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SAGE Therapeutics

Biotechnology

US Equity Research
20 May 2015

BUY
unchanged

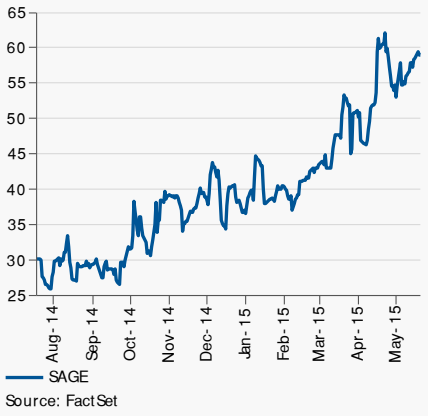
PRICE TARGET	US$85.00↑
from US$58.00	
Price (20-May)	US$63.01
Ticker	SAGE-NASDAQ

52-Week Range (US$):	24.25 - 65.01
Avg Daily Vol (M) :	184.9
Shares Out. (M) :	21.6
Market Cap (US$M):	1,359

FYE Dec	2014A	2015E	2016E
Sales (US$M)	0.0	0.0	0.0
EPS Adj&Dil (US$)	(1.67)	(2.56)↓	(2.42)↓
Previous	*(1.67)*	*(1.04)*	*(1.06)*

Quarterly Sales	Q1	Q2	Q3	Q4
2014A	0.0	0.0	0.0	0.0
2015E	0.0	0.0	0.0	0.0
2016E	-	-	-	-

Quarterly EPS Adj&Dil	Q1	Q2	Q3	Q4
2014A	(3.70)	(4.57)	(0.50)	(0.26)
2015E	(0.66)	(0.58)	(0.64)	(0.68)
2016E	-	-	-	-



Source: FactSet

SAGE Therapeutics is a biopharmaceutical company focused on developing drugs to treat CNS disorders where no effective options exist.

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Raising Target Price

Increasing PT to $85 on higher probability of success for SAGE-547, mid-year proof of concept data

Higher conviction for SAGE-547 going into pivotal trials based on positive POC Phase 1/2 data

We continue to believe SAGE-547 is well positioned to hit the primary endpoint in the upcoming Phase 3 STATUS trial, which is successful weaning off of anesthesia and all AE drugs without recurrence of SE within 24 hours, due to continued positive data in its Phase 1/2 trials (response rates remain of 77% in 22 evaluable patients). The Phase 3 trial will enroll 126 patients to either SAGE-547 vs. standard of care third-line anti-seizure agents for a total of six days, and we expect top-line data mid-2016. Importantly, the study will include a crossover and retreatment with a higher dose if no initial response, which we believe may provide a more definitive demonstration of efficacy.

Expect Phase 3 data by mid-2016, possibly earlier

SAGE expects to report top-line data for the STATUS trial by mid-2016, the key catalyst for the stock. Although data are ~12 months away, we believe that finalization of the Phase 3 design and enrollment will increase investor diligence near term. We believe the Phase 3 trial design of a placebo-controlled study vs. an open-label historical control will provide unambiguous evidence of efficacy for SAGE-547 vs.placebo, especially due to the high level of confounding variables that may occur in this complicated patient population if an open-label study was run.

Proof-of-concept data in ET and PPD expected mid-2015

We continue to anticipate Phase 2 data for SAGE-547 in Essential Tremor (ET) and severe PostPartum Depression (PPD) by mid-215, a near-term catalyst if early efficacy is shown. Although both studies are primarily studying PK and safety, the trial will report outcome measures, with tremors measured by the accelerometer and PPD by the HAM-D-17 and CGI-I scale, which may provide early proof of concept for the drug in these disease states.

Wholly-owned early compounds may surprise; potential data early 2016

Additionally, SAGE expects to move its proprietary follow-on candidates into the clinic by YE15, including SAGE-689 for adjunctive IV therapy for status epilepticus and SAGE-217 as an oral therapy for orphan epilepsies like Dravet and Rett syndrome, a positive. We look forward to upcoming data, potentially early 2016 (unconfirmed), to potentially drive shares prior to top-line phase 3 STATUS results.

Maintain BUY, raising PT to $85

We maintain our BUY rating and increase our PT to $85 from $58. We have higher conviction for SAGE-547 and increase our probability of approval to 65% from 55% and use a P/S valuation. Additionally, we do not include any of the early compounds and label expansion for SAGE-547 into our valuation, which may mean significant upswing for the stock if data are positive.

Figure 1: SAGE income statement

(000's) [FY - DEC]													
Revenues	**2012A**	**2013A**	**2014A**	**1Q15A**	**2Q15E**	**3Q15E**	**4Q15E**	**2015E**	**2016E**	**2017E**	**2018E**	**2019E**	**2020E**
SAGE-547													
US			-	-	-	-	-	-	-	-	81,823	337,154	607,793
Ex-US			-					-	-	-	51,888	52,148	209,633
Ex-US royalty									-	-	8,821	8,865	35,638
Total			-	-	-	-	-	-	-	-	**90,644**	**346,019**	**643,431**
Income Statement	**2012A**	**2013A**	**2014A**	**1Q15A**	**2Q15E**	**3Q15E**	**4Q15E**	**2015E**	**2016E**	**2017E**	**2018E**	**2019E**	**2020E**
Total Revenue	-	-	-	-	-	-	-	-	-	-	90,644	346,019	643,431
COGS	-	-	-	-	-	-	-	-	-	-	9,064	34,602	64,343
Gross Profit	-	-	-	-	-	-	-	-	-	-	81,580	311,417	579,088
Operating Expenses													
Research and development	7,229	14,357	24,100	12,900	15,003	17,152	19,254	64,309	64,505	57,323	55,439	62,278	72,142
SAGE-547	125	3,918	9,707	4,885	9,771	11,744	13,736	40,136	40,939	28,657	20,060	18,054	16,249
SAGE-689	1,047	2,772	4,620	1,570	1,805	1,895	1,914	7,184	7,903	10,669	14,403	19,444	26,249
SAGE-217	-	1,129	3,524	1,172	1,231	1,243	1,256	4,902	5,883	7,647	9,942	12,924	16,801
other r&d	3,495	3,388	231	(14)	(15)	(15)	(15)	(59)	(64)	(71)	(78)	(86)	(94)
Options expense				600	600	600	600	2,400	2,880	3,456	4,147	4,977	5,972
Unallocated expenses	2,562	3,150	6,018	1,907	1,610	1,685	1,763	6,965	6,965	6,965	6,965	6,965	6,965
Personnel related expenses	2,116	2,718	4,685	1,214	1,456	1,529	1,606	5,805	1,622	5,863	1,638	5,922	1,654
Other expenses	446	432	531	152	154	156	157	619	159	625	160	632	162
General and administrative	2,402	3,922	9,710	3,997	4,216	4,369	4,529	17,111	15,139	15,290	40,319	44,088	48,231
Personnel related	899	1,764	3,133	2,798	2,910	3,055	3,208	11,971	12,270	12,393	37,393	41,132	45,246
Professional fees	929	1,253	2,837	380	384	387	391	1,542	1,557	1,573	1,589	1,604	1,620
Facilities	266	364	362	160	161	163	165	649	656	662	669	676	682
Other	308	541	761	160	161	163	165	649	656	662	669	676	682
Options expense				500	600	600	600	2,300	2,760	3,312	3,974	4,769	5,723
Total Operating Expense	9,631	18,279	33,810	16,897	19,219	21,521	23,783	81,421	79,644	72,614	95,758	106,366	120,372
EBITDA													
Operating income	(9,631)	(18,279)	(33,810)	(16,897)	(19,219)	(21,521)	(23,783)	(81,421)	(79,644)	(72,614)	(14,178)	205,051	458,716
Interest (expense) income, net	-	1	8	21	8	21	8	58	8	58	8	58	8
Other income (expense), net	(1)	(3)	(9)	5	(9)	5	(9)	(8)	(9)	(8)	(9)	(8)	(9)
Pre-tax income (GAAP)	(9,632)	(18,281)	(33,811)	(16,871)	(19,220)	(21,495)	(23,784)	(81,371)	(79,645)	(72,564)	(14,179)	205,101	458,715
Pre-tax income (non-GAAP)													
Taxes (GAAP)		-	-	-	-	-	-	-	-	-	-	75,887	169,724
Tax rate (GAAP)	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
Accretion of redeemable convertible preferred	(4)	(7)	(2,294)										
Net Income (GAAP)	**(9,637)**	**(18,288)**	**(36,105)**	**(16,871)**	**(19,220)**	**(21,495)**	**(23,784)**	**(81,371)**	**(79,645)**	**(72,564)**	**(14,179)**	**129,214**	**288,990**
GAAP EPS (diluted)	($8.62)	($12.26)	($1.67)	($0.66)	($0.58)	($0.64)	($0.68)	($2.56)	($2.42)	($2.01)	($0.36)	$2.95	$6.01
Diluted shares	1,118	1,492											
Pro forma - diluted shares		9,514	21,574	25,656	33,000	33,495	34,828	31,745	32,856	36,142	39,756	43,731	48,104
Pro forma EPS (diluted)		**($1.92)**	**($1.67)**	**($0.66)**	**($0.58)**	**($0.64)**	**($0.68)**	**($2.56)**	**($2.42)**	**($2.01)**	**($0.36)**	**$2.95**	**$6.01**

Source: Company Reports, Canaccord Genuity estimates

Figure 2: SAGE valuation

Product	Peak revenues	Year	probability	P/S	Value / share
SAGE-547					
US	$984	2020	65%	6	76
Ex-US	$82	2024	65%	6	4
Total Product Value					$80
Cash					$6
Total Equity Value					**$85**
Shares Outstanding (MM)					27

Risk-Free Rate	3.0%
Beta	1.8
Risk Premium	4%
Discount Rate	11%

Source: Company Reports, Canaccord Genuity estimates

Appendix: Important Disclosures

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Target Price / Valuation Methodology:

SAGE Therapeutics - SAGE

Our price target of $85 is based on a probability adjusted P/S valuations.

Risks to achieving Target Price / Valuation:

SAGE Therapeutics - SAGE

Clinical trials for SAGE-547, 689, and 217 may ultimately fail, resulting in substantial downside to our estimates and price target. SAGE currently has no products approved by FDA or European regulatory agencies and has no revenues at present. Also, the exact number of patients suffering from super-refractory status epilepticus and other subsets of status epilepticus is not known. The actual number of SRSE patients may be smaller than modeled, which could result in difficulty enrolling clinical studies and longer clinical timelines. Smaller patient numbers could also result in lower revenues than our current estimates. Later-stage clinical trials for SAGE-547 may fail despite encouraging initial data from emergency use cases, resulting in lack of clinical approval, revenues, and downside to our price target. In addition, safety signals may emerge in Phase 1/2 and Phase 3 studies that were not seen in the initial emergency use cases. Safety signals could prevent FDA approval if serious. SAGE utilizes third parties, or clinical research organizations, to conduct its clinical studies for SAGE-547. Should these organizations conduct poor quality control, poor selection of clinical investigators, or improper statistical analysis, SAGE shares could be adversely impacted. Also, if the clinical research organization does not recruit the studies in a timely fashion, investors may become disappointed, creating downward pressure on the stock. Even assuming regulatory approval, SAGE's products may not perform well in the marketplace, resulting in lower revenues. If the pace of the launch is too slow, investors may be disappointed, and shares may be under pressure. Competitive products may emerge that generate better clinical data versus SAGE's pipeline. At present, SAGE's principal competitor is Marinus Pharmaceuticals, which is developing a reformulated form of Ganaxalone, a known GABA positive allosteric modulator neuroactive steroid, for potential treatment of drug-resistant partial complex seizures and fragile X syndrome. Also, many of SAGE's competitors have substantially more resources to fund clinical development, and may do so in a faster and/or more effective manner. SAGE is also likely to need substantial additional funding going forward, potentially creating downward pressure related to financing. Research and development costs may be higher than we have anticipated, requiring additional capital and potential dilution. SAGE expects to continue to incur substantial operating losses for the foreseeable future. The company may never become profitable, or profitability may take much longer than originally anticipated, disappointing some investors and resulting in downside to the share price.

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Global Stock Ratings (as of 05/20/15)

Rating	Coverage Universe		IB Clients
	#	%	%
Buy	579	58.02%	31.95%
Hold	334	33.47%	17.07%
Sell	40	4.01%	5.00%
Speculative Buy	45	4.51%	55.56%
	998*	100.0%	

*Total includes stocks that are Under Review

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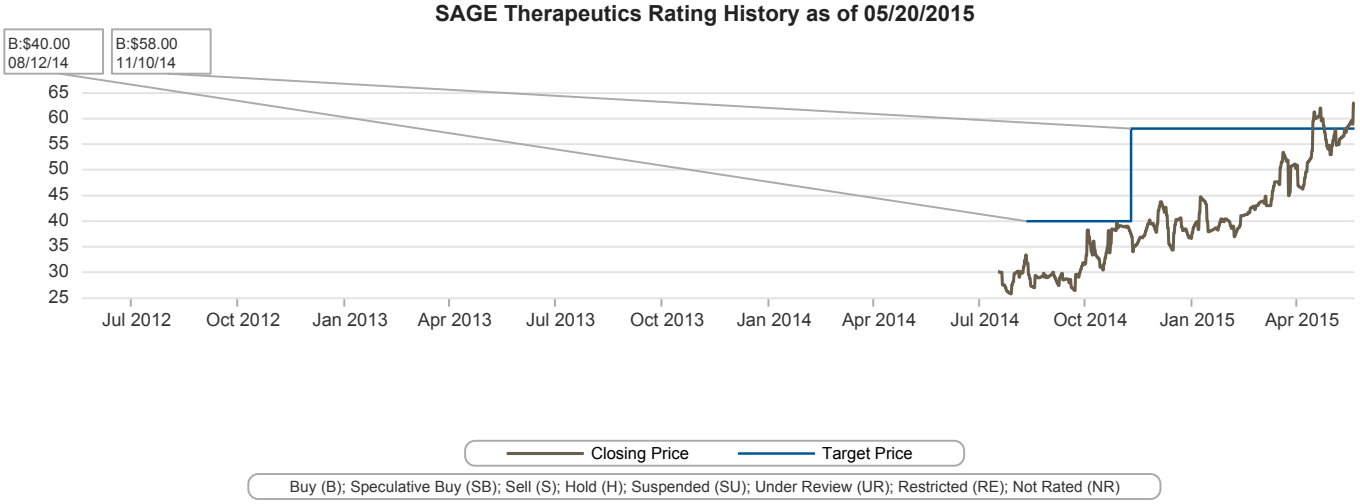
SAGE Therapeutics Rating History as of 05/20/2015



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