March 27, 2015

**OUTPERFORM** 

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Reason for report: **EARNINGS** 

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(NASDAQ:CALA)

### CALITHERA BIOSCIENCES, INC.

Three CB-839 Trials To Report Starting in 2Q and Preclinical IO Data in Fall

- Bottom Line: CALA's 4Q:14 call continued to highlight the solid clinical progress with lead candidate CB-839 (glutaminase inhibitor, Phase I) with 61 patients enrolled through December and another 100 patients expected to be enrolled in 2015. While the IND for arginase inhibitor program is pushed out slightly to 1Q:16 (from late 2015/early 2016 recently), management appears quite excited about the profile of its compound with preclinical data expected in the fall. While the activity of CB-839 remains to be seen and the sensitivity to the compound could be context-dependent requiring patient selection or combination, we are increasing our PT from \$13 to \$19 based on increased probability of success (from 10% to 15%) due to the apparent good safety to date.
- · ASCO and EHA data to include both dose escalation and expansion cohorts. For CB-839, it appears that most of the 61 patients enrolled by the end of Dec. were solid tumor patients and data are expected at ASCO (5/29-6/2, Chicago) and should include some data on patients being enrolled to the dose expansion cohort. Data on patients from each of the two liquid tumor Phase I trials (in acute lymphocytic leukemia/acute myeloid leukemia, and multiple myeloma/non-Hodgkin's lymphoma, respectively) are expected at EHA (6/11-14, Vienna), though multiple myeloma may be more a focus for ASH (12/5-8, Orlando) where combination data are expected. In addition, combination data in breast cancer are expected at SABCS (12/8-12, San Antonio). According to management, most of the patients in the dose escalation portion of the studies were treated below the Phase II dose of 600 mg twice a day, therefore the dose expansion cohort may offer a better opportunity for seeing activity. Management indicated that it tested doses as high as 1000 mg tid, but determined that 600 mg bid was sufficient based on PK/ PD analysis (no dose-limiting toxicities were identified).
- Five AACR presentations focus on preclinical combinations. Two oral presentations at AACR discuss the potential of CB-839 in lung cancer as well as synergy with signal transduction pathway inhibitors. CB-839 sensitivity was found to be correlated with the expression of phospho-Rb, Smad3, c-Myc and MEK2, which may serve as candidates for biomarker for CB-839. Management also stated that specific metabolic genetic mutations appear to be the best biomarker for CB-839.
- Immuno-oncology (IO) program (arginase inhibitor) could present preclinical data in fall. Although IND timeline is pushed back slightly, management appears excited about the profile of its candidates.
- Model update: CALA ended 2014 with \$102M in cash and guided to end 2015 with \$65M, which in turn is projected to support operations through 2017. Based on 4Q:14 and 2014 reported spending, and management guidance, we increase our 2015 R&D and G&A estimates.

S&P 600 Health Care	e Index: 1,610.49
Price:	\$15.88
Price Target:	\$19.00 from \$13.00
Methodology:	DCF analysis, 10% discount rate
52 Week High:	\$33.48
52 Week Low:	\$6.51
Shares Outstanding (	mil): 17.9
Market Capitalization	(mil): \$284.3
Book Value/Share:	\$0.00

**Key Stats:** 

Cash Per Share: \$5.69
Dividend (ann): \$0.00
Dividend Yield: 0.0%



Dec Yr	1Q	2Q	3Q	4Q	FY Rev	1Q	2Q	3Q	4Q	FY EPS	P/E
2014A	0.0	0.0	0.0	0.0	0.0	(\$0.60)	(\$0.60)	(\$0.54)	(\$0.38)	(\$2.00)	NM
2015E - New	0.0	0.0	0.0	0.0	0.0	(\$0.48)	(\$0.53)	(\$0.58)	(\$0.63)	(\$2.22)	NM
2015E - Old					0.0					(\$1.10)	NM
2016E - New					0.0					(\$3.03)	NM
2016E - Old					0.0					(\$1.52)	NM

Source: Company Information and Leerink Partners LLC Research



### **INVESTMENT THESIS**

We rate CALA Outperform with a valuation of \$19. CALA is an early clinical-stage biotechnology company developing novel, potentially first-in -class agents for cancer by exploiting dysregulated metabolism of tumor cells and host immune response. We believe targeting cancer metabolism is an important new area of exploration for cancer therapeutics. We believe the rationale for targeting cancer metabolism is strong, given the elevated metabolic need as a hallmark of cancer and importantly altered metabolic pathways compared to normal cells. CALA's lead compound CB-839 (Phase I) is a specific inhibitor of glutaminase thereby interferes with increased glutamine metabolism seen in cancer cells. Based on preclinical data and biological rationale, glutaminase inhibitors could be especially interesting for settings where a high unmet need exists such as triple negative breast cancer as well as patients with ras and myc mutations. The effectiveness of a glutaminase inhibitor is likely context-dependent – patient selection and combinations could be key to success. Glutaminse clearly remains to be validated clinically as a target. Feedback we received is mixed and a concern about targeting glutaminase and perhaps metabolism in general is that cancer cells could potentially switch to a low-growth state, therefore these agents may not be cytotoxic but rather cytostatic. Data for CB-839 show that for at least some cells, CB-839 is cytotoxic. MEDACorp cancer biology specialists point out that the susceptibility to a glutaminase inhibitor varies considerably among different tumor cells therefore patient selection will likely need to be integral to development. In addition to CB-839, CALA has an interesting preclinical immunooncology program in targeting arginase, which has similarities to IDO inhibitors, which have drawn considerable attention recently. The management's proven track record with Kyprolis (AMGN) bodes well for a sustainable pipeline.

**CALA – Upcoming Catalysts** 

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Drug	Timing	Description
CB-839	mid 2015 (ASCO)	Phase I data solid tumors
	mid 2015 (EHA)	Phase I data in ALL and AML
		Data from combination Phase 1b
	late 2015 (SABCS)	with placitaxel in TNBC
		Phase I data in MM, combination
	late 2015 (ASH)	data with pomolidomide in MM
Arginase		
inhibitors	2H:15	Present preclinical data
	1Q:16	Submit IND

Source: Company reports



### CALA - Pipeline

Drug	Mechanism/ Class	Status	Setting	n	Primary Endpoint	Trial initiation	Region		
CB-839	Glutaminase Inhibitor	Phase I	TNBC, NSCLC, RCC and Mesothelioma	100	Safety	Feb. 2014	US		
CB-839	Glutaminase Inhibitor	Phase I	AML, ALL	50	Safety	Feb. 2014	US		
CB-839	Glutaminase Inhibitor	Phase I	NHL, DLBCL, MM, T-cell NHL	65	Safety	Feb. 2014	US		
Preclinical programs									
Program		cpected IN	ID						
Arginase in	hibitor	1Q:16							
Hexokinas	e II inhibitor								

Source: Company reports



### **VALUATION**

We are increasing our valuation for CALA from \$13 to \$19 based on the apparent good safety of CB-839 in a relatively sizable patient population of ~60, which we believe de-risks the program on safety and improves the probability of success. Our valuation is based on DCF analysis and probability-weighted sales for CB-839 in triple-negative breast cancer (TNBC) and multiple myeloma (MM) (both increased from 10% probability to 15%), with a 10% discount rate. We believe this discount rate is appropriate as we use probability-weighted sales for the products.

### **RISKS TO VALUATION**

Risks to our valuation include:

Early stage of development as lead candidate is still in Phase I with limited efficacy and safety data.

Novel targets that have not been validated clinically. As a potentially first in class agent, lead compound CB-839 targets an enzyme (glutaminase) that is still unproven as a target either clinically with a drug or genetically through mutation linkage. The broader approach of targeting cancer metabolism is also a new approach that does not have extensive validation.

Financing risks. CALA's current balance of cash or equivalents (\$102M) is expected to support operations through 2017 but additional financing will likely needed before CALA turns profitable.

Calithera																			
(In '000s, except per share items)																			
	2012	2013					2014A					2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E
	2012	2013	1QA*	2QA*	3QA	4QA	2014A	1QE	2QE	3QE	4QE	2013L	2010L	2017	2010L	2013L	2020L	20212	2022L
REVENUE:																			
CB-839(POS adjusted salesUS)	-	-	-						_								13,832	80,965	154,830
royalty on OUS sales																	207	3,643	9,290
Milestone payments																			
Other, net																			
Total Revenue																	14,039	84,609	164,120
OPERATING EXPENSES:																			
Cost of product Sales															_	_	968	5,668	10,838
Research and Development	6,558	9.900	3,751	3,751	3,894	4,972	16,367	6,000	7,000	8,000	9.000	30,000	45,000	67,500	74,250	81,675	89,843	98,827	108,709
General and Adminstrative	1,417	2,478	1,071	1,071	1,447	1,866	5,454	2,500	2,550	2,550	2,601	10,201	10,405	12,486	13,735	20,000	60,000	90,000	108,000
Royalties																			
Amortization of Acquired Intangible Assets																			
Operating Loss/ Income	(7.975)	(12.378)	(4.821)	(4.821)	(5.341)	(6.838)	(21.821)	(8.500)	(9.550)	(10.550)	(11.601)	(40.201)	(55.405)	(79.986)	(87.985)	(101.675)	(136.771)	(109.886)	(63.427)
	(1,51.5)	(12,010)	(-,	(1)1	\-///	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		.,,	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, .,,		, , , , ,	(00,100)	(1.0,000)	(01,000)	(101,010)	(100)111/	(100)000/	(,
Investment, Interest and Other Income, Net		1	1	1	2	5	9	5	5	5	5	20							
Gain on extinguishment of convertible preferred stock	2889																		
Change in fair value of convertible preferred stock warrant liability  Net Income before Taxes	(7,975)	(12,377)	(4,820)	(4,820)	(5,339)	(6,833)	(21,812)	(8,495)	(9,545)	(10,545)	(11,596)	(40,181)	(55,405)	(79,986)	(87,985)	(101,675)	(136,771)	(109,886)	(63,427)
Income tax rate%	(7,973)	(12,377)	(4,020)	(4,020)	(5,559)	(0,033)	(21,012)	(0,493)	(9,343)	(10,545)	(11,596)	(40, 101)	(55,405)	(79,900)	(67,965)	(101,675)	(130,771)	35%	35%
Income Tax									-									38.460	22,200
Net Loss	(5,086)	(12,377)	(4,820)	(4,820)	(5,339)	(6,833)	(21,812)	(8,495)	(9,545)	(10,545)	(11,596)	(40,181)	(55,405)	(79,986)	(87,985)	(101,675)	(136,771)	(71,426)	(41,228)
Basic and Diluted Net Loss per Common Share			(0.60)	(0.60)	(0.54)	(0.38)	(2.00)	(0.48)	(0.53)	(0.58)	(0.63)	(2.22)	(3.03)	(4.33)	(3.07)	(3.51)	(2.52)	(1.28)	(0.73)
Shares Used in Calculating Basic and Diluted Net Loss per Share(pro forma)			7,979	7,979	9,882	17,882	10,931	17,859	18,037	18,218	18,400	18,129	18,310	18,493	28,678	28,965	54,254	54,797	55,345
Dilutive shares			9.000	9.000	10,903	18,903	11,952	18,880	19,058	19,239	19,421	19,150	19,331	19,514	29,699	29,986	55,275	55,818	56,366
Branco Grando			-,	-,	,	5.69	,	,	,	,	,	,	,	,	,	,	,	,	,
Cash and cash equivalents					110,811	101,969	101,969	93,474	83,929	73,384	61,788	61,788	6,383	(73,603)	(31,588)	(133,263)	54,966	(16,460)	(57,687)
Milestone payments																			
Capital raise														130,000		325,000			
Shares issued Price per share														10,000 \$ 13.00		25,000 \$ 13.00			
Net Cash	_			27.750	110,811	101.969	101,969	93.474	83.929	73,384	61.788	61,788	6.383	56,397	(31,588)	191,737	54.966	(16,460)	(57,687)
10.0001				21,100	110,011	101,000	101,000	00,	00,020	70,00	01,700	01,700	0,000	00,007	(01,000)	101,101	01,000	(10,100)	(07,007)
Stock Options												102 to 65							
Restricted stock							35.9					25, 75							
Total							71.6			35.9 +71.6	102	end of 2017							
							107.5			23.00	.52,	01 2011							
Stock price							(1,302)												
Market Cap									31.5										
EV									10.5										

## Balance sheet data Working Capital Total assets

Convertible preferred stock warrant liability Convertible preferred stock Total stockholder's (deficit) equity

Source: Company reports and Leerink Partners

<sup>\* 1</sup>H:14 results available but 1Q and 2Q were not broken out separately.



# **Disclosures Appendix Analyst Certification**

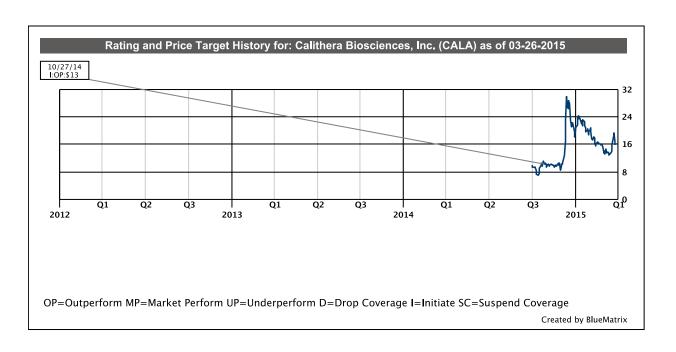
I, Howard Liang, Ph.D., certify that the views expressed in this report accurately reflect my views and that no part of my compensation was, is, or will be directly related to the specific recommendation or views contained in this report.

### **Valuation**

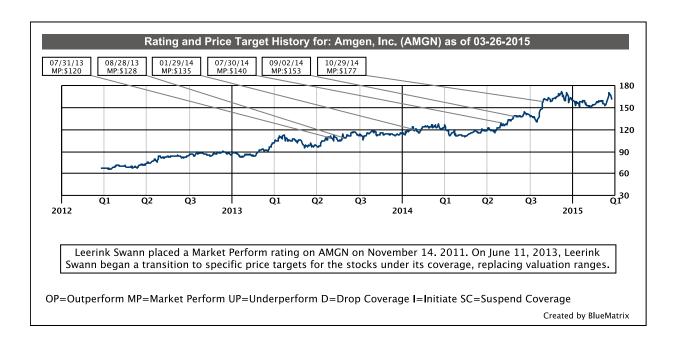
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	Distribution of Ratings/Investment Bank	king Services (II	,	erv./Past 12 Mos.
Rating	Count	Percent	Count	Percent
BUY [OP]	150	70.00	60	40.00
HOLD [MP]	64	30.00	1	2.00
SELL [UP]	0	0.00	0	0.00

### **Explanation of Ratings**

Outperform (Buy): We expect this stock to outperform its benchmark over the next 12 months.

<u>Market Perform (Hold/Neutral):</u> We expect this stock to perform in line with its benchmark over the next 12 months.

<u>Underperform (Sell):</u> We expect this stock to underperform its benchmark over the next 12 months. The degree of outperformance or underperformance required to warrant an Outperform or an Underperform rating should be commensurate with the risk profile of the company.

For the purposes of these definitions the relevant benchmark will be the S&P 600® Health Care Index for issuers with a market capitalization of less than \$2 billion and the S&P 500® Health Care Index for issuers with a market capitalization over \$2 billion.

### **Important Disclosures**

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In the past 12 months, the Firm has received compensation for providing investment banking services to Calithera Biosciences, Inc. .

Leerink Partners LLC makes a market in Calithera Biosciences, Inc. and Amgen, Inc.



Leerink Partners LLC has acted as the manager for a public offering of Calithera Biosciences, Inc. in the past 12 months.

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