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OUTPERFORM

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LEERINK

Reason for report:

EARNINGS

ZAFGEN, INC.

1Q Recap: Ph.3 PWS Enrollment Completed Ahead of Schedule; Readout in 1Q16

• **Bottom Line:** We are updating our model to reflect 1Q15 financial results reported after the close. ZFGN reported EPS of ($0.53) vs. our estimate of ($0.76). Increasing OpEx was attributed to clinical/regulatory development, manufacturing, and headcount to meet the demands of a public company. **Reiterate OP with a PT of $61.**

• **As we projected in our recent report [LINK], Phase III "bestPWS" data is now expected in early 1Q16, one quarter earlier than the previously delayed timeline suggested.** Based on further discussions with the FDA, ZFGN announced an adjustment to the statistical analysis plan for measuring efficacy in the study, whereby hyperphagia and change in body weight will be considered co-primary endpoints with a threshold alpha of 0.05 each. Therefore, ZFGN will need to meet statistical significance at this level for both endpoints, whereas previously the company could have either done this or hit just one with a threshold alpha of 0.025.

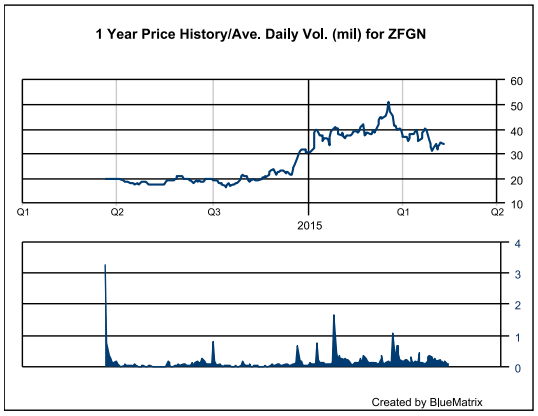
• **Management believes that their probability of success has not decreased as a result of the change to the statistical analysis plan,** and we concur because the study has 90% power to show at least a 1.5% difference in weight and a 4.5 unit difference in the hyperphagia questionnaire. This is much less than was seen at an earlier time point in Ph2 which showed curves which continued to separate over time. Furthermore, the company's discussions with the FDA and advisors suggest that the FDA could be flexible with their requirements for approval given the seriousness/rarity of Prader-Willi syndrome, as evidenced by the agency's suggestion that the second Phase III study may not be required for NDA filing. Our model projects a late 2017 launch which could be conservative if ZFGN is able to file based on data generated early next year.

• **ZFGN is exploring MetAP2i for other indications.** In addition to PWS, Beloranib is being tested in obese pts with type II diabetes and pts with hypothalamic injury (HIAO). We expect the IND for ZGN-839 which targets the liver, to be filed for potential study in NASH in mid-2015 as well as the initiation of the Beloranib Phase III trial in the EU. ZFGN has also been discussing the concept of targeting "super severe obesity," with the FDA. The completion of a recent follow-on offering, with proceeds of $129.5M should provide financial flexibility for 2015-2016.

Key Stats:	**(OTC Un:ZFGN)**
S&P 600 Health Care Index:	**1,606.69**
Price:	**$33.98**
Price Target:	$61.00
Methodology:	Probability-weighted DCF analysis, 11% discount rate
52 Week High:	$55.36
52 Week Low:	$16.01
Shares Outstanding (mil):	29.6
Market Capitalization (mil):	$1,005.8
Book Value/Share:	$0.00
Cash Per Share:	$7.50
Dividend (ann):	$0.00
Dividend Yield:	0.0%

Shares Outstanding (mil): Diluted; includes stock options

Cash Per Share: On a net basis as of 1Q15E



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	($6.18)	($2.96)	($0.65)	($0.48)	($3.00)	NM
2015E - New	**0.0A**	**0.0**	**0.0**	**0.0**	**0.0**	**($0.53)A**	**($0.81)**	**($0.89)**	**($0.99)**	**($3.23)**	**NM**
2015E - Old	0.0A	0.0	0.0	0.0	0.0	($0.76)	($0.81)	($0.89)	($0.98)	($3.45)	NM
2016E - New	**--**	**--**	**--**	**--**	**0.0**	**--**	**--**	**--**	**--**	**($3.13)**	**NM**
2016E - Old	--	--	--	--	0.0	--	--	--	--	($3.34)	NM

Source: Company Information and Leerink Partners LLC Research
GAAP EPS presented

INVESTMENT THESIS

We rate ZFGN Shares Outperform. Zafgen (NASDAQ: ZFGN) is a biopharmaceutical company dedicated to the development of medicines to address the unmet need in obesity, with an initial focus on two orphan diseases that offer a potentially streamlined development path and high margin business model. We believe that ZFGN has an experienced management team with an outstanding track record executing in the field of drug discovery and commercialization. ZFGN's lead asset, beloranib, is a MetAP2 inhibitor that has generated compelling Phase II data in Prader-Willi syndrome (PWS) and severe obesity on a number of clinically relevant endpoints, in our view, and is now being studied in a registration-enabling Phase III PWS study expected to read out data by 1Q16. We project an 80% probability of PWS approval in 2017, and peak gross PWS sales of ~$700MM worldwide in 2029. Zafgen is also developing beloranib in hypothalamic-injury associated obesity (HIAO), where it also recently released positive proof-of-concept Phase IIa data and expects to initiate a registration-enabling study in HIAO in the near future. We project 60% probability of HIAO approval in 2018, and peak gross HIAO sales of ~$445MM worldwide in 2029. The commercial opportunity presented by severe obesity holds the potential to be orders of magnitude larger than PWS and HIAO, though ZFGN will likely need support from a larger partner to unlock its full potential. Thus, while severe obesity afflicts ~16MM Americans in the US, we only model ~$200MM in peak beloranib sales in non-PWS/HIAO patients, though in a partnership/acquisition (P&A) scenario, ZFGN is likely to receive considerably more value for beloranib in high prevalence indications. In the meantime, we believe that establishing broader proof-of-concept in orphan sub-populations offers a less risky and more rapid development path, and over the long term could position ZFGN as a very attractive partnership or takeout target. Likewise, a second generation MetAP2 inhibitor in preclinical development for general obesity, and a novel chemical class MetAP2 inhibitor in preclinical development for NASH/diabetes could provide significant upside to our price target as clinical catalysts are realized.

VALUATION

We derive a ~$61 per share value for ZFGN using an 11% discount rate and a 2% terminal growth rate, representing a ~$1,740MM market capitalization. Our price target assumes an 80% and a 60% probability of beloranib approval in PWS and HIAO, respectively, which leads to our peak net sales estimates of ~$560MM and ~$270MM in each indication. We only model ~$200MM in peak sales in severe obesity, which we believe holds the potential to be very conservative if/when ZFGN generates pivotal beloranib data in orphan indications.

RISKS TO VALUATION

Risks to our valuation include disappointing clinical data, regulatory setbacks, dilution risk from an additional equity offering, and commercial shortfalls. Because ZFGN has only one late stage product, the occurrence of any of these could impact the stock significantly.

ZFGN P&L ($MM) GAAP	2013	1Q14	2Q14	3Q14	4Q14	2014	1Q15	2Q15E	3Q15E	4Q15E	2015E	2016E	2017E	2018E	2019E
Beloranib PWS	-	-	-	-	-	-	-	-	-	-	-	-	4.6	53.2	144.7
Beloranib HIAO	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0	34.4
Beloranib Severe Obesity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue (p/w)	-	-	-	-	-	-	-	-	-	-	-	-	**4.6**	**63.2**	**179.1**
COGS	-	-	-	-	-	-	-	-	-	-	-	-	0.5	6.3	17.9
R&D	9.6	3.3	4.7	12.1	7.3	27.4	10.2	18.0	20.0	22.0	70.2	70.2	63.2	56.9	62.7
SG&A	4.2	1.2	1.3	2.3	3.3	8.1	3.0	4.0	4.3	5.0	16.3	22.9	30.0	37.9	53.7
Operating Expenses	13.8	4.5	6.0	14.4	10.7	35.5	13.2	22.0	24.3	27.0	86.5	93.1	93.7	101.1	134.3
Operating Income	(13.8)	(4.5)	(6.0)	(14.4)	(10.7)	(35.5)	(13.2)	(22.0)	(24.3)	(27.0)	(86.5)	(93.1)	(89.0)	(37.9)	44.8
Interest Income (Expense)	-	(0.0)	(0.4)	(0.2)	(0.2)	(0.8)	(0.2)	(0.2)	(0.2)	(0.2)	(0.8)	(0.4)	(0.3)	-	-
FX Gains/Losses	(0.2)	0.1	0.0	(0.1)	(0.1)	(0.1)	(0.1)	-	-	-	(0.1)	-	-	-	-
Total Other Income (expense)	(0.2)	0.1	(0.4)	(0.3)	(0.3)	(0.9)	(0.2)	-	-	-	(0.2)	(0.4)	(0.3)	-	-
EBT	(14.0)	(4.5)	(6.4)	(14.7)	(10.9)	(36.5)	(13.5)	(22.0)	(24.3)	(27.0)	(86.8)	(93.4)	(89.3)	(37.9)	44.8
Tax	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Income (Loss)	**(14.2)**	**(4.5)**	**(6.4)**	**(14.7)**	**(10.9)**	**(36.6)**	**(13.5)**	**(22.0)**	**(24.3)**	**(27.0)**	**(86.8)**	**(93.4)**	**(89.3)**	**(37.9)**	**44.8**
Diluted EPS	**$ (19.53)**	**$ (6.18)**	**$ (2.96)**	**$ (0.65)**	**$ (0.48)**	**$ (3.00)**	**$ (0.53)**	**$ (0.81)**	**$ (0.89)**	**$ (0.99)**	**$ (3.23)**	**$ (3.13)**	**$ (2.76)**	**$ (1.14)**	**$ 1.30**
Basic Shares Outstanding	0.7	0.7	2.2	22.7	22.9	12.2	25.6	27.1	27.2	27.3	26.8	29.8	32.3	33.3	34.3
Diluted Shares Oustanding	0.7	0.7	2.2	22.7	22.9	12.2	29.6	27.1	27.2	27.3	27.8	30.8	33.3	34.3	35.3

Source: SEC Filings and Leerink Partners Research

ZFGN BS & CFS ($MM) GAAP	2013	1Q14	2Q14	3Q14	4Q14	2014E	1Q15	2Q15E	3Q15E	4Q15E	2015E	2016E	2017E	2018E	2019E
Net Cash	**35.5**	**31.1**	**126.9**	**119.6**	**102.4**	**102.4**	**222.1**	**201.9**	**178.5**	**151.7**	**151.7**	**65.6**	**(18.5)**	**(43.3)**	**15.5**
Cash & Equivalents	35.5	38.5	134.2	127.0	115.5	115.5	234.2	212.9	188.5	160.6	160.6	70.4	(14.8)	(43.3)	15.5
Debt	-	7.4	7.4	7.4	13.1	13.1	12.0	11.0	10.0	8.9	8.9	4.7	3.7	-	-
Change in Cash	**25.6**	**3.0**	**95.8**	**(7.2)**	**(11.5)**	**80.0**	**118.6**	**(21.3)**	**(24.4)**	**(27.9)**	**45.1**	**(90.2)**	**(85.1)**	**(28.5)**	**58.8**
Operating Cash Flow	**(15.0)**	**(4.0)**	**(6.9)**	**(6.7)**	**(17.2)**	**(34.9)**	**(9.9)**	**(20.2)**	**(22.4)**	**(24.8)**	**(77.3)**	**(81.1)**	**(74.4)**	**(18.5)**	**68.8**
Net Income (Loss)	(14.0)	(4.5)	(6.4)	(14.7)	(10.9)	(36.5)	(13.5)	(22.0)	(24.3)	(27.0)	(86.8)	(93.4)	(89.3)	(37.9)	44.8
SOE	0.4	0.2	0.4	0.9	0.6	2.0	1.1	1.8	1.9	2.2	6.9	8.4	9.3	10.4	14.0
D&A	0.0	0.0	-	-	-	0.0	-	-	-	-	-	4.0	5.6	9.0	10.0
Other	(1.4)	0.3	(0.9)	7.1	(6.9)	(0.4)	2.5	-	-	-	2.5	-	-	-	-
Investing Cash Flow	**(0.0)**	**(0.0)**	**-**	**-**	**-**	**(0.0)**	**-**	**-**	**(1.0)**	**(2.0)**	**(3.0)**	**(5.0)**	**(7.0)**	**(10.0)**	**(10.0)**
CapEx	(0.0)	(0.0)	-	-	-	(0.0)	-	-	(1.0)	(2.0)	(3.0)	(5.0)	(7.0)	(10.0)	(10.0)
Other	-	-	-	-	-	-	-	-	-	-	-	-			
Financing Cash flow	**40.6**	**7.0**	**102.7**	**(0.5)**	**5.7**	**114.9**	**128.6**	**(1.0)**	**(1.0)**	**(1.0)**	**125.4**	**(4.2)**	**(3.7)**	**-**	**-**
Equity Issuance (Buyback)	40.8	0.4	102.7	-	-	103.1	129.6	-	-	-	129.6	-		-	-
Debt Issuance (Retirement)	-	7.4	-	(0.5)	5.7	12.6	(1.0)	(1.0)	(1.0)	(1.0)	(4.2)	(4.2)	(3.7)	-	-
Other	(0.2)	(0.8)	-	-	-	(0.8)	-	-	-	-	-	-	-	-	-

Source: SEC Filings and Leerink Partners Research

ZFGN DCF Analysis	2014	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	TV
Cash Flow From Operations ($MM)	(35)	(77)	(81)	(74)	(18)	69	140	251	290	317	362	398	431	463	488	503	375	191	
Cash Flow From Investing ($MM)	(0)	(3)	(5)	(7)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	
Net Borrowing (Repayment) ($MM)	5	(4)	(4)	(4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Free Cash Flow ($MM)	(30)	(85)	(90)	(85)	(28)	59	130	241	280	307	352	388	421	453	478	493	365	181	2055
Discount Periods	-	-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
NPV FCF ($MM)	-	(63)	(83)	(71)	(21)	40	79	132	139	137	141	140	137	133	126	117	78	35	397

Sum NPV FCF ($MM)	1594
Net Cash 1Q15E	222
Implied ZFGN Mkt Cap ($MM)	**$ 1,816**
ZFGN Per Share Value	**$ 61.34**

Cost of Equity	11%
TG Rate	2%
Diluted Shares Oustanding	29.6

Source: Leerink Partners Research

Product	Event	Timing
Beloranib	Initiate US Phase III PWS Trial	3Q14
Beloranib	Initiate Phase IIb Severe Obesity Trial	4Q14
Beloranib	Phase IIa HIAO Data	1Q15
ZGN-839	File NASH/Type II Diabetes IND	mid-2015
Beloranib	Initate EU Phase III PWS Trial	mid-2015
Beloranib	6 Month Interim Severe Obesity Data	4Q15/1Q16
Beloranib	Initiate Phase III HIAO Study	2016
Beloranib	6 Mo. Phase III PWS Data	1Q16

Source: Company Presentations and Leerink Partners Research

Disclosures Appendix

Analyst Certification

I, Joseph P. Schwartz, 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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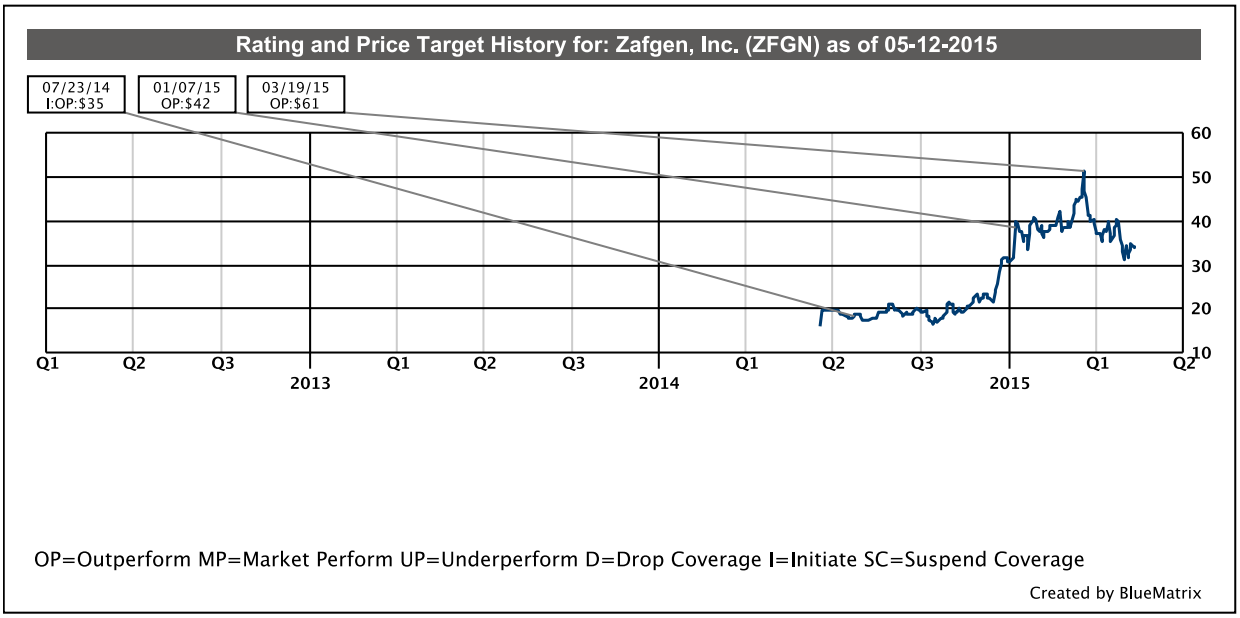

Distribution of Ratings/Investment Banking Services (IB) as of 03/31/15				
			IB Serv./Past 12 Mos.	
Rating	Count	Percent	Count	Percent
BUY [OP]	151	70.20	55	36.00
HOLD [MP]	64	29.80	2	3.00
SELL [UP]	0	0.00	0	0.00

Explanation of Ratings

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

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

Underperform (Sell): 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 Zafgen, Inc. .

Leerink Partners LLC makes a market in Zafgen, Inc.

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