#### **OUTPERFORM**

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Reason for report:

**COMPANY UPDATE** 



## **ACCELERON PHARMA**

Positive NKF Sotatercept Data & Multiple 2014 Catalysts To Drive XLRN Higher

- Bottom Line: Sotatercept National Kidney Foundation (NKF) data look encouraging with more details than we expected, and 2Q14 is catalyst-rich with other pipeline data presentations at ASCO (5/30-6/3) and European Hematology Association (EHA [6/12-15]) that could drive the shares meaningfully higher. ASCO will have 3 presentations for proprietary compound Dalantercept, with main focus on results from the 2nd-line Renal Cell Carcinoma (RCC) Phase II Dalantercept-Axitinib combo trial (abstract 4566). EHA-2014 will provide 5 key Sotatercept & ACE-536 presentations with the most important being top-line Phase II Sotatercept and ACE-536 data from 4 different trials in MDS and  $\beta$ -Thalassemia ( $\beta$ -Thal.). If it were not for the large number of meaningful upcoming catalysts, we believe recent share lock-up expiry could have resulted in greater volatility. We reiterate our Outperform rating and \$52 price target on XLRN.
- The Sotatercept NKF Part-1 ESRD trial presentation builds upon preliminary positive data previously available in the mid-March abstract. As a reminder, abstract data demonstrated early Sotatercept dose escalation cohorts that showed hemoglobin (Hgb) increases on par with Erythrocyte Stimulating Agents (ESAs) even if this is not the main goal of the trial. Specifically, the 0.3 and 0.5mg/kg cohorts demonstrated 0.5g/dL and 0.8g/dL Hgb increases. No new data were presented for the 0.7mg/kg cohort, but based on trends for the previous 2, this dose looks very promising. New to us in the NKF poster is disclosure (but not data) of a 4th "step-down" treatment cohort starting patients on a 0.7mg/kg loading dose followed by 0.4mg/kg maintenance dose. Additionally, the poster shows: 1) 28-day dose escalation Hgb increases with proportion of patients achieving ≥1g/dL (placebo:0.3:0.5; 20%:37%;40%), and 2) dose decreasing need for erythropoietin rescue (if Hgb fell <9g/dL) (placebo:03:05; 40%:13%;0%). These data suggest to us that any of the 3 cohorts starting at ≥0.5mg/kg could be viable to take forward. As a reminder, the main point of this study is not to demonstrate Sotatercept's superiority to ESAs but rather to capitalize on its ability to positively impact ESRD (end-stage renal disease) hemodialysis patients experiencing bone mineral density (BMD) abnormalities or vascular calcifications. We did not expect any details on this in Part-1 of the trial presented at NKF, but believe this will be a key feature in presentation of Part-2 when data become available ~1H15. Any expectation that meaningful BMD data from this dose escalation trial would be presented in April at NKF is unrealistic given the small patient numbers and dose exploration. This data will be a key feature of the Part-2 randomized portion of the trial that we estimate will yield data by 1H15.
- Next up in 2Q14 are key pipeline presentations in June at ASCO and EHA that could meaningfully boost the shares (LINK).

Key Stats: (NASDAQ:XLRN)
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 S&P 600 Health Care Index:
 1,247.08

 Price:
 \$33.42

 Price Target:
 \$52.00

 Methodology:
 \$52.00

DCF analysis; 10% discount rate; 1%

terminal growth rate

52 Week High: \$57.89 52 Week Low: \$15.00 Shares Outstanding (mil): 31.1 Market Capitalization (mil): \$1,039.4 Book Value/Share: \$1.29 Cash Per Share: \$7.81 Dividend (ann): \$0.00 Dividend Yield: 0.0%

Cash Per Share: Cash per share is pro forma for Jan-2014 financing (~\$129M in net proceeds).



Dec Yr	1Q	2Q	3Q	4Q	FY Rev	1Q	2Q	3Q	4Q	FY EPS	P/E
2013A	\$15.0	\$26.4	\$4.3	\$11.5	\$57.2	\$0.13	\$0.64	(\$0.66)	(\$0.64)	(\$4.15)	NM
2014E	0.0	0.0	\$30.0	0.0	\$30.0	(\$0.50)	(\$0.53)	\$0.40	(\$0.58)	(\$1.22)	NM
2015E					0.0					(\$2.20)	NM

Source: Company Information and Leerink Partners LLC Research

Revenue in MM.
GAAP EPS presented.



## **INVESTMENT THESIS**

We rate XLRN Outperform. We believe XLRN shares are poised to appreciate near/longer term driven by progress with CELG-partnered compounds Sotatercept/ACE-536 and proprietary Dalantercept (ACE-041). XLRN has multiple significant data read-out catalysts during almost every quarter until YE14. Pivotal catalysts through 2014: (1) Preliminary Dalantercept Phase II RCC data in 2Q14; (2) top-line Sotatercept and ACE-536 Phase II MDS and β-Thal. (4 trials) data at EHA in 2Q14; (3) final Sotatercept and ACE-536 Phase II MDS and β-Thal. (4 trials) data at ASH in 4Q14; (4) initiate pivotal MDS and/or β-Thal. trials by YE14. MEDACorp KOLs are very bullish and encouraged by emerging pipeline data and science. We assume probability of success in the low 30%'s for Sotatercept/ACE-536 in MDS, 40% for β-Thal., 20% in end-stage renal disease (ESRD) patients on hemodialysis, and low 30%'s for Dalantercept in 2nd-line RCC.

### ASCO 2014 Titles

Dalantercept:								
Abstract #	Title	Time/Session	Poster Board	Presenter				
5594	Phase II evaluation of dalantercept, a soluble recombinant activin receptor-like kinase 1 (ALK1) receptor-fusion protein, for treatment of recurrent/persistent endometrial cancer: GOG-0229N.	5/31(Sat) 8-11:45am S Hall A2 General poster Track(s): Gynecologic Cancer	376	Vicky Makker, MD				
6045	Phase 2 study of dalantercept in recurrent or metastatic squamous cell carcinoma of the head and neck	5/31 (Sat) 1:15-5pm S Hall A2 General poster Track(s): Head and Neck Cancer	80	Antonio Jimeno, MD, PhD				
4566	A two-part phase 2 randomized study of dalantercept and axitinib versus placebo plus axitinib in advanced renal cell carcinoma: Results from the part 1 dose escalation cohorts.	6/2 (Mon) 1:15-5pm S Hall A2 General Poster Track(s): Genitourinary Cancer	134	Michael B. Atkins, MD				

Source: ASCO.org, Leerink Partners estimates.



## Milestones

Product	Partner	Indication	Phase	Timing	Milestone
				2Q14	Phase II dose escalation data for MDS and β-Thal. at EHA-2014
				4Q14	Final Phase II in MDS and β-Thal. data
ACE-536				YE14 or Beg-15	Initiate Phase III trial for MDS and/or β-Thal.
		MDS +	Ph. II	2018	Approval and launch
	CELG	β-Thal.	F11. 11	2Q14	Phase II dose escalation MDS + β-Thal. data at EHA-2014; Preclinical data in sickle cell anemia
				4Q14	Final Phase II in MDS + β-Thal. data
				2018	Approval and launch
Sotatercept (ACE-011)				YE14 or Beg-15	Initiate Phase III trial for MDS and/or β-Thal.
	CELG	ESRD	Ph. II	4.22.26-14	Additional Data on Dose dependent Hg Increase from Ongoing Phase IIa Study at National Kidney Foundation (NKF)
				1H15	Part-2 top-line data
					Interim data from dose escalation Phase II RCC combo data trial (full at ASCO-2014)
Dalantercept				2Q14	GOG Ovarian Cancer single agent trial Go-No-Go to Part-2 of trial
(ACE-041)		Oncology	Ph. II	1H14	Initiate Phase II combo (sorafenib) trial in HCC
	Proprietary			YE14	Preliminary Phase II combo (sorafenib) data in HCC
				2014	Phase II data in SCCHN
				2018	Approval and launch in RCC
New TGF-β		Muscle	PC	2014	Advance Muscle Loss candidate into clinic (ACE-083)
Candidates		Fibrosis	PC	2015	Advance Fibrosis (i.e., PAH) candidate into clinic

Source: Company reports, Leerink Partners estimates.



Phase II Sotate	ercept Intravenous (IV)/Subcutaneous (SC) End-Stage Kidney Disease Patients on Hemodialysis
Purpose:	Determine optimal administration route, dose level, and safety of IV or SC sotatercept for maintaining hemoglobin
	levels in ESRD hemodialysis subjects
# Pts:	Part-1: N=60
	<b>Part-2:</b> N=230
	19 international sites (as of 1.8.14)
Design:	Interventional, 2x Part, randomized, open label, treatment trial
Trial Arms:	Note: Patients in both parts of study must first be on stable dose of ESA to maintain Hg levels and switched to treatment with sotatercept after an ESA treatment free period of ~5 days
	Part-1: Staggered dose group escalation
	<ul> <li>Arm-1 (IV): ACE-011 IV starting at 0.1mg/kg (gp-1), then 0.2mg/kg (gp-2) and 0.3mg/kg (gp-3) every 14 days for total of 8 doses and followed for 4 months after last dose</li> </ul>
	<ul> <li>Arm-2 (SC): ACE-011 SC starting at 0.13mg/kg (gp-1), then 0.26mg/kg (gp-2), and 0.4mg/kg (gp-3) every14 days for total of 8 doses and followed for 4 months after last dose</li> </ul>
	Part-2: Parallel group, randomized vs. active control (ESA)
Primary	Part-1:
Endpoint:	<ul><li>Pharmacokinetics: C-max, T-max, AUC 28days [Time Frame: 28 days] and T-1/2,z [211 days]</li></ul>
	Adverse Events: [Time Frame: 211 days] [Designated as safety issue], TEAEs
	Part-2:
	<ul> <li>Change in mean hemoglobin concentration from baseline</li> <li>Ability of sotatercept to maintain hemoglobin levels within target range after switching from ESA to sotatercept</li> </ul>
Secondary	Efficacy [Time Frame: 113 days]
Endpoints:	Change in mean hemoglobin (Hg) concentration between baseline and day-113
	Bone Turnover biomarkers for remodeling and mineral metabolism for 211 days
	Change in serum bone biomarker concentrations between baseline and end of study (day-211)
Start:	October-2013
Data:	October-2015
Status:	Recruiting (as of 1.8.14)
Sponsors:	CELG
Clin.Trial.ID:	NCT01999582, ACE-011-REN-002, 2012-003788-23

Source: Company reports, Leerink Partners estimates.

## **VALUATION**

Our \$52 12-month price target of XLRN shares reflects probability-adjusted royalty revenue from ESRD patients on hemodialysis at 20%. Our valuation is based on a discounted cash flow analysis. XLRN shares are poised to appreciate near/longer term driven by progress with CELG-partnered compounds Sotatercept/ACE-536 and proprietary Dalantercept (ACE-041). We apply a discount rate of 10% and a terminal growth rate of 1%, which translates to an 11x terminal multiple, which we believe is comparable to biotechnology companies in a similar development stage.

## **RISKS TO VALUATION**

An investment in XLRN is fundamentally a high-risk, high-reward investment, in our opinion. XLRN may face significant clinical, regulatory, and commercial risks for pipeline products. Most important is clinical risk for Phase II Sotatercept and ACE-536 trials in MDS (Myelodysplastic Syndromes) and  $\beta$ -Thal. as well as Dalantercept/Axitinib in RCC. There is also competitive risk from emerging MDS,  $\beta$ -Thal. and RCC therapies. Finally, XLRN may face financing risk beyond 1H15.

					XLRN I	P&L (\$000s, ex	cept per share	data)										
	2013A	1Q14E	2Q14E	3Q14E	4Q14E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E
Revenues																		
Sotatercept/ACE-536 WW Revenue in MDS to CELG					I					\$66,089	\$141,589	\$227,505	\$324,937	\$435,091	\$559,283	\$698,955	\$855,680	\$1,031,180
Probability of Success										32%	32%	32%	32%	32%	32%	32%	32%	32%
Risk Adjusted Sotatercept/ACE-536 WW Revenue										\$21,148	\$45,308	\$72,801	\$103,980	\$139,229	\$178,971	\$223,666	\$273,818	\$329,978
Risk Adjusted Sotatercept/ACE-536 WW Royalties in MDS										\$4,230	\$9,515	\$16,016	\$23,915	\$32,023	\$42,953	\$55,916	\$68,454	\$82,494
Sotatercept/ACE-536 WW Revenue in NTD β-Thal. to CELG										\$3,659	\$60.642	\$127,092	\$226,546	\$339.098	\$466,097	\$609.020	\$767,222	\$904,639
Probability of Success										40%	40%	40%	40%	40%	40%	40%	40%	40%
Risk Adjusted Sotatercept/ACE-536 WW Revenue in NTD β-Thal.										\$1,464	\$24,257	\$50.837	\$90,619	\$135,639	\$186,439	\$243,608	\$306.889	\$361.856
Risk Adjusted Sotatercept/ACE-536 WW Royalties in NTD β-Thal.										\$293	\$4,851	\$10.676	\$19.936	\$29.841	\$42.881	\$58,466	\$73,653	\$90,464
Nak Adjusted OctaterceptiAoE-550 WW Royaldes III WTD p-11lai.										Ψ <b>2</b> 33	\$4,031	\$10,070	\$13,330	\$23,041	\$42,001	\$30,400	<b>\$13,033</b>	\$30,404
Dalantercept WW Revenue in 2nd-line RCC					I					\$68,061	\$131,647	\$210,325	\$298,864	\$398,173	\$509,233	\$633,101	\$770,918	\$877,863
Probability of Success										32%	32%	32%	32%	32%	32%	32%	32%	32%
Risk Adjusted Dalantercept WW Revenue in 2nd-line RCC										\$21,780	\$42,127	\$67,304	\$95,637	\$127,415	\$162,954	\$202,592	\$246,694	\$280,916
Sotatercept US Revenue in ESRD Patients on Hemodialysis												\$301,866	\$819,107	\$1,418,781	\$1,915,379	\$2,064,199	\$2,220,226	\$2,383,756
Probability of Success												20%	20%	20%	20%	20%	20%	20%
Risk Adjusted Sotatercept US Revenue in ESRD Patients on Hemodialysis												\$60,373	\$163,821	\$283,756	\$383,076	\$412,840	\$444,045	\$476,751
Risk Adjusted Sotatercept US Royalties in ESRD Patients on Hemodialysis												\$12,075	\$36,041	\$65,264	\$91,938	\$103,210	\$111,011	\$119,188
, , ,					I													
Collaboration Revenue	\$57,231	-	-	\$30,000	-	\$30,000	-	\$40,000	\$30,000	\$22,400	\$8,000	-	\$8,000		\$8,000	\$8,000	\$8,000	\$8,000
Total Revenue	\$57,231	-	-	\$30,000	-	\$30,000	-	\$40,000	\$30,000	\$48,702	\$64,493	\$106,071	\$183,529	\$254,543	\$348,727	\$428,184	\$507,813	\$581,062
Costs and Expenses					I													
Probability Adjusted Dalantercept COGS	-					-	-	-		\$3,267	\$6,319	\$10,096	\$9,564	\$12,742	\$16,295	\$20,259	\$24,669	\$28,092
Research and Development	\$36,051	\$10,350	\$11,200	\$12,100	\$12,780	\$46,430	\$51,073	\$56,180	\$61,798	\$27,809	\$29,200	\$30,660	\$32,193	\$33,802	\$35,492	\$37,267	\$39,130	\$41,087
SG&A (Risk Adjusted from Time of Dalantercept Launch)	\$14,227	\$4,800	\$5,000	\$5,100	\$5,200	\$20,100	\$22,110	\$24,321	\$26,753	\$33,153	\$36,468	\$39,386	\$41,355	\$43,423	\$45,594	\$47,874	\$50,267	\$52,781
Total Costs and Expenses	\$50,278	\$15,150	\$16,200	\$17,200	\$17,980	\$66,530	\$73,183	\$80,501	\$88,551	\$64,229	\$71,987	\$80,141	\$83,112	\$89,967	\$97,382	\$105,400	\$114,067	\$121,959
Operating Income (EBIT)	\$6,952	(\$15,150)	(\$16,200)	\$12,800	(\$17,980)	(\$36,530)	(\$73,183)	(\$40,501)	(\$58,551)	(\$15,527)	(\$7,494)	\$25,930	\$100,417	\$164,576	\$251,345	\$322,784	\$393,746	\$459,103
Y/Y growth																		
Other Income (Expenses)	(\$27,710)					-	-	-	-	-	-	-	-	-	-	-	-	-
Interest Income	\$20																	
Interest Expense	(\$1,161)	(\$457)	(\$378)	(\$298)	(\$219)	(\$1,352)	(\$521)											
Income Before Taxes	(\$21,898)	(\$15,607)	(\$16,578)	\$12,502	(\$18,199)	(\$37,882)	(\$73,704)	(\$40,501)	(\$58,551)	(\$15,527)	(\$7,494)	\$25,930	\$100,417	\$164,576	\$251,345	\$322,784	\$393,746	\$459,103
Provision for Taxes									*	·		•	·	*	40,225	109,747	133,873	156,095
Tax Rate	(624,000)	(\$4 F COT)	(\$4C F70)	£42 F02	(£40,400)	0%	0%	0%	0%	0%	0%	0%	0%	0%	16%	34%	34%	34% \$303.008
Net income  Net income (loss) applicable to common stockholders—diluted	(\$21,898) (\$39,003)	(\$15,607) (\$15,607)	(\$16,578) (\$16,578)	\$12,502 \$12,502	(\$18,199) (\$18,199)	(\$37,882) (\$37,882)	(\$73,704) (\$73,704)	(\$40,501) (\$40,501)	(\$58,551) (\$58,551)	(\$15,527) (\$15,527)	(\$7,494) (\$7,494)	\$25,930 \$25,930	\$100,417 \$100,417	\$164,576 \$164,576	\$211,119 \$211,119	\$213,038 \$213,038	\$259,872 \$259,872	\$303,008
Net income (loss) applicable to common stockholders—diluted  Change in fair value of warrants	(\$39,003) \$1,500	(\$15,607)	(\$16,578)	\$12,502	(\$18,199)	(\$37,062)	(\$73,704)	(\$40,501)	(\$56,551)	(\$15,527)	(\$7,494)	\$25,930	\$100,417	\$104,576	\$211,119	\$213,038	\$259,672	\$303,008
Change in fair value or warrants	\$1,500																	
EPS (LPS) Basic	(\$4.15)	(\$0.50)	(\$0.53)	\$0.40	(\$0.58)	(\$1.22)	(\$2.20)	(\$1.20)	(\$1.72)	(\$0.45)	(\$0.22)	\$0.74	\$2.83	\$4.59	\$5.83	\$5.82	\$7.03	\$8.12
Basic Shares (000)	9,407	31,109	31,140	31,171	31,202	31,147	33,458	33,793	34,130	34,472	34,817	35,165	35,516	35,871	36,230	36,593	36,958	37,328

Source: Leerink Partners estimates and company reports. NTD=non-transfusion dependent.

#### DCF Calcuation

DCF Calcuation	
Discount rate	10%
Terminal Growth Rate	1%
Valuation (\$M)	\$1,690
Valuation / Share	\$52

Source: Leerink Partners estimates.

	VII	N DOE Vel	-ti/Ch Ca		:-	
	ALF	IN DUF VAIU	ation/Snare Se	nsitivity Analysi	ıs	
	_			Discount Rate		
		8.0%	9.0%	10.0%	11.0%	12.0%
0	0.0%	\$69	\$58	\$49	\$42	\$36
h Rat	1.0%	\$76	\$63	\$52	\$44	\$38
Terminal Growth Rate	2.0%	\$86	\$69	\$57	\$48	\$40
inal 0	3.0%	\$100	\$78	\$63	\$52	\$43
Term	4.0%	\$120	\$90	\$71	\$57	\$47
Source: Leerink Pa	rtners estima	ites.				



# **Disclosures Appendix Analyst Certification**

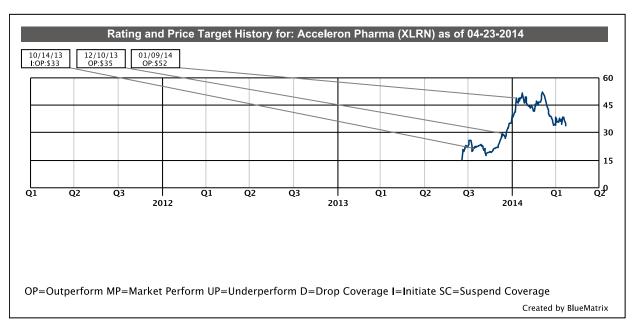
I, Marko Kozul, M.D., certify that the views expressed in this report accurately reflect my views and that no part of my compensation was, is, or will be directly related to the specific recommendation or views contained in this report.

## **Valuation**

Our \$52 12-month price target of XLRN shares reflects probability-adjusted royalty revenue from ESRD patients on hemodialysis at 20%. Our valuation is based on a discounted cash flow analysis. XLRN shares are poised to appreciate near/longer term driven by progress with CELG-partnered compounds Sotatercept/ACE-536 and proprietary Dalantercept (ACE-041). We apply a discount rate of 10% and a terminal growth rate of 1%, which translates to an 11x terminal multiple, which we believe is comparable to biotechnology companies in a similar development stage.

## **Risks to Valuation**

An investment in XLRN is fundamentally a high-risk, high-reward investment, in our opinion. XLRN may face significant clinical, regulatory, and commercial risks for pipeline products. Most important is clinical risk for Phase II Sotatercept and ACE-536 trials in MDS (Myelodysplastic Syndromes) and  $\beta$ -Thal. as well as Dalantercept/Axitinib in RCC. There is also competitive risk from emerging MDS,  $\beta$ -Thal. and RCC therapies. Finally, XLRN may face financing risk beyond 1H15.









Distribut	tion of Ratings/Investment Bankin	g Services (IB) a		rv./Past 12 Mos.
Rating	Count	Percent	Count	Percent
BUY [OP]	131	68.23	46	35.11
HOLD [MP]	61	31.77	3	4.92
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**

This information (including, but not limited to, prices, quotes and statistics) has been obtained from sources that we believe reliable, but we do not represent that it is accurate or complete and it should not be relied upon as such. All information is subject to change without notice. This is provided for information purposes only and should not be regarded as an offer to sell or as a solicitation of an offer to buy any product to which this information relates. The Firm, its officers, directors, employees, proprietary accounts and affiliates may have a position, long or short, in the securities referred to in this report, and/or other related securities, and from time to time may increase or decrease the position or express a view that is contrary to that contained in this report. The Firm's salespeople, traders and other professionals may provide oral or written market commentary or trading strategies that are contrary to opinions expressed in this report. The Firm's proprietary accounts may make investment decisions that are inconsistent with the opinions expressed in this report. The past performance of securities does not guarantee or predict future performance. Transaction strategies described herein may not be suitable for all investors. Additional information is available upon request by contacting the Editorial Department at One Federal Street, 37th Floor, Boston, MA 02110.

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MEDACorp is a network of healthcare professionals, attorneys, physicians, key opinion leaders and other specialists accessed by Leerink and it provides information used by its analysts in preparing research.



In the past 12 months, the Firm has received compensation for providing investment banking services to Acceleron Pharma .

Leerink Partners LLC makes a market in Acceleron Pharma and Celgene, Inc.

In the past 12 months, an affiliate of the Firm, Leerink Swann Consulting LLC, has received compensation for providing non-securities services to: Acceleron Pharma and Celgene, Inc.

Leerink Partners LLC has acted as the manager for a public offering of Acceleron Pharma in the past 12 months.

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