COMPANY NOTE

Target Change

USA | Healthcare | Biotechnology

March 26, 2015

Jefferies

Avalanche Biotechnologies (AAVL)
Key Takeaways from Avalanche's R&D Day

BUY
Price target $51.00
(from $46.00)
Price $41.04

EQUITY RESEARCH AMERICAS

Key Takeaway

AAVL held its R&D Day and reported encouraging dev'ts from its early stage pipeline. Topline data for the PIIa trial for AVA-101 is on-track for mid-'15. Experts hosted by AAVL emphasized that b/c the pts are refractory, VA changes may not be instructive of efficacy, and that anatomic changes would be more critical. We have incl value for its new candidates AVA-322/-323 for color blindness, which raises our PT to $51 (v. $46 prev).

AVA-101 Data On-track for Mid-'15: The PIIa trial is on-track for data in mid-'15. AAVL revealed key differences in the baseline characteristics btwn the PIIa and PI. Pts in the PIIa study have better baseline vision (63 v. 36.5 letters, respectively), have retinal thickness that is thinner (332.5 v. 549 microns), and had a shorter duration of dx from diagnosis (16.2 v. 49.2 mo). Most pts in the PIIa study are tx-exp (baseline prior median/mean of 10.5 and 13 inj), w/ 4 pts who are tx-naïve. The expert physicians hosted by AAVL emphasized that b/c these patients are refractory, VA changes may not be instructive of AVA-101's efficacy. Rather, anatomic changes indicating dryness would be more critical. Another aspect of the trial is AVA-101's safety profile especially as it relates to vitrectomy, but data to date have been clean. The primary safety concerns are infection, endophthalmitis, and retinal detachment but rates of those complications appear to be very low from 18-month follow-up of the PI trial. The full 36-mo PI data will be presented in H2'15, and AAVL will initiate a PIIb trial in tx experienced wAMD pts in 2H '15.

AAVL Expands its Gene Therapy Portfolio into Color Blindness: AAVL entered into an exclusive license agreement with the U. of Washington to develop products based on AAVL's Ocular BioFactory platform for the tx of color vision deficiency (CVD). CVD affects ~10M individuals in the U.S., a sizeable opp'y where no txs exist. AAVL/UW have developed AVA-322/-323 that can deliver L-opsin, and have tested them in squirrel monkeys and showed that color vision could be restored. Reimb by payors becomes an interesting question, but we believe color-blind individuals would be willing to pay out-of-pocket for a tx that could restore color vision, as pts do for LASIK for vision correction (>$2B/yr mkt). AAVL expects IND-filing for color blindness in H1'16.

Valuation/Risks

Our $51 PT is DCF-based. Risks include clinical, manufacturing, competitive, regulatory, and commercial.

Financial Summary	
Net Debt (MM):	($289.9)
Long-Term Debt (MM):	$0.0
Cash & ST Invest. (MM):	$289.9
Cash/Share:	$11.60
Cash (MM):	$289.9

Market Data	
52 Week Range:	$62.48 - $22.00
Total Entprs. Value (MM):	$383.2
Market Cap. (MM):	$673.1
Shares Out. (MM):	16.4
Float (MM):	18.5
Avg. Daily Vol.:	362,593

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USD	Prev.	2013A	Prev.	2014A	Prev.	2015E	Prev.	2016E
Rev. (MM)	--	0.5	--	0.6	*2.0*	0.8	--	0.0
EV/Rev		NM		NM		NM		
EPS								
Mar	--	--	--	(0.11)	--	(0.41)	--	--
Jun	--	--	--	(2.27)	--	(0.41)	--	--
Sep	--	--	--	(0.50)	--	(0.41)	--	--
Dec	--	--	--	(0.46)	--	(0.43)	--	--
FY Dec	--	(1.45)	--	(2.46)	--	(1.69)	--	(1.87)
FY P/E		NM		NM		NM		NM

Price Performance

Avalanche Biotechnologies

Buy: $51 Price Target

THE LONG VIEW

Scenarios

Target Investment Thesis

- Positive outcome for AVA-101 in PIIa trial for wAMD in mid-2015, and subsequent PIIb trial and PIII program. We expect U.S. approval of AVA-101 for wAMD in 2020 and peak sales of $1.5B by 2026 (risk-adj)
- We expect AVA-101 U.S. expansion into DME and CRVO in 2022 and peak sales of $1.5B by 2026 (risk-adj)
- Expect AVA-322/-323 sales of $135M for color blindness by 2030
- DCF-based PT: $51

Upside Scenario

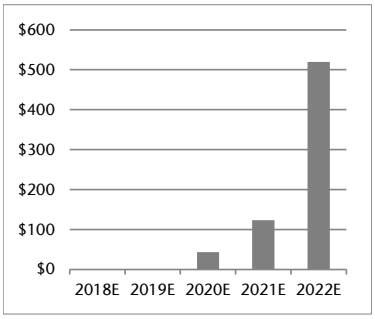
- De-risked AVA-101 program through Phase II/III trial datasets for wAMD, DME and CRVO
- DCF-based PT: $135
- De-risked AVA-322/-323 program through Phase I-III trial datasets for color blindness
- DCF-based PT: $190
- Successful development of AVA-201 for wAMD (prevention) and AVA-311 for XLRS
- DCF-based PT: $250

Downside Scenario

- Negative outcome for AVA-322/-323 program
- DCF-based PT: $46
- Negative outcome for AVA-101 in DME and CRVO
- DCF-based PT: $19
- Negative outcome for AVA-101 in all ophthalmic diseases
- Cash-based PT: $6

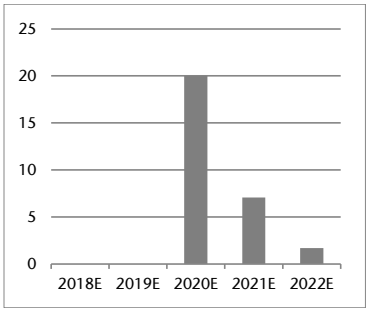
Long Term Analysis

Revenue (millions)



Source: Company data; Jefferies estimates

Enterprise Value (EV)/Sales



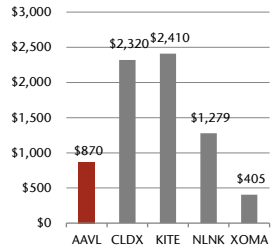
Source: Company data; Jefferies estimates

Other Considerations

We consider small-cap and mid-cap biotech companies with late-stage programs to continue to be attractive targets for partnering or M&A partnering with large-cap biotech and pharma companies, which we believe will be a driving factor for performance in the biotech sector 2015-2016.

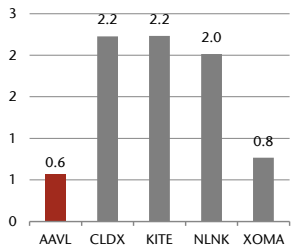
Peer Group

Group EV



Source: Factset, Jefferies estimates

Group EV/2024E Sales



Source: Factset, Jefferies estimates

Recommendation / Price Target

Ticker	Rec.	PT
AAVL	**Buy**	**$51**
CLDX	Buy	$36
KITE	Buy	$84
NLNK	Buy	$50
XOMA	Buy	$7

Catalysts

- Topline data for AVA-101 for Phase IIa trial in mid-2015
- Full 36-mo Phase I data for AVA-101 in H2 2015
- Initiation of Phase IIb trial for AVA-101 in wAMD in H2 2015

Company Description

Avalanche Biotechnologies, Inc. is a biotechnology company focused on the discovery and development of novel gene therapies for sight-threatening ophthalmic diseases. It has leveraged its gene therapy platform, Ocular BioFactory, to create a pipeline of product candidates. AAVL's lead candidate is AVA-101 for wet AMD, which is a gene therapy product that utilizes AAV2 to deliver the gene for sFlt-1, a naturally-occurring VEGF inhibitor. AVA-101 has generated proof-of-concept data in eight patients in a Phase I trial. AAVL may also expand AVA-101 into DME and CRVO. AAVL is also developing AVA-201 for wAMD (prevention) and AVA-311 for juvenile X-linked retinoschisis (XLRS).

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AVA-101 Data On-track for Mid-2015: AAVL reviewed its clinical program of gene therapy candidates for ophthalmic diseases at its first R&D Day, including its lead candidate, AVA-101, a gene therapy which may provide sustained anti-VEGF levels for wet AMD. The ongoing Phase IIa trial is on-track to have topline data in mid-'15 and has fully enrolled 32 patients. AAVL revealed key differences in the baseline characteristics b/w the Phase IIa and Phase I studies. Patients in the Phase IIa study generally have better baseline vision (63 v. 36.5 letters, respectively), have retinal thickness that is thinner (332.5 v. 549 microns), and had a shorter duration of disease from diagnosis (16.2 mo v. 49.2 mo). Most patients in the Phase IIa study are treatment-experienced (baseline average median of 10.5 inj in the Phase IIa vs 11.5 inj in the Phase I), with 4 patients who are treatment-naïve. The expert physicians hosted by AAVL emphasized that b/c these patients are refractory to anti-VEGF treatment, visual acuity (VA) changes may not be instructive of AVA-101's efficacy profile (although they would expect to see VA gains in the 4 treatment-naïve patients). VA is a lagging indicator according to one of the expert physicians. Rather, the experts emphasized that anatomic changes indicating dryness would be more critical such as OCT retinal thickness. Another aspect of the trial is AVA-101's safety profile especially as it relates to vitrectomy, but data from AAVL PI and AAVL's animal data to date has so far shown a clean profile. The primary safety concerns are infection, endophthalmitis, and retinal detachment but rates of those complications are very low. For example, the rates of endophthalmitis rate from vitreoretinal procedures is similar to intravitreal injections (<0.1%), and given there are far few total injections overall from AVA-101 v. anti-VEGF treatment, the experts don't expect such a complication to be a problem. The full 36-mo PI data will be presented in H2 2015. Assuming the Phase IIa trial is positive and the full PI safety data is clean, AAVL intends to initiate a Phase IIb trial in multiple U.S. centers in 2015.

Progress on AVA-201: AAVL presented animal model data for the first time showing intravitreal delivery of AVA-201 in a rodent model increases levels of sFLT1 w/ a AAVL proprietary vector. The company is finalizing a target candidate and appears close to accomplishing this objective. AAVL also highlighted the development of a drusen biomarker which it is evaluating to identify patients at high risk of developing wet AMD. Another pot'l strategy could be to treat the contralateral eye in patients that have been diagnosed w/ wet AMD.

AAVL Expands its Gene Therapy Portfolio into Color Blindness: AAVL also announced that it has entered into an exclusive license agreement with the University of Washington (UW) to develop products based on AAVL's Ocular BioFactory platform for the treatment of color vision deficiency (CVD), or red-green color blindness. CVD affects ~10 million individuals in the U.S., and thus represents a sizeable opportunity where no treatments exist. AAVL/UW have developed new gene therapy candidates, AVA-322 and AVA-323, that can deliver L-opsin, a gene that encodes for the photoreceptor proteins in the cone cells sensitive to the red/yellow-green region of the EM spectrum. AAVL/UW has tested these candidates in squirrel monkeys as a natural model for red-green color blindness, and showed that color vision could be restored in ~20 wks as the gene becomes expressed. Importantly, as it relates to AVA-101, the effect was durable lasting >3 years (as long as 9 years) from a single injection. We believe that the proof-of-concept demonstrated by these candidates show that therapeutic genes can be successfully delivered to rods/cones and bodes well for the intravitreal delivery of AVA-201 where the rods/cones have been known to degenerate in wet AMD (Curcio, C. A. et al., *Investigative Ophthalmology & Visual Science* 1996, 37(7), 1236-1249). AVA-201 is in preclinical stage w/ the company close to optimizing a vector for intravitreal delivery. What the AVA-322 and AVA-323 data shows us is that the AAVL gene vector platform is successfully able to observe gene expression in the cone and could represent a significant advance given it

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could be applied to other disorders that affect the cone receptor such as macular degeneration, achromatopsia, and Stargardt's.

For an indication as color blindness, reimbursement for this treatment by payors becomes an interesting question. We believe individuals affected by CVD would be willing to pay out-of-pocket for a therapy that could restore color vision. As a simple proxy, we could look at how patients are willing to pay out-of-pocket for LASIK surgery for vision correction, which is a market that exceeds >$2 billion/yr. AAVL expects IND-filing for color blindness in H1'16, and hopes to bring the candidates to the clinic shortly thereafter.

Valuation

We arrive at our $51 PT (v. $46 previously) based on a DCF valuation model, which assumes a WACC of 14%, terminal growth rate of 0% and outstanding shares of 27.2 million, driven by sales of AVA-101. We assume market entry for AVA-101 for wet AMD in 2020 assuming positive data from a Phase III program. We estimate peak sales of $4.4 billion in the U.S. by 2026 for ophthalmic diseases including wet AMD, DME, and CRVO on an unadjusted-basis. If we apply a 65% risk discount to reflect the clinical risk of the AVA-101 program, we estimate $1.5 billion in U.S. sales by 2026. Additionally, we expect $118 million in royalty revenue for the same indications in 2026 using a 65% risk-discount.

At this time, we do not model AVA-201 for wAMD or AVA-311 for juvenile X-linked retinoschisis (XLRS), and these products represent upside. We have included $135 million risk-adjusted peak sales for AVA-322/-323 for color blindness. We expect R&D expense to reach $31 million by YE 2015, increasing to $63 million by 2026 as AAVL ramps up clinical development of AVA-101 into DME and CRVO, AVA-201 and AVA-311. We expect SG&A expense to be $14 million by YE 2015, increasing to $50 million by 2026. We include $29 million in launch expenses for AVA-101 in 2021, risk-adjusted by 65%.

Exhibit 1: DCF sensitivity analysis

Equity Value	Price/Share
$1,942.9	$71.52
$1,629.4	$59.98
$1,376.7	**$50.67**
$1,172.1	$43.14
$1,005.7	$37.02

Source: Jefferies estimates

Risks

Clinical Failure: As with all companies in biotechnology and pharmaceuticals developing treatments of the future, a clinical failure can lead to delays in approval or possibly discontinuation of programs.

Regulatory Failure: The FDA could determine the Biologic Licensing Application is inadequate for AVA-101 for wet AMD and could delay approval. Furthermore, to date the FDA has not approved any gene therapy products for any indication. There is therefore no historical precedence for approval of such products, and the FDA may deem AAVL's clinical package for AVA-101 as insufficient for approval. Any delays in approval timelines could impact our earnings estimates, price target, and/or rating.

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Commercial Failure: We currently estimate peak sales of $4.4 billion in the U.S. by 2026 for ophthalmic diseases including wet AMD, DME, and CRVO on an unadjusted-basis. If we apply a 65% risk discount to reflect the clinical risk of the AVA-101 program, we estimate $1.5 billion in U.S. sales by 2026. Additionally, we expect $117 million in royalty revenue for the same indications in 2026 using an 65% risk-discount. Our estimates may rely on the success of the company/partners to receive drug reimbursement from private/public payors.

Manufacturing Risks: AAVL relies on its proprietary baculovirus expression system (BVES) to produce its gene therapy products, including AVA-101. AAVL believes its BVES is efficient and scalable, with production yields up to 100x greater than those obtained by conventional AAV production system, allowing it to manufacture commercial grade production for large markets as wet AMD. If AVA-101 is approved, AAVL will need a consistent and reliable process, while limiting contamination risks, for manufacturing these candidates on large-scale for the approved patient population. Any supply or manufacturing disruption could negatively impact AVA-101 supply and sales.

Competitive Risks: Other companies are rapidly developing gene therapy product candidates in various stages of clinical development for ophthalmic diseases including wet AMD that may compete with AVA-101. If any of these product candidates have an improved therapeutic profile over AVA-101 and is approved, AVA-101's growth trajectory in the marketplace, even if approved, could be adversely impacted.

Financing Risks: We expect AAVL to have adequate cash through the majority of AVA-101's clinical development, and we model an $80 million equity raise on 2 million shares in 2019. AAVL may need additional dilutive financing to fund the potential U.S. launch of AVA-101 and its R&D programs in additional indications.

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Exhibit 2: AAVL Income Statement

Avalanche Biotechnologies, Inc.

Quarterly Income Statement

(All values in $MM except EPS and average shares)

	2012A	2013E	2014A	2015E					2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
	FY	FY	FY	1QE	2QE	3QE	4QE	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY
Revenue:																		
AVA101- U.S.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.5	112.8	420.6	845.7	1317.5	1519.5
AVA101- ROW royalty	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2	49.3	94.2	112.1	121.3
AVA322/323	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	75.0	100.0	110.0
License and collaboration revenues	0.0	0.5	0.6	0.2	0.2	0.2	0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total revenue, net	**0.0**	**0.5**	**0.6**	**0.2**	**0.2**	**0.5**	**0.5**	**0.8**	**0.0**	**0.0**	**0.0**	**0.0**	**43.5**	**123.0**	**519.9**	**1,014.9**	**1,529.7**	**1,750.8**
Costs and expenses:																		
Cost of goods sold	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	30.8	130.0	253.7	367.1	402.7
Research & development	1.3	2.2	17.0	7.3	7.4	7.7	8.3	30.7	35.3	38.8	42.7	47.0	49.3	51.8	54.4	57.1	60.0	63.0
Selling, general & administrative	0.5	1.8	8.0	3.5	3.5	3.5	3.5	14.0	15.4	16.9	18.6	19.6	20.5	39.1	41.0	43.1	45.2	47.5
Total operating expenses	**1.8**	**3.9**	**25.0**	**10.8**	**10.9**	**11.2**	**11.8**	**44.7**	**50.7**	**55.8**	**61.4**	**66.6**	**80.8**	**121.6**	**225.4**	**353.9**	**472.3**	**513.1**
Income (loss) from operations	**(1.8)**	**(3.5)**	**(24.4)**	**(10.6)**	**(10.7)**	**(10.7)**	**(11.3)**	**(43.9)**	**(50.7)**	**(55.8)**	**(61.4)**	**(66.6)**	**(37.3)**	**1.4**	**294.5**	**661.0**	**1,057.3**	**1,237.6**
Other income (expense):																		
Miscellaneous (expense) income	(0.0)	(1.9)	(4.2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest expense	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net profit (loss) before income taxes	**(1.8)**	**(5.3)**	**(28.6)**	**(10.6)**	**(10.7)**	**(10.7)**	**(11.3)**	**(43.9)**	**(50.7)**	**(55.8)**	**(61.4)**	**(66.6)**	**(37.3)**	**1.4**	**294.5**	**661.0**	**1,057.3**	**1,237.6**
Income tax expense (benefit)										0.0	0.0	0.0	0.0	0.0	29.4	231.3	370.1	433.2
Income tax (%)										*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*10.0%*	*35.0%*	*35.0%*	*35.0%*
Net Income (GAAP)	**(1.8)**	**(5.3)**	**(28.6)**	**(10.6)**	**(10.7)**	**(10.7)**	**(11.3)**	**(43.9)**	**(50.7)**	**(55.8)**	**(61.4)**	**(66.6)**	**(37.3)**	**1.4**	**15.0**	**429.6**	**687.3**	**804.5**
Adjusted Items (Non-GAAP)																		
Stock options	0.0	0.0	0.0	0.6	0.7	0.8	0.9	3.0	4.0	5.0	6.0	7.0	14.0	16.0	18.0	20.0	22.0	24.0
Depreciation and amortization expense	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Income (Non-GAAP)	**(1.8)**	**(5.3)**	**(28.6)**	**(10.0)**	**(10.0)**	**(9.9)**	**(10.4)**	**(40.9)**	**(46.7)**	**(50.8)**	**(55.4)**	**(59.6)**	**(23.3)**	**17.4**	**33.0**	**449.6**	**709.3**	**828.5**
EPS, GAAP																		
Basic	(0.50)	(1.45)	(2.46)	(0.41)	(0.41)	(0.41)	(0.43)	(1.67)	(1.87)	(2.03)	(2.21)	(2.22)	(1.23)	0.05	0.49	13.77	21.80	25.27
Diluted	**$ (0.50)**	**$ (1.45)**	**$ (2.46)**	**$ (0.41)**	**$ (0.41)**	**$ (0.41)**	**$ (0.43)**	**$ (1.69)**	**$ (1.87)**	**$ (2.03)**	**$ (2.21)**	**$ (2.22)**	**$ (1.23)**	**$ 0.05**	**$ 0.49**	**$ 13.77**	**$ 21.80**	**$ 25.27**
Weighted average share- Basic	3.6	3.7	11.7	25.6	25.9	26.1	26.4	26.0	27.2	27.4	27.7	30.0	30.3	30.6	30.9	31.2	31.5	31.8
Weighted average share- Diluted	3.6	3.7	11.7	25.6	25.9	26.1	26.4	26.0	27.2	27.4	27.7	30.0	30.3	30.6	30.9	31.2	31.5	31.8

Source: Jefferies, company data

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Exhibit 3: AAVL Balance Sheet

Avalanche Biotechnologies

Balance Sheet

(All values in $MM)

	2012A FY	2013A FY	2014E FY	2015E FY	2016E FY	2017E FY	2018E FY	2019E FY	2020E FY	2021E FY	2022E FY	2023E FY	2024E FY	2025E FY
Current assets:														
Cash and cash equivalents	0.4	0.6	146.2	107.5	63.3	12.2	(39.9)	(22.8)	(44.0)	(24.5)	10.6	462.4	1,172.7	2,002.1
Certificants of deposit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash and investments	**0.4**	**0.6**	**146.2**	**107.5**	**63.3**	**12.2**	**(39.9)**	**(22.8)**	**(44.0)**	**(24.5)**	**10.6**	**462.4**	**1,172.7**	**2,002.1**
Prepaid expenses/Acct receivable	0.0	0.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Total current assets	**0.4**	**0.8**	**146.8**	**108.0**	**63.9**	**12.8**	**(39.3)**	**(22.3)**	**(43.4)**	**(23.9)**	**11.2**	**463.0**	**1,173.2**	**2,002.7**
Other	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total assets	**0.4**	**1.1**	**147.1**	**108.4**	**64.2**	**13.2**	**(39.0)**	**(21.9)**	**(43.1)**	**(23.6)**	**11.6**	**463.3**	**1,173.6**	**2,003.1**
Current liabilities:														
Accounts payable	0.5	0.8	0.9	2.1	3.6	2.3	4.5	5.1	6.2	7.3	8.4	9.5	9.5	9.5
Accrued expenses	0.3	0.4	0.7	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Deferred rent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Accrued bonuses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current portion of deferred revenue	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total current liabilities	**0.8**	**1.2**	**1.7**	**4.2**	**5.7**	**4.3**	**6.5**	**7.1**	**8.2**	**9.3**	**10.4**	**11.5**	**11.5**	**11.5**
Other	0.5	0.1	0.2	14	14	14	14	14	14	14	14	14	14	14
Total Liability	**1.4**	**1.3**	**1.9**	**5.6**	**7.1**	**5.7**	**7.9**	**8.5**	**9.6**	**10.7**	**11.8**	**12.9**	**12.9**	**12.9**
Total stockholders' equity	**(1.0)**	**(0.2)**	**145.2**	**102.8**	**57.1**	**7.5**	**(46.9)**	**(30.4)**	**(52.7)**	**(34.3)**	**(0.2)**	**450.4**	**1,160.7**	**1,990.2**
Total liabilities and stockholders' equity	**0.4**	**1.1**	**147.1**	**108.4**	**64.2**	**13.2**	**-39.0**	**-21.9**	**-43.1**	**-23.6**	**11.6**	**463.3**	**1173.6**	**2003.1**

Source: Jefferies, company data

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Exhibit 4: AAVL Cash Flow Statement

Avalanche Biotechnologies

Cash Flow Statement

(All values in $MM)

	2012A FY	2013A FY	2014E FY	2015E FY	2016E FY	2017E FY	2018E FY	2019E FY	2020E FY	2021E FY	2022E FY	2023E FY	2024E FY	2025E FY
Cash flows from operating activities:	(18)	(5.3)	(28.6)	(43.9)	(50.7)	(55.8)	(61.4)	(66.6)	(37.3)	1.4	15.0	429.6	687.3	804.5
Net income														
Adjustments to reconcile cash by operating activities:														
Depreciation and amortization expense	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Compensation expense	0.1	0.5	0.6	3.0	4.0	5.0	6.0	7.0	14.0	16.0	18.0	20.0	22.0	24.0
Other	0.0	2.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Changes in operating assets and liabilities:														
Prepaid expenses	(0.0)	(0.3)	(0.3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deferred rent	0.0	0.0	0.2	1.2	1.5	(1.3)	2.2	0.6	1.1	1.1	1.1	1.1	0.0	0.0
Deposit	0.0	(0.1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Accounts receivable	0.0	0.0	(0.2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Accounts payable	0.4	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Accrued expenses and deferred rent	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Net cash provided by operating activities	**(1.2)**	**(2.2)**	**(27.3)**	**(38.6)**	**(44.1)**	**(51.0)**	**(52.0)**	**(57.8)**	**(21.1)**	**19.6**	**35.2**	**451.8**	**710.4**	**829.6**
Cash flows from investing activities:														
Purchase of fixed assets	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Net cash (used in) provided by investing activities	**(0.0)**	**(0.1)**	**(0.1)**	**(0.1)**	**(0.1)**	**(0.1)**	**(0.1)**	**(0.1)**	**(0.1)**	**(0.1)**	**(0.1)**	**(0.1)**	**(0.1)**	**(0.1)**
Cash flows from financing activities:														
Issuance of common stock, net of offering costs	0.0	0.0	119.1	0.0	0.0	0.0	0.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0
Issuance of common stock from exercise of stock options	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proceeds from preferred stock	0.0	1.0	52.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proceeds from notes payable	0.5	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Principal payments on debt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net cash (used in) provided by financing activities	**0.5**	**2.5**	**173.0**	**0.0**	**0.0**	**0.0**	**0.0**	**75.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Effect if exchange rate changes on cash/equivalents														
Increase (decrease) in cash and cash equivalents	(0.7)	0.2	145.6	(38.7)	(44.2)	(51.1)	(52.1)	17.1	(21.2)	19.5	35.1	451.7	710.3	829.5
Cash and cash equivalents at beginning of period	1.1	0.4	0.6	146.2	107.5	63.3	12.2	(39.9)	(22.8)	(44.0)	(24.5)	10.6	462.4	1,172.7
Cash and cash equivalents at end of period	**0.4**	**0.6**	**146.2**	**107.5**	**63.3**	**12.2**	**(39.9)**	**(22.8)**	**(44.0)**	**(24.5)**	**10.6**	**462.4**	**1,172.7**	**2,002.1**

Source: Jefferies, company data

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Exhibit *5*: AAVL DCF analysis

Avalanche Biotechnologies

Discounted Cash Flow Analysis

(All values in $MM)	*2012A*	2013A	2014A	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Sales	*0.0*	0.5	0.6	0.8	0.0	0.0	0.0	0.0	43.5	123.0	519.9	1,014.9	1,529.7	1,750.8
Operating Expenses	*1.8*	3.9	25.0	44.7	50.7	55.8	61.4	66.6	80.8	121.6	225.4	353.9	472.3	513.1
EBIT	*(1.8)*	(3.5)	(24.4)	(43.9)	(50.7)	(55.8)	(61.4)	(66.6)	(37.3)	1.4	294.5	661.0	1,057.3	1,237.6
(-): Taxes	*0.0*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.4	231.3	370.1	433.2
EBIAT	*(1.8)*	(3.5)	(24.4)	(43.9)	(50.7)	(55.8)	(61.4)	(66.6)	(37.3)	1.4	265.0	429.6	687.3	804.5
(+):Depreciation	*0.0*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(+):FAS-123 Options	*0.0*	0.0	0.0	3.0	4.0	5.0	6.0	7.0	14.0	16.0	18.0	20.0	22.0	24.0
(-): Capital expenditures	*0.0*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Unlevered free cash flow	***(1.8)***	***(3.5)***	***(24.5)***	***(41.0)***	***(46.8)***	***(50.8)***	***(55.4)***	***(59.6)***	***(23.3)***	***17.3***	***283.0***	***449.6***	***709.3***	***828.5***

Source: Jefferies estimates, company data

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Company Description

Avalanche Biotechnologies, Inc., a clinical-stage biotechnology company, focuses on discovering and developing novel gene therapies for the treatment of ophthalmic diseases based on its Ocular BioFactory platform. Its lead product candidate includes AVA-101, which is in a Phase I/IIa trial for the treatment of wet age-related macular degeneration (AMD). The company is also developing AVA-201, an anti-vascular endothelial growth factor gene therapy product candidate for the prevention of wet AMD; and AVA-311 that is in preclinical studies for the treatment of juvenile X-linked retinoschisis, a rare genetic disease of the retina with no approved therapy. Avalanche Biotechnologies, Inc. has a collaboration agreement with Regeneron Pharmaceuticals, Inc. research, develop, and commercialize gene therapy products. The company was founded in 2006 and is headquartered in Menlo Park, California.

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- Celldex Therapeutics, Inc. (CLDX: $26.20, BUY)
- Kite Pharma (KITE: $62.27, BUY)
- Newlink Genetics Corp. (NLNK: $47.36, BUY)
- XOMA Ltd. (XOMA: $3.70, BUY)

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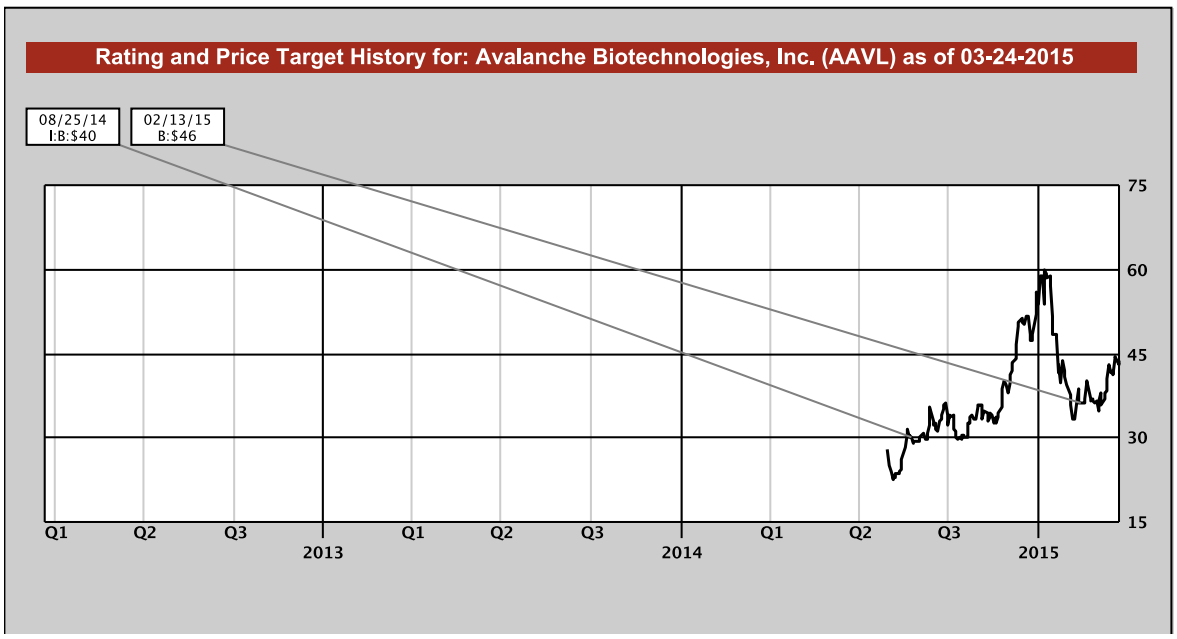

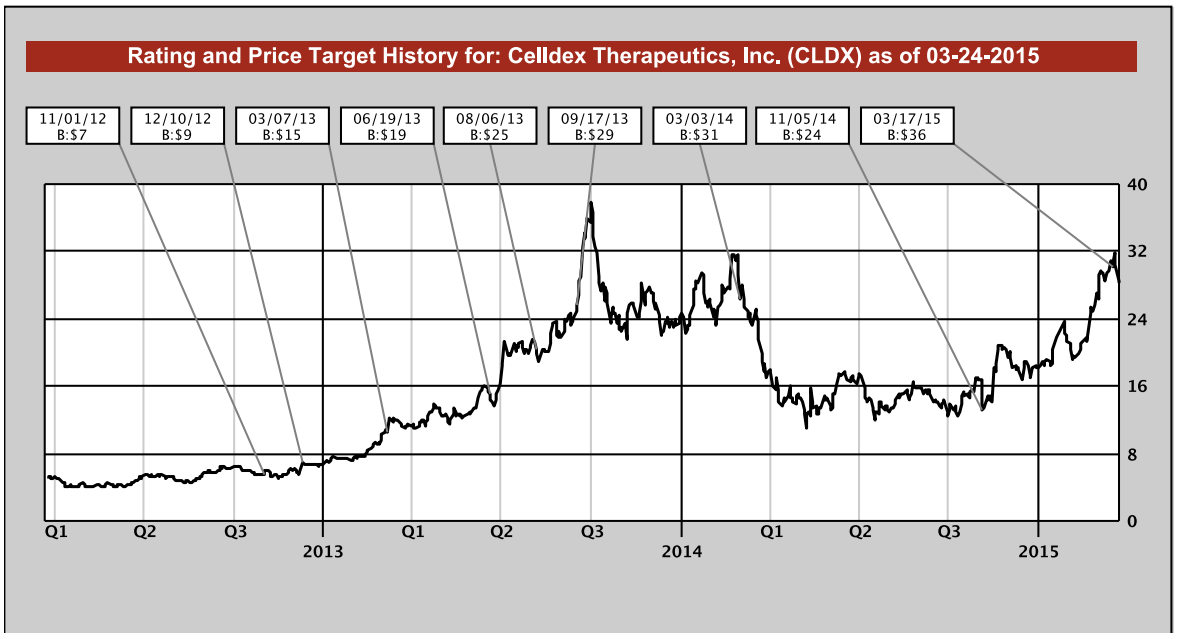

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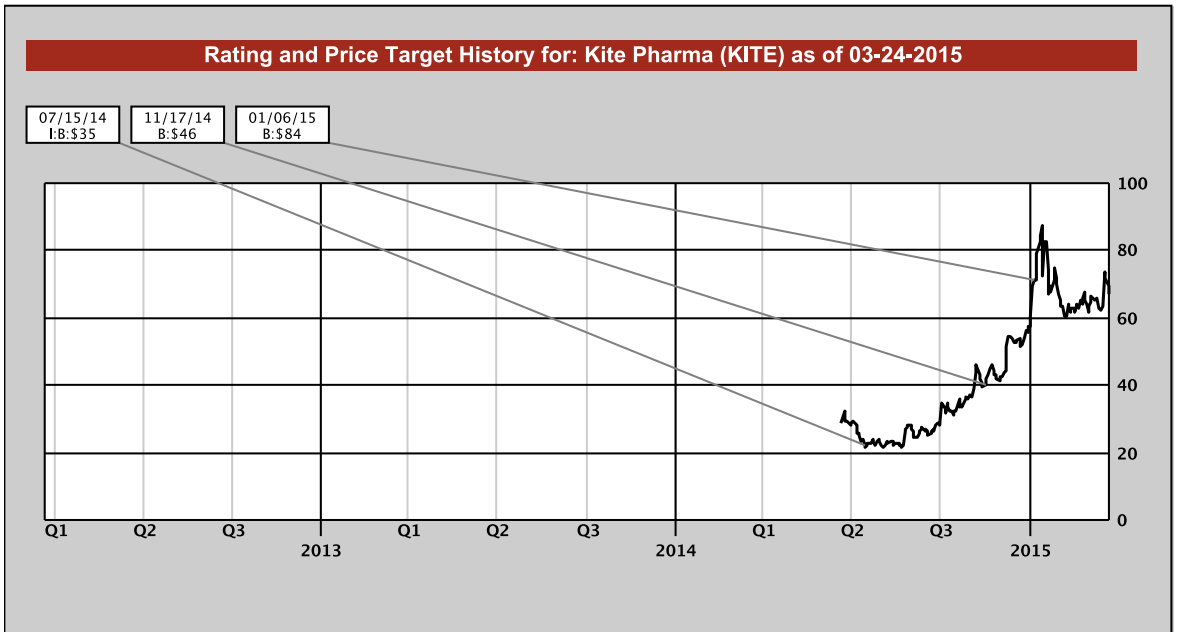

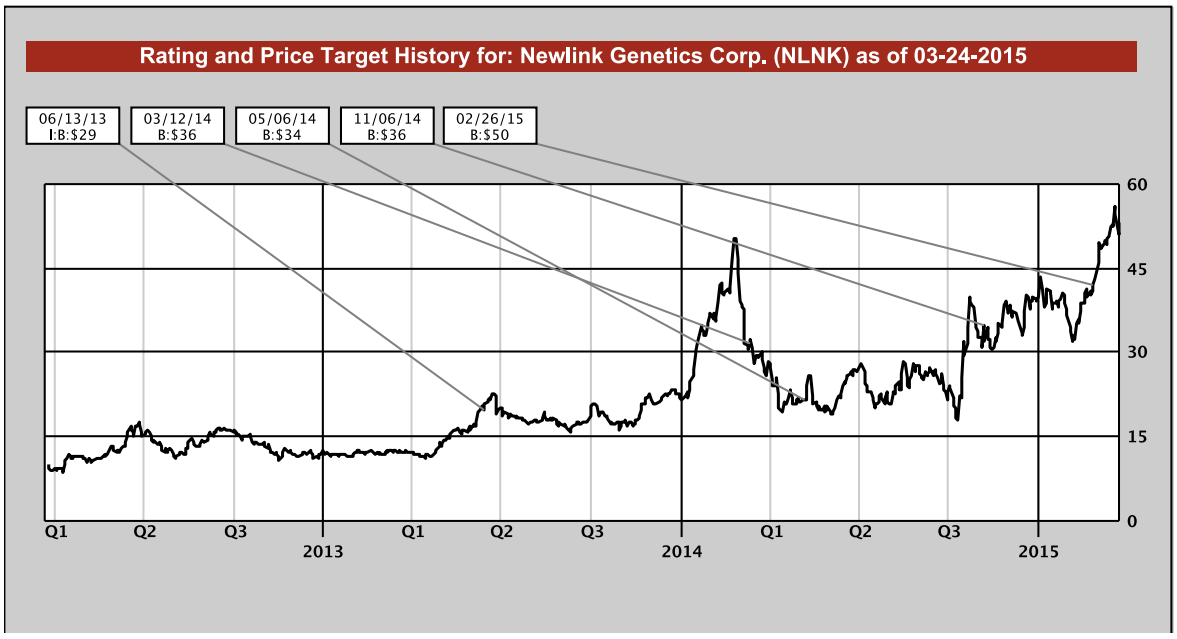

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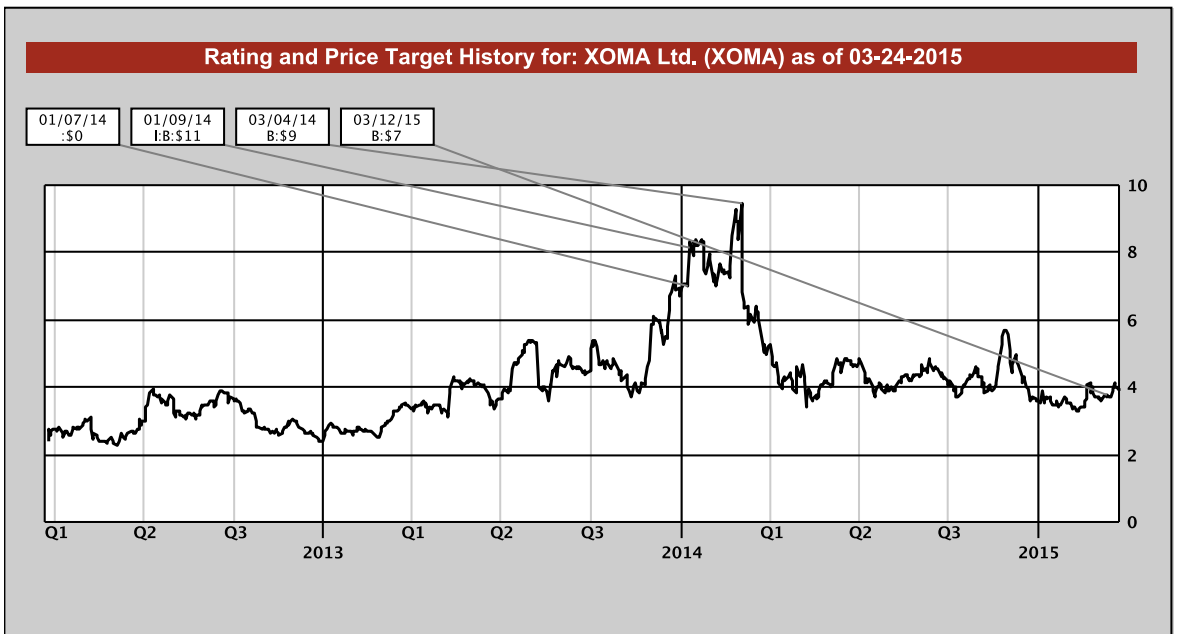

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