

Sage Therapeutics

1Q Snapshot...More Promising Phase 1/2 Data Headlines Quarterly Update

With the presentation set for tomorrow, Sage released full data from SAGE-547's Phase 1/2 trial in SRSE in concurrence with their 1Q15 financial results. Response rate for patients treated with '547 grew to 77% (17/22) from the 71% (12/17) previously reported and is now even more consistent with the rate seen in the eIND (78%). We're encouraged that the results continue to hold up with prior data despite the addition of more patients. Notably, however, 4 of the 17 patients who met the primary endpoint had recurrence of SE within 4 weeks. We ultimately don't think this is a big deal as the patients' underlying condition persists despite resolution of SRSE. Further, management stated that due to the severity of patients' underlying illness, recurrences occurring in this timeframe aren't uncommon and, importantly, shouldn't impact the primary endpoint. From a safety perspective, '547 continued to be in line with prior data with no serious AEs deemed to be related to treatment. Overall, we believe the latest '547 update reinforces the data we've previously seen and continue to see high potential in this asset. Reiterate OW.

- **Pipeline remains on track.** For '547, the SRSE Phase 3 initiation and data from the exploratory proof of concept studies in PPD and essential tremor remain on track for mid-2015. We note these PoC studies offer interesting upside optionality, if positive. Additionally, '547's Expanded Access Protocol (Study 302) has been started. As far as the other programs go, management reiterated their intention to advance '217 and '689 into the clinic by the end of 2015.
- **1Q15 financial results.** SAGE reported EPS of (\$0.66) compared to JPM of (\$0.49). Operating expenses came in slightly higher than expected at \$16.9M vs. JPM of \$12.7M. The higher spend was driven primarily by increased R&D (\$12.9M vs. JPM of \$9.1M). SAGE ended 1Q15 with \$113.2M in the bank and will add another \$129M in net proceeds from the secondary offering in April (JPM was a co-book runner).
- **Model updates.** In addition to updating for actuals, we've adjusted our model to reflect the impressive consistency of the full Phase 1/2 results by bumping probability of success in the US to 75% from 70%. These tweaks bring our YE15 price target to \$66.
- **Key upcoming events.** SAGE will present Phase 1/2 '547 data tomorrow at the Antiepileptic Drug and Device Trials XIII Conference (2:50 pm EST). Additionally, data from the proof of concept studies in PPD and essential tremor are expected in mid-2015. The Phase 3 trial of '547 in SRSE will begin enrolling by mid-year as well. SAGE continues to guide for next-gen assets '217 and '689 to enter the clinic by yearend.

Sage Therapeutics, Inc. (SAGE;SAGE US)

FYE Dec	2012A	2013A	2014A	2015E (Prev)	2015E (Curr)
EPS reported (\$)					
Q1 (Mar)	-	(0.76)	(1.17)	(0.49)	(0.66)A
Q2 (Jun)	-	-	(4.57)	(0.55)	(0.70)
Q3 (Sep)	-	-	(0.50)	(0.64)	(0.68)
Q4 (Dec)	-	-	(0.47)	(0.78)	(0.70)
FY	(2.74)	(2.15)	(1.67)	(2.48)	(2.74)

Source: Company data, Bloomberg, J.P. Morgan estimates.

Overweight

SAGE, SAGE US

Price: \$57.29

▲ **Price Target: \$66.00**

Previous: \$58.00

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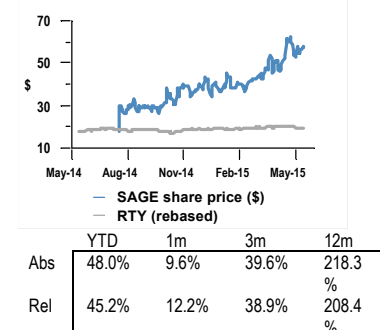
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Price Performance



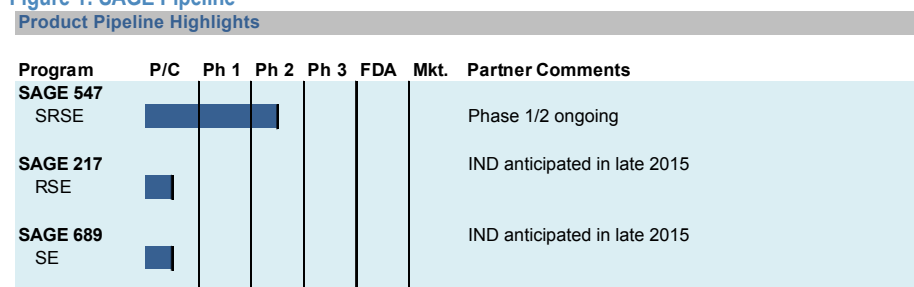
Company Data

Price (\$)	57.29
Date Of Price	13 May 15
52-week Range (\$)	63.77-24.25
Market Cap (\$ mn)	1,609.51
Fiscal Year End	Dec
Shares O/S (mn)	28
Price Target (\$)	66.00
Price Target End Date	31-Dec-15

See page 5 for analyst certification and important disclosures.

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Figure 1: SAGE Pipeline



Source: Company reports and J.P. Morgan estimates.

Figure 2: SAGE Upcoming Events

Anticipated Newsflow Highlights

Program	Event	Expected Timing	Significance
SAGE 547	Potential Pivotal trial Start	mid-2015	Low
	Potential Pivotal Data	2016	High
	Potential NDA/MAA Filings	2016	Low
SAGE 217	IND Filing	late 2015	Low
SAGE 689	Potential IND Filing	late 2015	Low

Source: Company reports and J.P. Morgan estimates.

Investment Thesis, Valuation and Risks

Sage Therapeutics (*Overweight; Price Target: \$66.00*)

Investment Thesis

We have an OW rating on SAGE based on the potential of SAGE-547 for the treatment of super-refractory status epilepticus (SRSE) – a life-threatening state of persistent seizure that is unresponsive to currently available therapies (and an orphan indication). We believe SAGE-547's unique mechanism of action should continue to generate positive data and that the significant unmet need in SRSE will drive uptake of SAGE-547 upon commercialization. Follow-on candidates SAGE-689 and SAGE-217 for earlier lines of SE could grow the top line with significant infrastructure synergy.

Valuation

Our probability-weighted Dec-15 PT of \$66 is based on a blended average of our proprietary probability-adjusted sum-of-the-parts scenario analysis (50% weighting) and risk-adjusted NPV model (50% weighting).

SAGE Valuation Summary

SAGE Valuation Summary			
Discount rate	12%		
4Q15 Fully Diluted Shares (m)	30.3		
Main value drivers	Prob of approval	Peak WW sales est (avg. scenario)	Avg peak yr
SAGE-547- Status Epilepticus - US	75%	\$ 1,032	2022
SAGE-547- Status Epilepticus - G7	65%	\$ 582	2024
Valuation methodology	Value / share	Weighting	Adj. value/ share
DCF			
P/E 2016			
Real options scenario analysis	\$ 73.25	50%	36.63
Risk adjusted NPV analysis	\$ 57.91	50%	28.96
Total			\$ 65.58
Catalyst/liquidity discount			0%
YE15 Price Target			\$ 66

Source: J.P. Morgan estimates.

Risks to Rating and Price Target

SAGE is susceptible to the standard risks that apply to the entire biotech industry, including development, regulatory, commercial, manufacturing, financing, and IP pitfalls. More specific risks to the downside include clinical setbacks for the key pipeline product SAGE-547 and pre-clinical candidates SAGE-689 and SAGE-217, regulatory hurdles, commercial setbacks and personnel risk.

Sage Therapeutics: Summary of Financials

Income Statement - Annual	FY14A	FY15E	FY16E	FY17E	Income Statement - Quarterly	1Q15A	2Q15E	3Q15E	4Q15E
Revenues	0	0	-	-	Revenues	0A	0	0	0
Cost of products sold	0	0	-	-	Cost of products sold	0A	0	0	0
Gross profit	-	-	-	-	Gross profit	-	-	-	-
SG&A	(10)	(17)	-	-	SG&A	(4)A	(4)	(4)	(4)
R&D	(24)	(62)	-	-	R&D	(13)A	(15)	(16)	(18)
Operating income	(34)	(79)	-	-	Operating income	(17)A	(19)	(21)	(22)
EBITDA	(34)	(79)	-	-	EBITDA	(17)A	(19)	(21)	(22)
Net interest (income) / expense	-	-	-	-	Net interest (income) / expense	-	-	-	-
Other income / (expense)	(0)	0	-	-	Other income / (expense)	0A	0	0	0
Income taxes	0	0	-	-	Income taxes	0A	0	0	0
Net income - GAAP	(36)	(79)	-	-	Net income - GAAP	(17)A	(19)	(21)	(22)
Net income - recurring	(36)	(79)	-	-	Net income - recurring	(17)A	(19)	(21)	(22)
Diluted shares outstanding	22	29	43	-	Diluted shares outstanding	26A	28	30	32
EPS - excluding non-recurring	(1.67)	(2.74)	-	-	EPS - excluding non-recurring	(0.66)A	(0.70)	(0.68)	(0.70)
EPS - recurring	(1.67)	(2.74)	-	-	EPS - recurring	(0.66)A	(0.70)	(0.68)	(0.70)
Balance Sheet and Cash Flow Data	FY14A	FY15E	FY16E	FY17E	Ratio Analysis	FY14A	FY15E	FY16E	FY17E
Cash and cash equivalents	121	174	-	-	Sales growth	-	-	-	-
Accounts receivable	-	-	-	-	EBIT growth	84.9%	133.8%	-	-
Inventories	-	-	-	-	EPS growth - recurring	(22.3%)	64.0%	-	-
Other current assets	0	0	-	-	Gross margin	-	-	-	-
Current assets	121	174	-	-	EBIT margin	-	-	-	-
PP&E	0	0	-	-	EBITDA margin	-	-	-	-
Total assets	121	174	-	-	Tax rate	0.0%	0.0%	-	-
Total debt	0	0	-	-	Net margin	-	-	-	-
Total liabilities	3	3	-	-	Net Debt / EBITDA	356.1%	219.2%	-	-
Shareholders' equity	119	171	-	-	Net Debt / Capital (book)	6835.3%	8961.6%	-	-
Net income (including charges)	(36)	(79)	-	-	Return on assets (ROA)	(55.7%)	(53.5%)	-	-
D&A	0	0	-	-	Return on equity (ROE)	(57.9%)	(54.5%)	-	-
Change in working capital	0	0	-	-	Enterprise value / sales	-	-	-	-
Other	1	3	-	-	Enterprise value / EBITDA	NM	NM	-	-
Cash flow from operations	(34)	(76)	-	-	Free cash flow yield	(2.8%)	(4.6%)	-	-
Capex	0	0	-	-					
Free cash flow	(34)	(76)	-	-					
Cash flow from investing activities	0	0	-	-					
Cash flow from financing activities	147	129	-	-					
Dividends	-	-	-	-					
Dividend yield	-	-	-	-					

Source: Company reports and J.P. Morgan estimates.

Note: \$ in millions (except per-share data). Fiscal year ends Dec

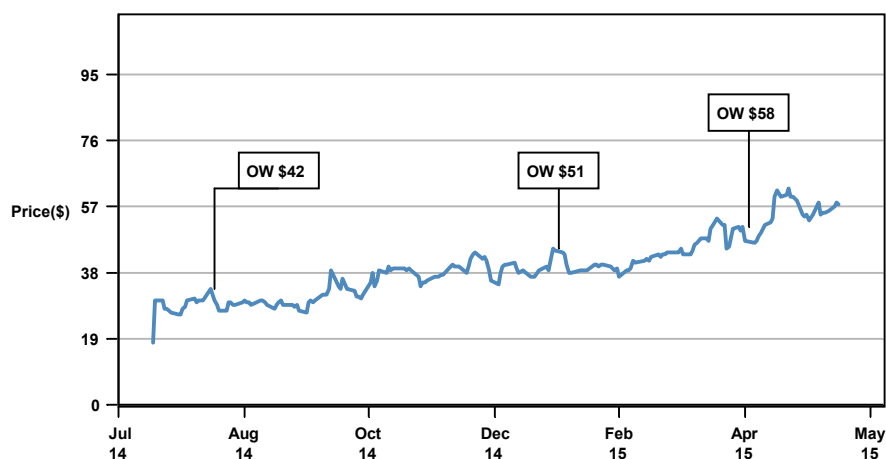
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Source: Bloomberg and J.P. Morgan; price data adjusted for stock splits and dividends.
Initiated coverage Aug 12, 2014.

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