	*0.13*	0.15	0.16	0.16	0.16	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Total other income	*0.13*	0.15	0.16	0.16	0.16	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Pre-tax income (loss)	**(28.03)**	(9.16)	(14.95)	(11.74)	(13.04)	(48.88)	(64.82)	(93.44)	(118.96)	(11.73)	253.85	629.38	1,165.82	1,899.85	2,623.58	3,375.67	4,596.01
Tax expense (benefit)	**(0.03)**	0.00									0.00	(94.41)	(291.45)	(569.96)	(918.25)	(1,181.49)	(1,608.60)
Tax rate											*0%*	*15%*	*25%*	*30%*	*35%*	*35%*	*35%*
Net Income	**(28.01)**	(9.16)	(14.95)	(11.74)	(13.04)	(48.88)	(64.82)	(93.44)	(118.96)	(11.73)	253.85	534.97	874.36	1,329.90	1,705.33	2,194.19	2,987.41
Other comprehensive gain (loss), net of tax:																	
Unrealized loss on investments	*(0.10)*	0.08	(0.05)														
Other comprehensive gain (loss)																	
Net loss applicable to common stockholders	**(28.11)**	**(9.16)**	**(14.99)**	**(11.74)**	**(13.04)**	**(48.88)**	**(64.82)**	**(93.44)**	**(118.96)**	**(11.73)**	**253.85**	**534.97**	**874.36**	**1,329.90**	**1,705.33**	**2,194.19**	**2,987.41**
Net loss per share basic	$ (1.43)	$ (0.42)	$ (0.62)	$ (0.40)	$ (0.44)	$ (1.64)	$ (2.13)	$ (3.01)	$ (3.74)	$ (0.36)	$ 7.64	$ 15.73	$ 25.12	$ 37.32	$ 46.73	$ 58.70	$ 65.14
Net loss per share diluted	$ (1.43)	$ (0.42)	$ (0.62)	$ (0.40)	$ (0.44)	$ (1.64)	$ (2.13)	$ (3.01)	$ (3.74)	$ (0.36)	$ 7.35	$ 15.10	$ 24.06	$ 35.67	$ 44.55	$ 55.82	$ 60.44
Basic share outstanding	*19.69*	21.92	24.22	29.55	29.75	29.78	30.42	31.09	31.78	32.50	33.24	34.01	34.81	35.63	36.49	37.38	45.86
Diluted Shares outstanding	*0.00*	25.23	25.57	30.32	30.57	30.67	31.39	32.13	32.91	33.71	34.55	35.43	36.34	37.29	38.28	39.31	49.43

Source: JMP Securities LLC and Company Reports

Company Description

Atara Biotherapeutics was founded as a spinoff from Amgen, bringing along six early-stage therapeutics with the potential to modulate transforming growth factor-beta (TGF-β) biology. The TGF-β family participates in a broad array of biological processes, including tissue growth, immune cell function, and cancer biology. Atara's most advanced program is PINTA-745, which is currently in a Phase II trial for treating muscle loss associated with protein energy wasting (PEW) in dialysis patients. PINTA-745 has already demonstrated signs of efficacy in a Phase I trial for treating muscle wasting in prostate cancer patients undergoing androgen deprivation therapy. With top-line results anticipated by the end of 2015, Atara could move to a Phase III trial as soon as 2016. Atara's second program targeting TGF-β family members is STM-434, which is currently being tested for anti-tumor effects in a Phase I trial. Atara recently diversified its portfolio by licensing the rights to several allogeneic cell therapy based platforms from the Memorial Sloan Kettering Cancer Center (MSKCC). These adoptive cell transfer therapies already have substantial clinical evidence demonstrating their effectiveness for treating Epstein Barr virus and cytomegalovirus infections in immunocompromised patients, but also exhibit broad potential as cancer therapeutics.

Investment Risks

Clinical. Drug development is an inherently risky business, requiring significant investment of both time and capital. The company's clinical-stage candidates (PINTA-745, STM-434, EBV-CTL and CMV-CTL) could fail to achieve positive efficacy results, or might exhibit safety signals that preclude further clinical development. Such scenarios could decrease ATRA's innate value and adversely impact our valuation.

Regulatory and commercial. The ability of Atara to market its drugs depends upon those drugs obtaining approval from the FDA and foreign regulatory agencies. Failure to achieve approval or delays in the timelines to approval could negatively impact the company's share price.

Competitive. The development of cachexia and cancer therapeutics is intensely competitive and is dominated by biotechnology and pharmaceutical companies with expertise and resources that may be greater than those of Atara. There are direct competitors working on the same mechanism of action (Acceleron Pharma (XLRN, MO, PT $58), Pfizer (PFE, NC), Bristol-Myers Squibb (BMS, NC), Eli Lilly (LLY, NC) and Regeneron Pharmaceuticals (REGN, NC)), as well as companies working on distinct therapeutic modalities that could impact overlapping patient populations (such as Kite Pharma, Juno Therapeutics, and Lion Biotechnologies (LBIO, NC)).

Financial. Atara is currently well-funded, with $348.9MM in cash and cash equivalents; however, the company may require additional equity financing, in the form of a secondary offering, to complete the development of its drug candidates. The terms of any potential partnership deals remain unknown at this time, exposing existing shareholders to an uncertain level of dilution risk.

Legal. Atara was formed as a spin out from Amgen (AMGN, NC) and the products licensed from Amgen have strong IP claims through 2032. A number of academic institutions have conducted research on allogeneic cellular therapy platforms. Atara's intellectual property in this space will be based on the proprietary algorithms developed by Memorial Sloan Kettering for administering the Tcells from the allogeneic cell bank and trade secrets and know how.

JMP FACTS AND DISCLOSURES

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JMP Securities was manager or co-manager of a public offering of securities for Atara Biotherapeutics, Inc. (ATRA) 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 Atara Biotherapeutics, Inc. in the next 3 months.

JMP Securities Investment Opinion Definitions:

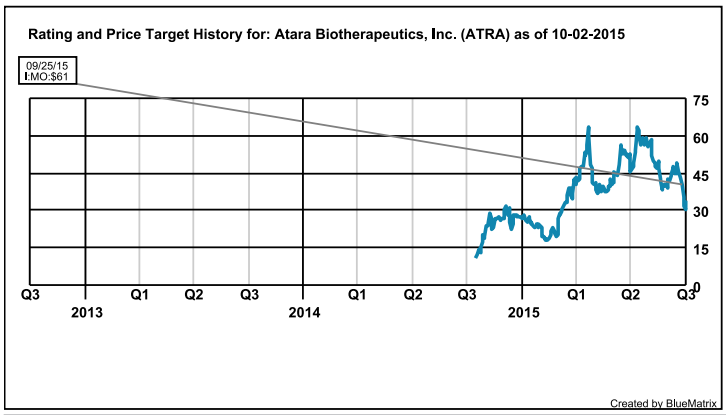
Market Outperform (MO): JMP Securities expects the stock price to outperform relevant market indices over the next 12 months.
Market Perform (MP): JMP Securities expects the stock price to perform in line with relevant market indices over the next 12 months.
Market Underperform (MU): JMP Securities expects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

JMP Securities Research Ratings and Investment Banking Services: (as of October 5, 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	303	*63.52%*	Buy	303	*63.52%*	88	*29.04%*
MARKET PERFORM	Hold	150	*31.45%*	Hold	150	*31.45%*	14	*9.33%*
MARKET UNDERPERFORM	Sell	5	*1.05%*	Sell	5	*1.05%*	0	*0%*
COVERAGE IN TRANSITION		19	*3.98%*		19	*3.98%*	2	*10.53%*
TOTAL:		477	*100%*		477	*100%*	104	*21.80%*

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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