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EQUITY RESEARCH
Company Report

April 20, 2016

MabVax Therapeutics (MBVX - $ 0.73)

Healthcare/Biotechnology

Ticker:	**MBVX**
Rating:	**Buy**
Price Target:	**$ 2.50**

Pipeline Updates at the AACR and Meeting with Management

MBVX presented three posters at the American Association for Cancer Research (AACR) meeting today highlighting the lead product HuMab-5B1 and earlier stage anti-GD2 monoclonal antibodies, 1B7 and 31F9V2. We also met with MBVX management this morning and walked away with continued confidence that all developments are on track to advance into human clinical studies.

- **HuMab-5B1 exhibited potent ADCC and CDC activities from preclinical studies.** The poster authored by E.M. O'Reilly and colleagues provided a summary of several key performances from preclinical studies and the study design of the ongoing Phase I/II trial of HuMab-5B1. The preclinical study result highlights include the antibody's binding specificity against glycan and against cancer but not normal tissues. In addition to the PK profile, the poster also showcases its ADCC (antibody-dependent cellular cytotoxicity) and CDC (complement-dependent cytotoxicity) activities as well as its anti-tumor activities in human pancreatic cancer from xenograft models. The study design of the Phase I/II trial is also part of the presentations.
- **First look at the anti-GD2 Mabs.** MBVX reported preclinical study results of its next pipeline products, Mabs that target GD2. Both Mabs (31F9V2 and 1B7) are also derived from successfully vaccinated cancer patients. GD-2, a ganglioside, is clinically validated given it is the target of an approved (3/10/2015) Unituxin (dinutuximab), which is part of 1st-line therapy for pediatric patients with high-risk neuroblastoma. Unituxin is a chimeric mouse /human Mab. MBVX's two Mabs exhibited encouraging binding activities against sarcoma and neuroblastoma cell lines. 31F9V2 was monospecific for GD2 (~4 nM) while 1B7 showed dual specificity for GD2 (~1 nM) and GM2 (~370 nM). ADCC and CDC activities are detected. Both Mabs also showed anti-tumor activities against sarcoma in xenograft models.
- **Management updates.** We walked away from meeting with management this morning with continued confidence that all developments are on track based on their advancements. We estimate the start of the Phase I study evaluating HuMab-5B1-PET as a PET imaging agent in pancreatic cancer in 2Q16 as the most near-term event. Clinical results are expected in 2H16.
- **Action.** We are reiterating our Buy rating and $2.50 price target to reflect our view that broad HuMab-5B1-based platform development is highly encouraging. Our valuation is based on our peer comparable, probability adjusted DCF and sum-of-the-parts analyses.

Trading Data:

Last Price (04/20/2016)	$ 0.73
52–Week High (4/20/2015)	$ 3.55
52–Week Low (2/16/2016)	$ 0.41
Market Cap. (MM)	$ 21
Shares Out. (MM)	29

Earnings Estimates: (per share)

(Dec)	1Q	2Q	3Q	4Q	FY	P/E
FY-16E	-0.12	-0.13	-0.14	-0.14	-0.52	NM
FY-15A	-6.25	-0.29	-0.20	-0.14	-1.82	NM
FY-14A	NA	NA	NA	NA	-9.51	NM
FY-13A	NA	NA	NA	NA	NA	NM

Source: Laidlaw & Company estimates

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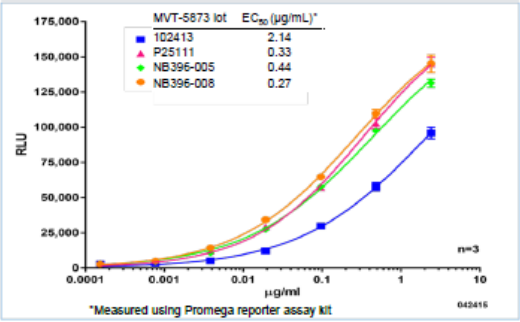
Figure 1: HuMab-5B1 exhibits potent ADCC and CDC activities preclinically

Antibody-dependent cellular cytotoxicity (ADCC)

Potent ADCC activity against the sLe^a positive BxPC3 human pancreatic cancer cell line.*



Complement-mediated cytotoxicity (CDC)

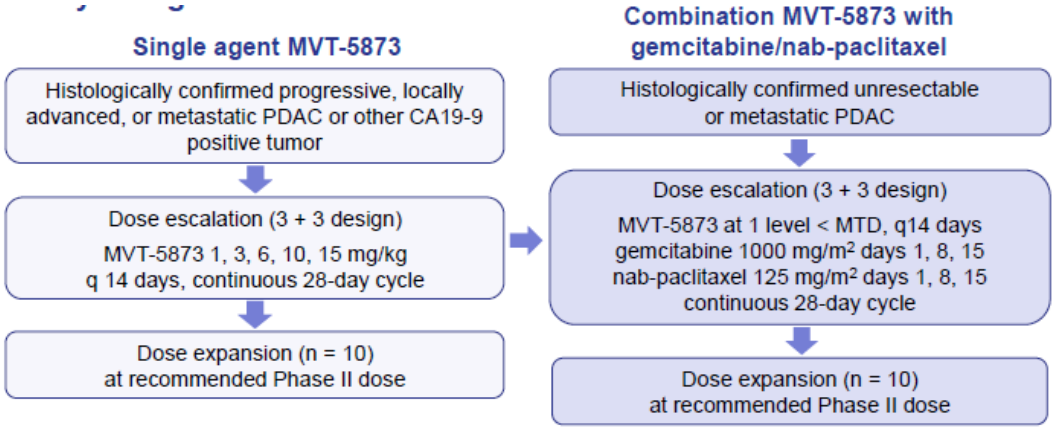
Potent CDC activity against the sLe^a positive DMS 79 human lung cancer cell line. Cell kill proportional to MVT-5873 concentration.**

MVT-5873 conc. (µg/mL)	% cell kill	
	Mean	SD
10.00	67.8	1.5
3.30	51.2	1.6
1.10	28.6	4.1
0.36	10.9	2.2
0.12	2.5	0.6

**Measured using Guava PCA-96 Cell Toxicity™ kit

Source: O'Reilly, E. M., et. al., Poster CTO26 AACR 2016

Figure 2: HuMab-5B1 Phase I/II trial design



Source: O'Reilly, E. M., et. al., Poster CTO26 AACR 2016

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Anticipated milestones in 2016 and beyond

Product	Indication	Event	Timing	Importance
HuMab-5B1	Pancreatic adenocarcinoma (PDAC)	Report interim results of Phase I study	**2H16**	***
		Potentially complete Phase I trial patient recruitment	**YE16**	***
		Report interim results of the combination Phase I /II study	**1H17**	****
		Report top-line results of the combination Phase I /II study	**2H17**	****
HuMab-5B1 RIT	Pancreatic adenocarcinoma (PDAC)	Potentially determine the isotope to be used for Phase I study	**Mid-'16**	***
		Potentially start Phase I study	**1H17**	***
HuMab-5B1 ADC	Pancreatic adenocarcinoma (PDAC)	Potentially start Phase I study	**2H17**	***
HuMab-5B1 PET	Pancreatic adenocarcinoma (PDAC)	Potentially start Phase I study	**2Q16**	***
		Potentially report Phase I study interim results	**2H16**	****
Sarcoma vaccine	Sarcoma	Potentially report Phase II study OS results	**4Q16**	***
Ovarian cancer vaccine	Ovarian cancer	Potentially report Phase II study PFS results at the ASCO	**2Q16**	***
		Potentially report Phase II study OS results	**4Q16**	***

***** / ***** Major catalyst event that could impact share price very significantly while *** event is more informative*

Source: Laidlaw & Company estimates and company presentation.

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Major risks

Clinical study failure could have a major impact on MBVX share value. Despite promising pre-clinical results of the company's lead products, HuMab-5B1 and HuMab-5B1-PET, it remains too early to predict the longer term safety and efficacy from the upcoming clinical studies. Given that clinical validation has not been established, it would be critical for these studies to demonstrate efficacy and a positive safety profile in order to increase the assets and shareholder value. Negative results of Phase I and future clinical studies could have a materially negative impact on the shareholder value; especially since the company has a very diverse-limited pipeline profile.

Yet-to-be-validated vaccinated patient derived monoclonal antibody (Mab) screening platform could remain uncertain. Although monoclonal antibodies have been established as a validated cancer treatment modality; currently there is no Mab derived from vaccinated patients that has been approved or is in a late clinical development stage to demonstrate efficacy. As such, clinical risks for monoclonal antibody based cancer therapy derived from successfully vaccinated patients are higher than similar products generated from other more proven development platforms.

Product may not be approved or reach anticipated sales. Although MBVX's current pipeline products have exhibited the potential to generate positive clinical outcomes from current and future trials; it remains too early to project whether any of these products would be approved by regulatory agencies. Even if the products were to enter the market, sales could be significantly below projections due to the specific product label under approval, physician consensus for prescribing the drug, changes of treatment paradigms, entrance of competitors, and the possible changes in pricing flexibility and payer reimbursement. A revenue outlook below expectations could also negatively affect MBVX shareholder value.

Additional financings could dilute shareholder value. Although the company currently has ~$10MM (pro forma) cash after its recent financing, MBVX most likely would need more financial resources going forward if they want to expand and further develop their pipeline. Should the future operational expenses, especially from R&D, increase significantly, products not receive FDA approval, or product revenue not reach expectations; the company might need to issue new equity to raise additional cash. Under such a scenario, the share value of existing shareholders could be diluted.

Limited trading liquidity limits shareholder options. Given that MBVX shares only entered the public market recently; daily trading volume and name recognition are relatively modest. As such, shareholders wanting to increase or reduce their positions more substantially in a volatile stock market may face constraints.

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Figure 1: Income Statement

MabVax Therapeutics – Income Statement

(€'MM)	2014	2015	1Q16E	2Q16E	3Q16E	4Q16E	2016E	2017E	2018E	2019E	2020E	2021E
Revenue												
Grants	304	1,267	348	195	-	-	544	1	1	1	0	0
Product revenue	10	0	0	-	-	-	0	0	0	0	1,500	3,383
Total revenues	314	1,267	348	195	0	0	544	1	1	1	1,500	3,383
Gross revenue											1,500	3,383
Research and development	3,503	9,597	2,007	2,027	2,047	2,068	8,149	10,024	11,928	14,194	17,175	20,095
General and administrative	5,204	9,795	1,834	1,853	1,871	1,890	7,448	8,490	9,339	10,180	10,994	11,764
Marketing and sales												
Total operating costs and expenses	8,707	19,392	3,841	3,880	3,918	3,958	15,597	18,514	21,267	24,374	28,169	31,859
Operating Incomes (losses)	(8,393)	(18,125)	(3,493)	(3,684)	(3,918)	(3,958)	(15,053)	(18,513)	(21,266)	(24,373)	(26,669)	(28,475)
Interest and other income (expense)	(0)	(0)	0	-	-	-	0	0	0	0	0	0
Change in fair value of warrant liability	475	20	0	-	-	-	0	0	0	0	0	0
Tax												
Net Income (Loss)	(7,918)	(18,105)	(3,493)	(3,684)	(3,918)	(3,958)	(15,053)	(18,513)	(21,266)	(24,373)	(26,669)	(28,475)
Deemed dividend on Series A-1 preferred-stock	(2,215)	(9,018)	0	-	-	-	0	0	0	0	0	0
Deemed dividend on Series A-1 warrant		(179)	0	-	-	-	0	0	0	0	0	0
Deemed dividend on Series B preferred stock		(8,656)	0	-	-	-	0	0	0	0	0	0
Accretion of preferred stock dividends	(445)	(93)	0	-	-	-	0	0	0	0	0	0
Net loss aloocable to common stockholders	(10,578)	(36,051)	(3,493)	(3,684)	(3,918)	(3,958)	(15,053)	(18,513)	(21,266)	(24,373)	(26,669)	(28,475)
Basic and diluted net loss per share	($9.51)	($1.82)	($0.12)	($0.13)	($0.14)	($0.14)	($0.52)	($0.54)	($0.54)	($0.55)	($0.54)	($0.53)
Shares used to calculate the basic and diluted net loss per share	1,112.5	19,845	28,723	28,823	28,923	29,023	28,873	34,023	39,023	44,023	49,023	54,023
Margin Analysis (% of Sales/Revenue)												
Costs of goods										15%	15%	15%
R&D	1115%	757%	576%	1039%	NA	NA	1499%	1002352%	1192798%	1419430%	1145%	594%
SG&A	1657%	773%	526%	949%	NA	NA	1370%	849016%	933917%	1017970%	733%	348%
Operating Income (loss)	-2671%	-1430%	-1002%	-1888%	NA	NA	-2769%	-1851267%	-2126616%	-2437300%	-1778%	-842%
Pretax	-2520%	-1429%	-1002%	-1888%	NA	NA	-2769%	-1851267%	-2126616%	-2437300%	-1778%	-842%
Tax Rate												
Net Income	-705%	-2845%	-1002%	-1888%	NA	NA	-2769%	-1851267%	-2126616%	-2437300%	-1778%	-842%
Financial Indicator Growth Analysis (YoY%)												
Total Revenue	NA	303%	45%	43%	-100%	-100%	-57%	-100%	0%	0%	149904%	126%
R&D	NA	174%	16%	-13%	-35%	-14%	-15%	23%	19%	19%	21%	17%
SG&A	NA	88%	87%	-56%	-18%	-19%	-24%	14%	10%	9%	8%	7%
Operating Income (Losses)	NA	116%	42%	-42%	-26%	-1%	-17%	23%	15%	15%	9%	7%
Pretax Income	NA	241%	-83%	-42%	-26%	-1%	-58%	23%	15%	15%	9%	7%
Net Income	NA	241%	-83%	-42%	-26%	-1%	-58%	23%	15%	15%	9%	7%
EPS	NA	-81%	-98%	-56%	-32%	-2%	-71%	4%	0%	2%	-2%	-3%

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Source: Bloomberg LP; Company reports; Laidlaw & Company estimates.

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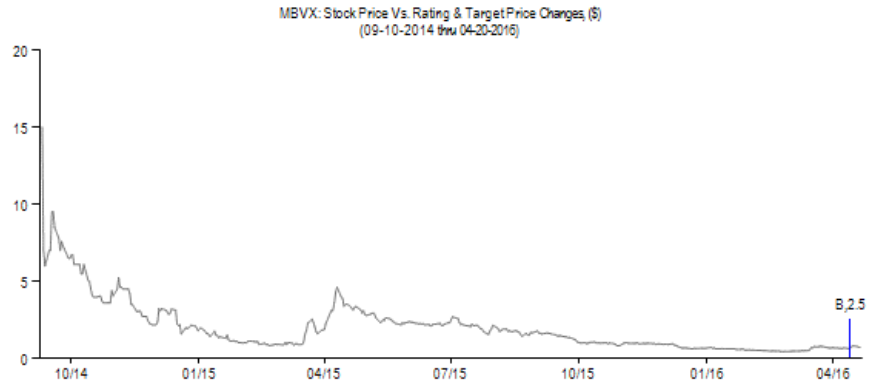
Rating and Price Target Change History



3 Year Rating Change History

Date	Rating	Closing Price ($)
04/13/2016	Buy (B)	0.70

3 Year Price Change History

Date	Target Price ($)	Closing Price, ($)
04/13/2016	2.50	0.70

Source: Laidlaw & Company **Created by: Blue-Compass.net**

Laidlaw & Company Rating System*		% of Companies Under Coverage With This Rating	% of Companies for which Laidlaw & Company has performed services for in the last 12 months	
			Investment Banking	Brokerage
Strong Buy (SB)	Expected to significantly outperform the sector over 12 months.	0.00%	0.00%	0.00%
Buy (B)	Expected to outperform the sector average over 12 months.	66.67%	27.78%	2.78%
Hold (H)	Expected returns to be in line with the sector average over 12 months.	0.00%	0.00%	0.00%
Sell (S)	Returns expected to significantly underperform the sector average over 12 months.	0.00%	0.00%	0.00%

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