LAIDLAW & COMPANY
Est. 1842
London
New York
San Francisco
Boston

EQUITY RESEARCH
Company Report

April 13, 2016

MabVax Therapeutics (MBVX - $ 0.65)

Healthcare/Biotechnology

Novel Discovery Platform Leveraging Potent Mabs Derived from Successfully Vaccinated Cancer Patients

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

We are initiating coverage of MabVax Therapeutics with a Buy rating and a $2.50 12-month price target. By leveraging its novel monoclonal antibodies (Mabs) discovery platform, MBVX has developed sLea-targeted HuMab-5B1 with several potential modifications as a potential 1st-line treatment for pancreatic cancer.

- **Lead product HuMab-5B1 has potential as an effective 1st-line treatment for pancreatic cancer.** MBVX developed its lead product, HuMab-5B1 via a unique platform by identifying and validating the most optimal monoclonal antibodies (Mabs) derived from cancer patients who have been successfully vaccinated from cancer vaccine therapy. The molecular target of HuMab-5B1 is sialyl Lewis A (sLea), a carbohydrate antigen that is broadly expressed in several epithelial originated tumors. HuMab-5B1 exhibited promising anti-tumor activities from preclinical studies and is undergoing a Phase I/II clinical study in combination with gemcitabine and Abraxane as a potential 1st-line pancreatic cancer treatment. Clinical data are expected in 2016 and 2017.
- **HuMab-5B1-based radiotherapeutics and antibody conjugate (ADC) could potentially provide more potent or alternative therapeutic products.** MBVX is also exploring HuMab-5B1-based therapies with the addition of different payloads [Lutetium (Lu^{177}) or Yttrium (Y^{39}) for radiotherapeutics and α-amanitin for ADC] to potentially develop treatment of greater potency or treatment that can be used in different clinical settings. Clinical studies could start in 2017.
- **HuMab-5B1-PET could be MBVX's first product as a novel pancreatic cancer PET imaging agent.** In addition to therapeutics, MBVX is also developing a PET imaging agent based on the HuMab-5B1 platform. HuMab-5B1-PET has the potential to be the best-in-class imaging agent for a pancreatic cancer PET scan based on promising preclinical data. Given the shorter development time, it could potentially be MBVX's first marketed product.
- **Two therapeutic cancer vaccines could bring upsides.** MBVX has two legacy cancer vaccines (sarcoma and ovarian cancer) in Phase II clinical studies. OS results are expected in 4Q16. Although both assets carry higher clinical risks in our opinion, we view possible success as an upside for MBVX shareholders.
- **Material upsides remain at the current valuation.** With a broad HuMab-5B1-based platform in development, we believe MBVX shares remain undervalued at current levels. Our 12-month $2.50 price target is based on peer comparable, probability adjusted DCF and sum-of-the-parts analyses.

Trading Data:

Last Price (04/12/2016)	$ 0.65
52–Week High (4/13/2015)	$ 4.54
52–Week Low (2/16/2016)	$ 0.41
Market Cap. (MM)	$ 19
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	N.A.
FY-15A	-6.25	-0.29	-0.20	-0.14	-1.82	N.A.
FY-14A	NA	NA	NA	NA	-9.51	N.A.
FY-13A	NA	NA	NA	NA	NA	N.A.

Source: Laidlaw & Company estimates

Yale Jen, Ph.D.
Managing Director/Senior
Biotechnology Analyst
(212) 953-4978
yjen@laidlawltd.com

Investment Thesis

Our $2.50 price target is supported by peer comparable, probability adjusted DCF and sum-of-the-parts analyses.

- **We are initiating coverage of MabVax Therapeutics (MBVX) with a Buy rating and a 12-month price target of $2.50.** MabVax Therapeutics is an early-clinical stage biotechnology company leveraging its monoclonal antibody discovering platform via identifying the most effective antibodies derived from patients who have undergone cancer vaccine treatment successfully. MBVX is also exploring this strategy by adding different payloads to its lead product, HuMab-5B1, such as radiotherapeutics and antibody conjugate (ADC), in addition to the naked antibody as a potential first line treatment in pancreatic cancer. MBVX is also developing HuMab-5B1-PET as a potential PET imaging agent for pancreatic cancer diagnosis. HuMab-5B1 (as a naked antibody) is currently undergoing a Phase I/II study in pancreatic cancer. In addition, MBVX has two legacy cancer vaccines (sarcoma and ovarian cancer) in Phase II development with top-line overall survival (OS) results that could potentially be available in 4Q16.

MBVX's candidate products were discovered initially by capturing a portion of the responding antibodies from cancer patients who were being treated successfully by a cancer vaccine; followed by screening and validation based on its high anti-tumor activities in pancreatic cancer models.

- **By identifying the most effective monoclonal antibodies from successfully vaccinated cancer patients, MBVX is establishing HuMab-5B1 as a potential effective pancreatic cancer treatment with different formats.** MBVX's candidate products were discovered initially by capturing a portion of the responding antibodies from seven stage IV breast cancer patients who were being treated successfully by a cancer vaccine; followed by screening and validation based on its high anti-tumor activities in pancreatic cancer models. The currently selected lead antibody, HuMab-5B1 came from a patient whom has been disease free for five years post vaccination. HuMab-5B1's molecular target is a carbohydrate antigen called sialyl Lewis A (sLea), which is broadly expressed in varieties of epithelial originated circulating tumors, such as pancreatic, colon, stomach, ovarian, breast, and small cell lung cancers. HuMab-5B1 has demonstrated positive anti-tumor effects in preclinical studies especially against pancreatic cancer. MBVX is conducting a Phase I/II study to evaluate HuMab-5B1 in combination with current SOC (gemcitabine and Abraxane) as a potential 1st-line treatment in pancreatic cancer. We estimate the initial dose-finding results from the single agent portion of the study could be available in 2H16; while the interim and top-line efficacy results from the combination portion of the study could be available in 1H17 and 2H17, respectively. The latter, in our opinion, would be an important clinical POC outcome for HuMab-5B1. Given the unmet medical needs, if clinically successful, we estimate total annual U.S. peak sales for HuMab-5B1 as a 1st-line pancreatic cancer treatment could potentially reach $700+MM.

MBVX is conducting a Phase I/II study to evaluate HuMab-5B1 in combination with gemcitabine and Abraxane as a potential 1st-line treatment in pancreatic cancer. We estimate the initial dose-finding results from the single agent portion of the study could be available in 2H16; while the interim and top-line efficacy results from the combination portion of the study could be available in 1H17 and 2H17, respectively.

In addition to the naked monoclonal antibody, MBVX is also exploring the opportunities for developing HuMab-5B1 by the additions of different payloads; either as a radiotherapeutics or antibody conjugates

Yale Jen, Ph.D.
yjen@laidlawltd.com

MBVX is also exploring the developments of additions of different payloads; either as a radiotherapeutics or antibody conjugates (ADC), to HuMab-5B1. The current configuration is Lutetium (Lu^{177}) or Yttrium (Y^{39}) for radiotherapeutics and α-amanitin for ADC.

(ADC). These therapies could potentially become the most potent therapeutic option or as a treatment to be used in different clinical settings. MBVX is developing HuMab-5B1 RIT, a HuMab-5B1-based radiotherapeutics by attaching either Lutetium 177 (Lu^{177}) or Yttrium 39 (Y^{39}) as radioactive payload. We estimate MBVX could make a final decision on the isotope to be used possibly in mid-2016 with the potential to commence a Phase I study in 1H17. MBVX is also developing a HuMab-5B1-based ADC with α-amanitin as payload. HuMab-5B1 ADC also exhibited anti-tumor activities from preclinical studies. MBVX plans to continue preclinical study in 2016/2017 with possible commencement of a Phase I study evaluating HuMab-5B1 ADC in pancreatic cancer in 2H17. Together, we believe MBVX has been putting together a comprehensive plan to potentially identify the most optimal HuMab-5B1-based therapeutic(s) as a potential pancreatic cancer treatment.

HuMab-5B1-PET is an imaging agent that can be used in positron emission tomography (PET) scan to target CA19-9 expressing tumor as part of the cancer treatment. The encouraging preliminary results shown a better tumor specificity compared to the commonly used FDG imaging agent.

- **HuMab-5B1-based PET imaging agent could potentially be superior to the current marketed competitor and possibly could be MBVX's first product to reach the market.** MBVX is also undertaking preclinical studies to develop a zirconium (^{89}Zr) attached antibody-based radiotracer, ^{89}Zr-HuMab-5B1 (HuMab-5B1-PET) as an imaging agent, and it can be used in positron emission tomography (PET) scans to target CA19-9 expressing tumors as part of the cancer treatment. The preliminary results are very encouraging as they have shown a better tumor specificity compared to the commonly used FDG imaging agent. An improved imaging agent that potentially could identify smaller metastatic tumor sites (such as 2-3mm) would have great value since the current imaging agents lack the sensitivity and specificity to do so. An effective imaging agent could be critical in guiding patient stratification for directed therapeutic interventions. MBVX is scheduled to conduct a Phase I dose optimizing study in 2Q16 evaluating HuMab-5B1-PET with preliminary results expected in 2H16. The objectives of the trial are to identify the optimal condition that could help to focus the radioactive antibody onto the proper tumor sites; and the time it takes for the antibody to accumulate onto the reactive sites to create the best image. If successful, MBVX is scheduled to start a Phase II study in 2017 after they have discussions with the FDA for more feedback. HuMab-5B1-PET development has been supported by $1.75MM funding from NIH.

MBVX guided that the top-line overall survival (OS) results for both (sarcoma and ovarian cancer) vaccines could be available in late 4Q16.

- **The possible advancement of sarcoma and ovarian cancer therapeutic vaccines are a potential upside for MBVX shareholders.** In addition to the HuMab-5B1 franchise, MBVX's development pipeline also includes two Phase II cancer therapeutic vaccines against sarcoma and ovarian cancer, respectively. Both developments are antigen-conjugate vaccines (GD2, GD3 and GM2 for sarcoma, and GM2, Globo H, TF and the combination of muc-1 glycosylated with TN for ovarian cancer) and were developed by Memorial Sloan Kettering Cancer Center (MSKCC). MBVX guided that the top-line overall survival (OS) results for both vaccines could be available in late 4Q16. The sarcoma vaccine study has failed to meet the PFS endpoint, while the ovarian cancer trial expects to report the PFS results at the 2016 ASCO meeting in 2Q16. Should the OS outcomes of either or both vaccines be positive, MBVX intends to discuss out-licensing the

Yale Jen, Ph.D.
yjen@laidlawltd.com

We believe these assets are a potential upside, not a core asset for MBVX. The higher potential clinical risks are due the lack of precedents for successful cancer vaccine treatment against carbohydrate-based antigens.

vaccines with prospective partners for future development. Although the two ongoing cancer vaccines have the potential to become important elements in the cancer treatment armamentarium, in our opinion these assets are a potential upside, not a core asset for MBVX. This is based on our belief that it remains too early to forecast these cancer vaccines' efficacy (especially PFS) since there are no precedents for successful cancer vaccine treatment against carbohydrate-based antigens.

- **Valuation is favorable.** We believe MBVX shares are undervalued, based on the substantial near term potential of several data-driven positive critical catalysts in 2016 and beyond. The key value proposition is to clinically validate the HuMab-5B1 as a potential treatment for pancreatic cancer. We also view the potential success of HuMab-5B1-PET as a modest upside for its potential shorter path to market. Accordingly, our $2.50 price target is supported by peer comparable, probability adjusted DCF and sum-of-the-parts analyses. We are recommending MBVX shares to long-term oriented investors with high risk tolerance.

Yale Jen, Ph.D.
yjen@laidlawltd.com

Company Description

MabVax Therapeutics is an early-clinical stage biotech company focused on exploring its proprietary monoclonal antibody (Mab) development platform to identify best-in-class Mabs. Specifically, MBVX's lead product, HuMab-5B1 was discovered by identifying the most effective candidates from capturing a portion of the responding antibodies from breast cancer patients who were successfully treated by a cancer therapeutic vaccine. HuMab-5B1 is undergoing a Phase I/II trial in combination with gemcitabine and Abraxane as a potential first-line treatment for pancreatic cancer. MBVX is also exploring the addition of different payloads, such as radiotherapy and antibody conjugates (ADC), to HuMab-5B1 as a potential treatment of greater potency or one that can be used in different clinical settings. Clinical studies are expected to start in 2017. MBVX is also developing HuMab-5B1-PET as a potential PET imaging agent as a diagnosis for pancreatic cancer. MBVX has two legacy Phase II cancer vaccines (sarcoma and ovarian cancer) under development with top-line overall survival results that could potentially be available in 4Q16.

Yale Jen, Ph.D.
yjen@laidlawltd.com

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	**2H16**	***
		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	**1H16**	***
		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 and company presentation.

Yale Jen, Ph.D.
yjen@laidlawltd.com

MabVax Therapeutics Pipeline

Product	Indication	Preclin	I	II	III	Comments
HuMab-5B1	Pancreatic cancer					Phase I/II combination trial to start in 3Q16
HuMab-5B1 RIT	Pancreatic cancer					Make final decision between using Y^{39} and Lu^{177} in mid-2016
HuMab-5B1-PET	PET scan for pancreatic cancer					Phase I study commencement expected in 2Q16
HuMab-5B1 ADC	Pancreatic cancer					Potentially start Phase I study in 2H17
1B7/31F9	Sarcoma / neuroblastoma					
Sarcoma vaccine	Sarcoma					Possible top-line results in 2016
Ovarian cancer vaccine	Ovarian cancer					Possible top-line results in 2016

Source: Laidlaw & Company and company presentation

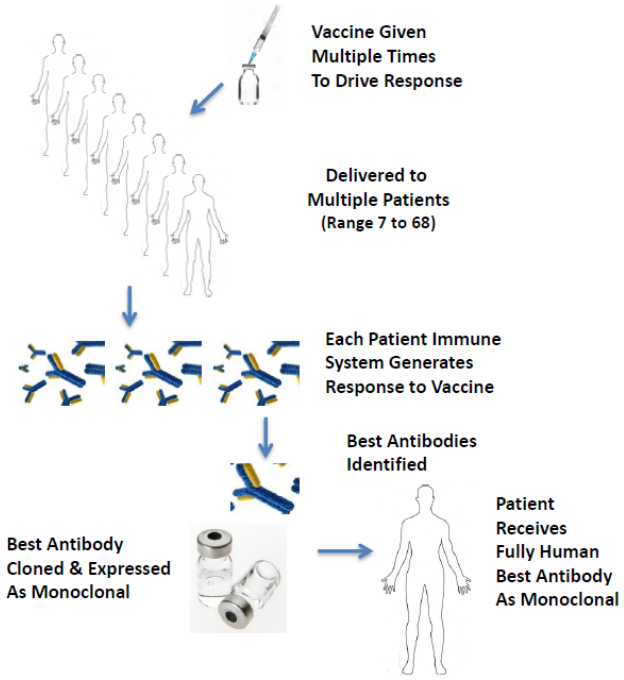
Yale Jen, Ph.D.
yjen@laidlawltd.com

Lead Antibody, HuMab-5B1, is Generated via a Novel and Potentially Effective Development Program

HuMab-5B1 is derived and selected from cancer patients successfully treated with a cancer vaccine

MBVX's lead therapeutic and diagnostic products are developed from a novel approach for potentially creating highly effective monoclonal antibodies derived from patients who had undergone cancer vaccine treatment successfully. Specifically, the company's lead product, HuMab-5B1 is discovered by capturing a portion of the responding antibodies from seven stage IV breast cancer patients who were being vaccinated in a Phase I trial in 2008 at the Memorial Sloan Kettering Cancer Center (MSKCC) with one of MBVX's licensed vaccines. The antibodies selected came from patients who had been disease free for five years post vaccination (Figure 1). Further, six of the seven patients who participated in the trial remain alive (median: 197 weeks post vaccination).

Figure 1: Novel platform leveraging antibodies derived from vaccinated patients



Source: Company presentation

During the next step, MBVX employed a microarray assay to identify cancer specific binding antibodies. The results illustrated that HuMab-5B1 bound to

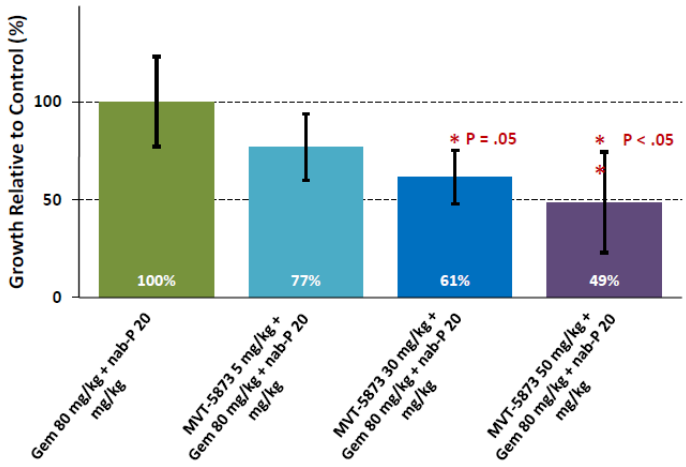
Yale Jen, Ph.D.
yjen@laidlawltd.com

several epithelial-derived tumor tissues, such as pancreatic, colon, bladder, ovarian, breast, and small cell lung cancer, but not normal tissues except for the exocrine cells at the ductal border of secretory cells.

MBVX conducted xenographic animal model testing as the subsequent step for further validation and demonstrated that HuMab-5B1 exhibited robust anti-tumor activities in a variety of animal models of human pancreatic, colon, and small cell lung cancers.

Positive pre-clinical responses. For example, in a pancreatic cancer BxPC3 xenograft model, adding varying doses of HuMab-5B1 to standard of care (SOC) [gemcitabine and nab-paclitaxel (Abraxane)] have significantly reduced tumor growth rate at day 42 (Figure 2).

Figure 2: HuMab-5B1 exhibited growth reduction in addition to SOC in pancreatic cancer

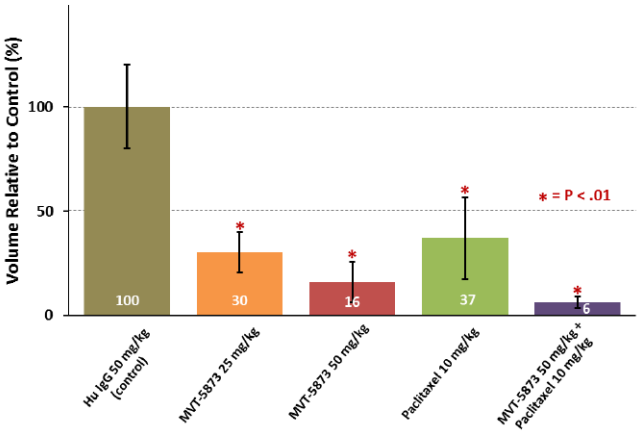


Source: Company presentation

In a small cell lung cancer IgG control DMS 79 xenograft model, adding varying doses of HuMab-5B1 and HuMab-5B1 plus paclitaxel had significantly reduced tumor growth rate at day 52 (Figure 3).

MBVX conducted xenographic animal model testing and demonstrated that HuMab-5B1 exhibited robust anti-tumor activities in a variety of animal models of human pancreatic, colon, and small cell lung cancers.

Figure 3: HuMab-5B1 exhibited growth reduction in small cell lung cancer model



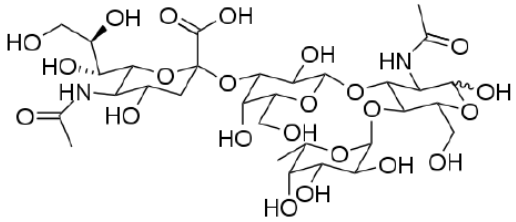
Source: Company presentation

Yale Jen, Ph.D.
yjen@laidlawltd.com

Sialyl Lewis A (sLea) is the targeted antigen recognized by HuMab-5B1. The molecular target of HuMab-5B1 is a carbohydrate antigen called sialyl Lewis A (sLea) (Figure 4). sLea is broadly expressed in a variety of epithelial originated circulating tumors, which include pancreatic, colon, stomach, ovarian, breast, and small cell lung cancers (Figure 5). sLea is a ligand for E selectin, which is expressed on the inner lining of blood vessels. The interactions between these two molecules have been suggested to play a key role for tumor proliferation, invasion and metastasis. Further, the over expression of sialyl Lewis antigen is correlated with poor survival[1]. sLea is also called CA 19-9 or carbohydrate antigen 19-9.

HuMab-5B1's molecular target is a carbohydrate antigen called sialyl Lewis A (sLea) or CA 19-9, which is broadly expressed in varieties of epithelial originated circulating tumors, which include pancreatic, colon, stomach, ovarian, breast, and small cell lung cancers.

Figure 4: Molecular structure of sialyl Lewis A



Source: Company presentation

Figure 5: Tumors that express sialyl Lewis A

Cancer type	Overall positivity (%)
Pancreas	92
Stomach	37
Endometrium	36
Uterus	30
Colon/rectum	29
Breast	24
Ovary	15
Other	3

Source: Company presentation

MBVX is conducting a Phase I/II study to evaluate HuMab-5B1 in pancreatic and CA19-9 positive cancers. MBVX will complete the single agent dose-finding study possibly in mid-2016 and followed by the start of the combination (with gemcitabine and Abraxane) study in 3Q16.

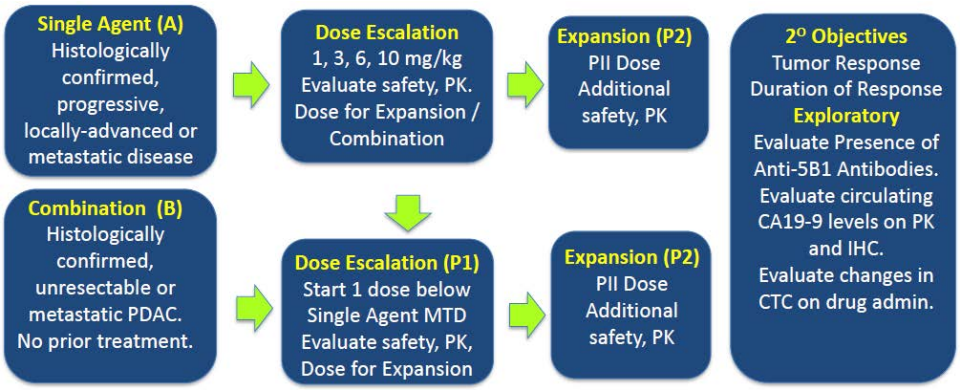
Current development. MBVX is conducting a Phase I/II study to evaluate HuMab-5B1 in pancreatic and CA19-9 positive cancers. It is an open label, dose escalation study that evaluates HuMab-5B1 in pancreatic adenocarcinoma (PDAC) with single agent and combination arms. On the single agent arm, four escalating doses (1, 3, 6 and 10mg/kg) will be evaluated. If MTD is identified, the study will advance into the Phase II portion with 10 patients at or near MTD. For the combination arm, dose escalation starts from one dose below the MTD determined from the single agent study, followed by Phase II expansion. They will complete the single agent dose-finding study possibly in mid-2016 followed by the commencement of the combination study in 3Q16 with patient recruitment completion projected in early 2017. The two drugs used for the

[1] *Ben-David, T., et. al., Immunol Lett 2008, 116: 218-224*

Yale Jen, Ph.D.
yjen@laidlawltd.com

combination study are gemcitabine and Abraxane. The objective for the Phase I study is safety, PK and potential determination of MTD. The endpoints for the Phase II portion of the study are to identify tumor response (based on RECIST 1.1), duration of response, presence of anti-5B1 antibodies and the level of circulating CA19-9 (Figure 6) as a potential first line therapy.

Figure 6: HuMab-5B1 in PDAC and CA19-9 positive cancer Phase I trial design



Source: Company presentation

MBVX could report interim results from the ongoing Phase I study in 2H16 and top-line data in 1H17. MBVX could provide interim data of the combination study in 1H17, and clinical data regarding response rate in 2H17.

The combination portion of the trial is likely to be a single arm study and the outcome is likely to be compared to historical chemotherapy results.

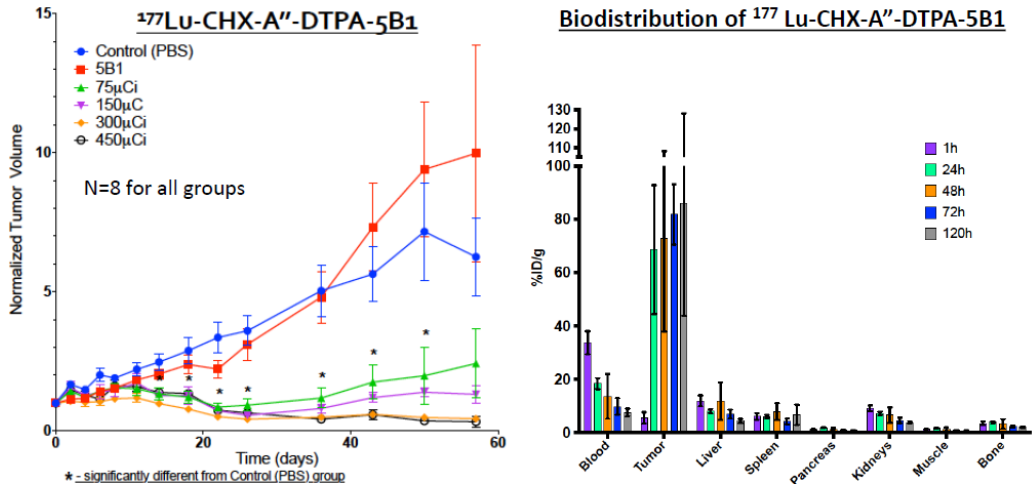
We estimate MBVX to report interim results from the ongoing Phase I study in 2H16 to provide the first look of safety, PK and dose escalating outcome. MBVX expects to complete patient recruitment for the Phase I single agent study in 2H16 with top-line data available in 1H17. In addition, MBVX could provide interim data of the combination study mainly focusing on safety and dosing in 1H17. MBVX is likely to release clinical data regarding response rate and PK, which are critical initial proof-of-concept information, in our opinion in 2H17. The study could enroll a total of 45 to 60 patients; among them, the dose escalation portion might include 12 patients with three patients for each dose.

MBVX is scheduled to make the final decision on choosing the final radiotherapeutic candidate for HuMab-5B1 RIT possibly in mid-2016; and could start a Phase I trial evaluating HuMab-5B1 RIT in CA19-9 positive cancers in 2017.

Additions of payloads to HuMab-5B1. In addition to the naked monoclonal antibody, MBVX plans to explore the options of adding different payloads to HuMab-5B1 to potentially expand the use or increase the potency of HuMab-5B1-based therapy. The company is developing a Lutetium 177 attached version of HuMab-5B1 (HuMab-5B1 RIT). Lutetium 177 (Lu^{177}) is an isotope with half-life of 6.73 days and it can emit both beta and gamma radiations (with mean path length of 65nm). By attaching to DOTAOctreotate to target cellular somatostatin-receptor, Lu^{177}–based therapy is currently being used as treatment against neuroendocrine tumors, such as gastroenteropancreatic (GEP) neuroendocrine tumors. Pre-clinical studies have demonstrated that HuMab-5B1 RIT exhibited promising results by reducing tumor volume with preferential distribution on the tumor instead of healthy tissues (Figure 7).

Yale Jen, Ph.D.
yjen@laidlawltd.com

Figure 7: HuMab-5B1 RIT exhibited anti-tumor and tumor specific distrubution from pre-clinical studies



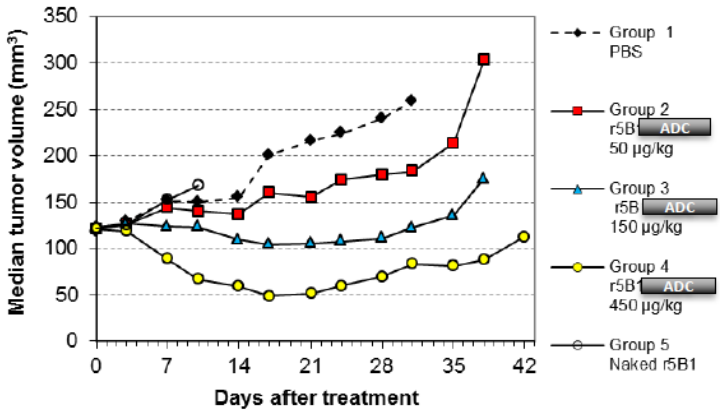
Source: Company presentation

In addition, MBVX is also exploring the use of Yttrium (Y^{39}) as an alternative radioactive payload for HuMab-5B1 RIT. MBVX indicated that the company is scheduled to make the final decision on choosing the final radiotherapeutic candidate for HuMab-5B1 RIT possibly in mid-2016. MBVX could start a Phase I trial evaluating HuMab-5B1 RIT in CA19-9 positive cancers in 2017.

HuMab-5B1-based antibody conjugate (ADC). MBVX is developing a HuMab-5B1-based antibody conjugate (ADC) with various partners, including Heidelberg Pharm, and currently with α-amanitin as payload as another option for therapeutics. Pre-clinical studies have demonstrated promising results as 5B1-amanitin ADC demonstrated cytotoxicity in several sLea positive pancreatic cancer cell lines and reduced tumor volume (Figure 8). Alpha-amanitin, a bicyclic octapeptide (a cyclic peptide of eight amino acids) toxin from mushroom, has a specific inhibitor effect against RNA polymerase II. Going forward, MBVX is scheduled to conduct more pre-clinical toxicity studies in 1H17 and plans to file an IND in 2H17 for starting a Phase I trial.

MBVX is scheduled to conduct more pre-clinical toxicity studies of HuMab-5B1- ADC in 1H17 and plans to file an IND in 2H17 for starting a Phase I trial.

Figure 8: 5B1-Toxin ADC exhibited anti-tumor effects from pre-clinical studies



Source: Company presentation

Yale Jen, Ph.D.
yjen@laidlawltd.com

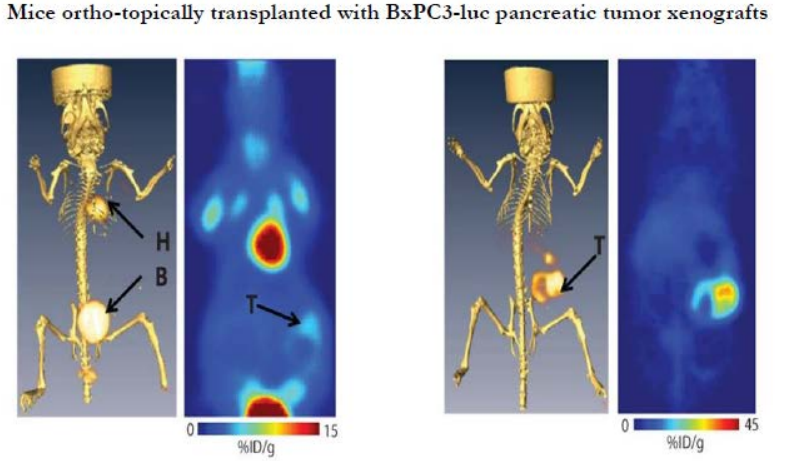
5B1 imaging agent program. Sialyl Lewis A or CA 19-9 (carbohydrate antigen 19-9) is a common tumor marker that is used primarily for the management of pancreatic cancer. Although the CA 19-9 serum test for detecting circulating antigens is already being used today, the test is not sensitive or specific enough as a screening test for cancer, and it is not a diagnostic for any specific type of cancer. According to the American Association for Clinical Chemistry (AACC), its main use is only as a tumor marker. The key shortcoming of the test is its relatively high false positive readings due to the concern that it is also produced from benign disorders in unrelated host tissues. CA 19-9 elevation is found in about 65% of bile duct (hepatobiliary) derived cancer.

MBVX believes that the use of HuMab-5B1 as an imaging agent for probing sites where CA 19-9 is potentially over expressed could potentially be a better approach for diagnosing and staging PDAC. An effective imaging agent could be used in guiding patient stratification for directed therapeutic interventions. In collaboration with Dr. Jason Lewis at MSKCC, MBVX developed zirconium (^{89}Zr) attached antibody-based radiotracer, ^{89}Zr-HuMab-5B1 (HuMab-5B1-PET) as a key element of the positron emission tomography (PET) scan targeting CA19-9 expressing tumors as part of the cancer treatment and management.

Preliminary results from a pre-clinical study suggested HuMab-5B1-PET showed better tumor specificity compared to FDG imaging agent.

From a pre-clinical study, MBVX has demonstrated HuMab-5B1-PET could localize tumors in multiple models representing diseases with both undetectable and clinical relevant circulating CA19-9 serum levels. Further, preliminary results suggested HuMab-5B1-PET showed better tumor specificity compared to the commonly used 2-deoxy-2-(18F)-fluoro-D-glucose, or FDG, imaging agent (Figure 9). The FDG imaging relies on increased tumor metabolism relative to nonmalignant cells, and is known to lack sensitivity and specificity in pancreas cancers and other slow growing cancers.

Figure 9: HuMab-5B1-PET exhibited greater specificity over current standard imaging agent



The co-registration of FDG-PET and computed tomography (CT) (left) and planar sections of FDG-PET only (right) displayed minimal tumor detection of the tracer with a high uptake in highly metabolic tissues

Acquired ^{89}Zr radiolabed-5B1 antibody (^{89}Zr-5B1) PET image of the same mouse co-registered with CT exhibited exceptional tumor detection of the BxPC3-luc tumor xenografts.

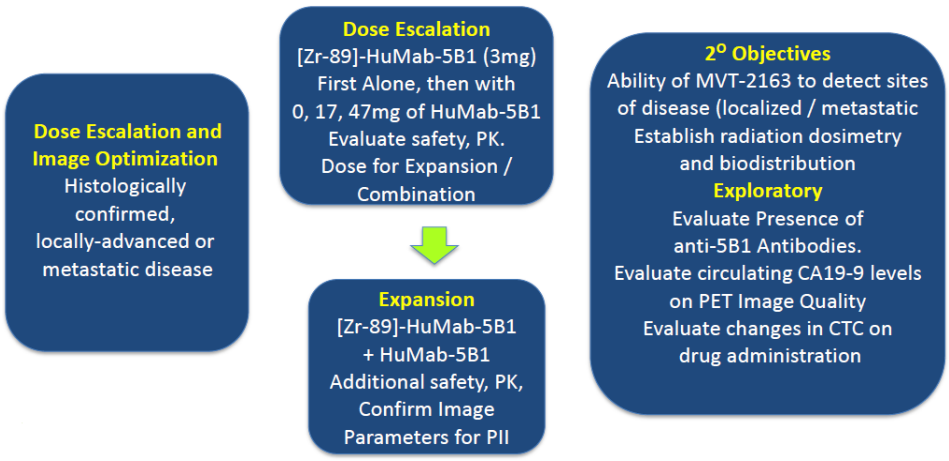
Source: Company presentation

Yale Jen, Ph.D.
yjen@laidlawltd.com

MBVX is scheduled to conduct a Phase I study to evaluate HuMab-5B1-PET with preliminary results expected to be available in 2H16. MBVX has received NIH funding up to $1.75MM for developing HuMab-5B1-PET. The study is an open label dose escalation trial that evaluates ^{89}Zr-HuMab-5B1 (hot) with the addition of increasing doses (17mg and 47mg/patient) of non-radioactive (cold) HuMab-5B1 to improve the PET image. The objectives of the trial are to identify the optimal conditions that could help to concentrate the hot antibody onto the proper tumor sites; and the time it takes for the antibody to accumulate onto the reactive sites to create the best image (possibly 7 days). MBVX expects to expand the test to more patients once the optimal dose has been identified.

MBVX is scheduled to conduct a Phase I study to evaluate HuMab-5B1-PET with preliminary results expected in 2H16.

Figure 10: HuMab-5B1-PET in pancreatic cancer Phase I trial design



Source: Company presentation

The objectives of the trial are to identify the optimal condition that could help to concentrate the hot antibody onto the proper tumor sites; and the time it takes for the antibody to accumulate onto the reactive sites to create the best image.

MBVX is scheduled to start a Phase II study in 2017 after they have discussions with the FDA to gain more feedback. A possible study design is to compare ^{89}Zr-HuMab-5B1 against a CT scan by comparing the quality and detectability of the tumors. ^{89}Zr-HuMab-5B1 could potentially have the advantage of detecting smaller (such as 2-3mm) metastatic sites.

Solid intellectual property supports HuMab-5B1 products. MBVX has established a broad intellectual property protection for its HuMab-5B1 antibodies. It includes two pending U.S. applications and two international pending applications. The key U.S. filing is 14/468,827, with a title of "Nucleic acid encoding human antibodies to sialyl-Lewis A." If granted, we estimate the patent life could last beyond mid- to late 2030.

Juno Option Agreement. MBVX entered an option agreement with Juno Therapeutics in 3Q14 to potentially license Juno the rights for developing products based on fully human antibodies with binding specificity against human GD2 or sialyl-Lewis A antigens. All parties are currently waiting for the completion of research conducted at MSKCC with respect to the patents in accordance with the terms of agreements between MSKCC and MBVX. Should

Yale Jen, Ph.D.
yjen@laidlawltd.com

the option be exercised, MBVX would negotiate with Juno for additional payments (i.e. license fees and milestone payments) in the future.

Follow-on monoclonal antibody products. MBVX is also developing 1B7/31F9 monoclonal antibody programs, which target GD2, an antigen that is significantly over expressed on sarcoma, melanoma, and neuroblastoma. The anti-GD2 antibodies are derived from the same screening technology as HuMab-5B1. The most optimal anti-GD2 antibodies were derived from >60 patients who participated in MBVX's sarcoma vaccine trial over the last three years. Anti-GD2 antibodies are a validated therapeutic agent in a well-controlled Phase III clinical trial (see Figure 14). MBVX plans to explore anti-GD2 antibodies as a potential sarcoma and neuroblastoma therapy.

Snapshots of pancreatic cancer. Pancreatic cancer is one of the most deadly cancers. According to the American Cancer Society, the annual estimated incidences for pancreatic cancer in the U.S. in 2015 are 48,960, while the estimated deaths are 40,560. There are several types of pancreatic cancer with pancreatic adenocarcinoma accounting for about 85% of cases. The poor prognosis of pancreatic adenocarcinoma can be reflected in its low survival, for example, the one year and five year survival rates after diagnosis are only 25% and 5%, respectively. It is reported that more than half of the pancreatic adenocarcinoma cases occur in patients over 70. Pancreatic cancers are categorized into four stages (Stage T1 to T4) based on a TNM (Tumor size, spread to lymph Nodes, and Metastasis) classification system. Tumors of Stage I and II are resectable, while Stage III is borderline resectable, and Stage IV is unresectable. Major treatment for pancreatic cancer is surgery, chemotherapy and radiotherapy. Globally, there are ~338,000 new cases (with ~58,000 from five major European countries) of pancreatic cancer each year.

Drug treatment for pancreatic cancer is slower and more difficult than other cancers due to the severity of the condition. Gemcitabine was the first approved (in 1997) 1st-line chemotherapy. Tarceva (erlotinib) in combination with gemcitabine was approved in 2010 as 1st-line treatment of locally advanced, unresectable or metastatic pancreatic cancer and with very mild survival improvements (6.4 vs. 6.0 months)[2]. Two chemotherapy combinations recently have shown efficacy as first-line pancreatic cancer treatments. The first is called FOLFIRINOX, which is a combination of several chemotherapies, including fluorouracil (5-FU), leucovorin (Wellcovorin), irinotecan (Camptosar), and oxaliplatin (Eloxatin). Due to serious side effects, FOLFIRINOX is mainly used in patients of good physical condition. The second is a combination of gemcitabine and nab-paclitaxel (Abraxane) of Celgene (CELG – NR) (approved in 3Q13). The Abraxane/gemcitabine regimen improves overall survival (8.5 vs. 6.7 months, $p < 0.0001$) and PFS (5.5 vs. 3.7 months, $p < 0.0001$).

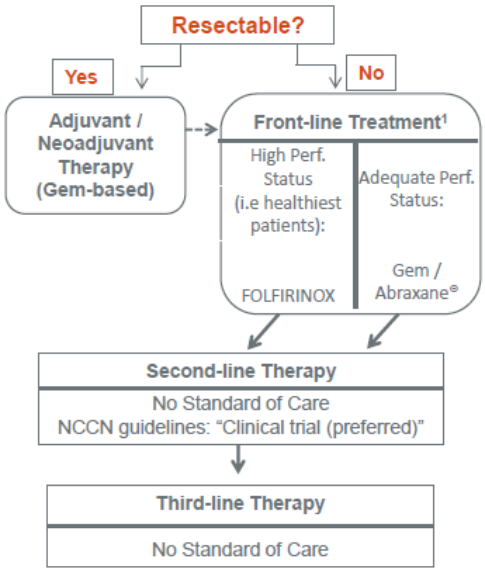
As for 2nd-line pancreatic cancer treatments, Abraxane/gemcitabine and FOLFIRINOX have been used for quite a while in patients who were refractory

[2] *Tarceva product insert*

Yale Jen, Ph.D.
yjen@laidlawltd.com

to the first-line treatment (for example, Abraxane/gemcitabine as second-line for treating FOLFIRINOX-refractory and vice versa). Onivyde (nanoliposomal irinotecan) in combination with 5-FU and leucovorin developed by Merrimack Pharmaceuticals is the most recently approved (in 4Q15) 2nd-line pancreatic cancer treatment. Onivyde demonstrated in Phase III (NAPOLI-1) trial an improved 12-month overall survival estimates (26% vs. 16%) over 5-FU/leucovorin alone in patients who had previously received a chemotherapy regimen containing gemcitabine.

Figure 11: Pancreatic cancer treatment paridigm



Source: Merrrimack company presentation

HuMab-5B1 in pancreatic cancer revenue model. Our model (Figure 12) assumes that HuMab-5B1 could potentially reach the market in 2023 if a full Phase III study is needed. Under a more aggressive assumption, in which a Phase II trial with a very robust outcome could be considered as a pivotal trial and is sufficient for accelerated approval; HuMab-5B1 could potentially reach the market in 2021. Assuming an annual course of therapy costs $72k (with an assumption of monthly costs of $9,000 with a possible 8 month of therapy) and only as 1st-line treatment in pancreatic cancer; we estimate total annual U.S. peak sales for HuMab-5B1 could reach $700+MM.

Yale Jen, Ph.D.
yjen@laidlawltd.com

Figure 12: HuMab-5B1 in 1st line pancreatic cancer revenue model

HuMab-5B1 in Pancreatic Cancer Revenue Model	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total U.S. pancreatic cancer incidences	52,598	53,072	53,549	54,031	54,517	55,008	55,503	56,003	56,507
% of sialyl Lewis (sLea) positive	90%	90%	90%	90%	90%	90%	90%	90%	90%
$sLea^+$ pancreatic cancer patients	47,338	47,764	48,194	48,628	49,066	49,507	49,953	50,402	50,856
% Metastatic/ Advanced Pts	80%	80%	80%	80%	80%	80%	80%	80%	80%
sLea+ Metastatic/ Advanced patients	37,871	38,212	38,555	38,902	39,253	39,606	39,962	40,322	40,685
% of 1st-line sLea+ pancreatic cancer patients	67%	67%	67%	67%	67%	67%	67%	67%	67%
1st-line sLea+ pancreatic cancer patients	25,373	25,602	25,832	26,065	26,299	26,536	26,775	27,016	27,259
% of 2nd-line sLea+ pancreatic cancer patients	50%	50%	50%	50%	50%	50%	50%	50%	50%
2nd-line sLea+ pancreatic cancer patients	12,687	12,801	12,916	13,032	13,150	13,268	13,387	13,508	13,629
% of 2nd-line sLea+ pancreatic cancer patients	40%	40%	40%	40%	40%	40%	40%	40%	40%
3rd-line sLea+ pancreatic cancer patients	5,075	5,120	5,166	5,213	5,260	5,307	5,355	5,403	5,452
% of 1st-line patients treated		10%	18%	24%	29%	32%	34%	35%	36%
1st-line patients treated		2,560	4,650	6,256	7,627	8,491	9,103	9,455	9,813
HuMab-5B1 annual treatment costs ($)		72,000	72,720	73,447	74,182	74,923	75,673	76,429	77,194
U.S. HuMab-5B1 in pancreatic cancer 1st-line sales ($MM)	**0**	**184**	**338**	**459**	**566**	**636**	**689**	**723**	**758**

Source: Laidlaw & Company estimates

HuMab-5B1-PET in pancreatic cancer revenue model. Our model (Figure 13) assumes that HuMab-5B1-PET could potentially reach the market in 2020 if the pivotal study meets its endpoints and the agent receives FDA approval. We assume annual costs per pancreatic cancer patient of $1,600 (with assumption that each patient might on average take 2.5 PET scans per year). We estimate total annual U.S. peak sales for HuMab-5B1-PET could reach $30+MM. Given the imaging agent industry is highly concentrated, we project the company could license HuMab-5B1-PET to a partner and earn a significant royalty payment (we assume 35%).

Figure 13: HuMab-5B1-PET in pancreatic cancer revenue model

HuMab-5B1-PET in Pancreatic Cancer Scan Revenue Model	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total U.S. pancreatic cancer incidences	52,749	53,408	54,076	54,752	55,436	56,129	56,831	57,541	58,260	58,988	59,726
% of HuMab-5B1-PET users	5%	11%	18%	22%	25%	27%	28%	29%	29%	29%	30%
HuMab-5B1-PET users	2,637	5,875	9,734	12,045	13,859	15,155	15,913	16,687	17,012	17,396	17,858
HuMab-5B1-PET costs per scan ($)	650	658	666	675	683	692	700	709	718	727	736
HuMab-5B1-PET scan per patient	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
HuMab-5B1-PET scan per year ($)	1,625	1,645	1,666	1,687	1,708	1,729	1,751	1,773	1,795	1,817	1,840
U.S. HuMab-5B1-PET sales ($MM)	**4**	**10**	**16**	**20**	**24**	**26**	**28**	**30**	**31**	**32**	**33**
HuMab-5B1-PET royalties ($MM)	**1.5**	**3.4**	**5.7**	**7.1**	**8.3**	**9.2**	**9.8**	**10.4**	**10.7**	**11.1**	**11.5**

Source: Laidlaw & Company estimates

Yale Jen, Ph.D.
yjen@laidlawltd.com

Two Therapeutic Cancer Vaccines Could Represent Potential Upsides

The sarcoma and ovarian cancer vaccines are currently in clinical development

In addition to the HuMab-5B1 antibody franchise, MBVX also has two legacy therapeutic cancer vaccines in development. The first is a sarcoma vaccine and the second is an ovarian cancer vaccine. Both vaccines were developed at the MSKCC and were exclusively licensed to MBVX in 2008. Both vaccines are considered as adjuvant therapy with antigens against carbohydrate molecules.

MBVX also has two legacy therapeutic cancer vaccines in development. Phase II top-line overall survival results for both the Sarcoma and ovarian cancer vaccines could be available in late 2016.

Sarcoma vaccine Phase II top-line overall survival (OS) results could also be available in late 2016. MBVX initiated a randomized, multicenter, double-blind Phase II clinical trial (n=136) in mid-2010 evaluating a therapeutic vaccine in stage IV sarcoma metastatic patients whose tumors were cleared after surgery. Patients were vaccinated 10 times subcutaneously over a treatment period of 84 weeks, and the study was powered to show 50% improvements in PFS and overall survival (OS). Patients were randomized to receive either vaccine/adjuvant or adjuvant alone. Patient recruitment has completed and all patients have received all vaccinations. The vaccine has induced IgM and IgG antibodies, which are capable of killing targeted cancer cells. The major antigens for the sarcoma vaccine are GD2, GD3 and GM2 conjugated to Keyhole limpet hemocyanin (KLH).

Although the DSMB concluded that the study did not reach statistical significance for its primary efficacy endpoint of a 50% improvement in PFS; MBVX discussed with the FDA prior to the commencement of the study to consider overall survival as the primary endpoint for the measurement of efficacy. MBVX estimates that the new top-line data of overall survival (OS) could be available in late 4Q16.

Ovarian cancer vaccine Phase II top-line overall survival (OS) results could also be available in late 2016. MBVX initiated a randomized, multicenter, double-blind Phase II clinical trial (n=164) in mid-2010 evaluating a therapeutic vaccine in metastatic ovarian cancer patients who underwent cyto-reductive surgery and chemotherapy and achieved clinical remission as defined by CA-125 levels and no evidence of disease by CT scan. Patients were vaccinated 10 times subcutaneously over a treatment period of 84 weeks, and the study was powered to show 50% improvements in PFS and overall survival. Patients were randomized to receive either vaccine/adjuvant or adjuvant alone. Patient recruitment is completed and all patients have received all vaccinations. The

Yale Jen, Ph.D.
yjen@laidlawltd.com

vaccine also has induced IgM and IgG antibodies, which are capable of killing targeted cancer cells. The major antigens for the ovarian cancer vaccine are GM2, Globo H, TF (Thompson Friedreich antigen) and the combo of muc-1 glycosylated with TN, and all antigens are conjugated to Keyhole limpet hemocyanin (KLH).

Gynecologic Oncology Group (GOG) could report ovarian cancer vaccine Phase II trial PFS (primary endpoint) results at the 2016 ASCO conference (June 3 – 7, 2016).

The Phase II study has not achieved a sufficient number of events to trigger the mid-point analysis. We estimate the Gynecologic Oncology Group (GOG) could report the PFS (primary endpoint) results at the 2016 ASCO conference (June 3 – 7, 2016). MBVX also anticipates top-line results of overall survival could potentially be available in late 2016.

Should OS outcomes of either or both vaccines be positive, MBVX intends to discuss with prospective partners to out-license the vaccines for future developments.

We believe both vaccines are a potential upside, not a core asset for MBVX. We believe it remains too early to forecast the efficacy of these cancer vaccines since there is no precedent for successful cancer vaccine treatment against carbohydrate-based antigens.

Although the two ongoing cancer vaccines have the potential to become an important element in cancer treatment armamentarium, we view these assets as a potential upside, not a core asset for MBVX. This is based on our belief that it remains too early to forecast the efficacy of these cancer vaccines (especially PFS) since there is no precedent for successful cancer vaccine treatment against carbohydrate-based antigens.

One recent example supports our cautious opinion is the recent development of Taiwan based OBI Pharma, which in February 2016 reported that their carbohydrate antigen-based breast cancer vaccine, OBI-822/82 has failed to meet its primary endpoint of PFS improvement from a Phase II/III trial. OBI-822 is comprised of synthetic glycoproteins, including tumor-associated carbohydrate antigen (TACA), Globo H and conjugated via covalent bonds to KLH. OBI-821 is also licensed from MSKCC. During the Phase II/III trial (NCT01516307), previously treated metastatic breast cancer patients (n=349) were vaccinated 9 times subcutaneously over a treatment period of 41 weeks, with a disease progression follow-up period of up to two years, and a survival follow-up period up to five years. Patients were randomized (2:1) between the OBI-822 treatment and the control group.

Commercial opportunities of sarcoma and ovarian cancer vaccines. Sarcomas are a rare group of malignant tumors that develop in soft tissues and bone. Based on the data from the NIH, the annual incidences of soft tissue sarcoma and bone sarcomas are 12,000 and 3,000, respectively. The overall prevalence of sarcoma in the U.S. is approximately 100,000. Prognosis of sarcomas is relatively poor, with more than 6,000 deaths (4,700 and 1,500 from soft tissue and bone sarcomas, respectively) each year. The recurrence rates are of 30% to 50% depending on the different subtype of sarcoma. Based on a modest $35,000 costs per patient, annual sales for a sarcoma treatment vaccine could potentially exceed $200MM, in our estimate.

For ovarian cancer, the estimated annual incidence is 21,290 and estimated prevalence is 192,446 in the U.S. in 2015 according to the data published by

Yale Jen, Ph.D.
yjen@laidlawltd.com

SEER of NIH. The Prognosis of ovarian cancer is also relatively poor, with an estimated 14,180 deaths in 2015[3]. The five-year survival rate is 46%. Based on a modest $40,000 costs per patient, annual sales for an ovarian cancer treatment vaccine could potentially exceed $300MM, in our estimate.

One of the unique aspects of MBVX's product development is its high focus on carbohydrate-based targets (sLea or GD2). By comparison, proteins are the majority of therapeutic targets (whether by using protein or small molecular compounds as a therapeutic) for drug development despite the fact that carbohydrates play an important role in a vast array of biological processes. Besides heparins, therapeutics of carbohydrates-based or -targeted are rather limited. Figure 14 illustrates selected carbohydrate-focused drug developments.

Figure 14: Selected carbohydrate-focused drug developments

Product	Developer	Ticker	Indication	Stage	Target	Type	Comments
Unituxin (Dinutiximab)	United Therapeutics Europe	UTHR	Neuroblastoma (pediatric)	Approved	GD2	Mab	Approved in the U.S. on May 10, 2015
APN311	Apeiron Biologics AG		Neuroblastoma (pediatric)	Filing	GD2	Mab	
Algenpantucel-L	NewLink Genetics	NLNK	Pancreatic cancer	Phase III	galactosylalpha-1,3-galactose	Vaccine	
OBI-822	OBI Pharma	TWO: 4174	Breast cancer	Phase II/III	TACA/Globo H	Vaccine	Did not meet primary endpoint of PFS
Cvac	Prima BioMed	PBMD	Ovarian cancer	Phase IIb	Muc1	Vaccine	Seek partnership for further development
OBI-822	OBI Pharma	TWO: 4174	Ovarian cancer	Phase II	TACA/Globo H	Vaccine	
KW2871	Life Sciences Pharmaceuticals		Melanomas	Phase II	GD3	Mab	
TG4010	Transgene	TNG FP	Non-small cell lung cancer (NSCLC)	Phase II	Muc1	Vaccine	
Oregovomab	Quest PharmaTech	QPT	Ovarian cancer	Phase II	CA125	Mab	
CV-301	Bavarian Nordic	BAVA	Bladder cancer	Phase II	CEA/Muc1	Vaccine	
Immucin	Vaxil BioTherapeutics	VXL	Multiple myeloma	Phase II	Muc1	Vaccine	
BMS-986012	Bristol-Myers Squibb	BMY	Small Cell Lung Cancer (SCLC)	Phase I/II	fucosyl GM1	Mab	
BIW-8962	Kyowa Hakko Kirin	TSE: 4151	Mesothelioma / cancer	Phase I/II	GM2	Mab	
OBI-833	OBI Pharma	TWO: 4174	Epithelial cancer	Phase I	Globo H	Vaccine	
MAG-Tn3	Institut Pasteur		Breast cancer	Phase I	Tn/sTn/TF	Vaccine	
BI 1361849 (CV9202)	Boehringer Ingelheim / CureVac		Non-small cell lung cancer (NSCLC)	Phase I	Muc1/ MAGEC1, 2	Vaccine	
DMUC4064A	Roche (Genentech)	RHHBY	Ovarian and pancreatic cancer	Phase I	Muc16	Mab (ADC)	
AR20.5	Quest PharmaTech	QPT	Pancreatic cancer	Phase I	Muc1	Mab	
PRX-003	Prothena	PRTA	Psoriasis	Phase I	Muc18	Mab	
SAR-566658	Sanofi / ImmunoGen	SNY/IMGN	Solid tumors	Phase I	CA6	Mab (ADC)	
GO-203-2c	Genus Oncology		Acute myeloid leukemia	Phase I	Muc1	Inhibitor	Peptide inhibitor
Bispecific antibodies	Sutro Biopharma		Neuroblastoma	Preclinical	GD2	Mab	
JCAR020	Juno Therapeutics	JUNO	Solid tumor	Preclinical	Muc16	CAR T	

Source: Laidlaw & Company and MabVax analyses

[3] *http://seer.cancer.gov/statfacts/html/ovary.html*

Yale Jen, Ph.D.
yjen@laidlawltd.com

Financial projections and valuation

In their 2015 10k filing, MBVX indicated it ended 2015 with $4MM cash. With $5MM received on January 2016 from Oxford Finance as part of $10MM senior secured term loan, we estimate the company has cash of ~$10MM (pro forma), which could be sufficient for the company's operation deep into late 2016. In addition, MBVX is also entitled to draw the second tranche ($5MM) of the loan once the company has fulfilled some of the pre-determined terms.

Our probability-adjusted DCF analysis suggested a one-year target value for MBVX of $2.55 based on cash flow until 2027 with an assumed terminal value multiple of three and a probability adjustment of 25%.

Probability-adjusted DCF analysis

Cash driven NPV	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Revenue	1	1	1	1,500	3,383	5,675	191,443	346,416	468,621	575,517	646,565
R&D	10,024	11,928	14,194	17,175	20,095	21,502	23,007	24,617	26,340	28,184	30,157
SG&A	8,490	9,339	10,180	10,994	11,764	22,352	46,969	49,318	51,784	54,373	57,092
Operating income	(18,513)	(21,266)	(24,373)	(26,669)	(28,475)	(38,178)	93,817	221,761	321,580	408,095	463,884
Net income	(18,513)	(21,266)	(24,373)	(26,669)	(28,475)	(38,178)	59,105	139,710	202,595	257,100	292,247
Period	0.7	1.7	2.7	3.7	4.7	5.7	6.7	7.7	8.7	9.7	10.7
NPV	(16,577)	(16,345)	(16,080)	(15,103)	(13,842)	(15,930)	21,169	42,951	53,462	58,237	56,822

Total DCF	138,765
Terminal value	181,772
Cash (2Q17)	7,000
Total valuation ($ '000)	327,537
Probability adjustment	25%
Value per share	**$2.55**
Shares outstanding (2017)	31,448
Discount rate	17%
Terminal value multiple	3

Source: Laidlaw & Company estimates

Our probability-adjusted-PV-driven, sum-of-the-parts analysis illustrates a breakdown of value for each potential value driver, with HuMab-5B1, HuMab-5B1-PET and two cancer vaccines in the pipeline accounting for 80%, 11% and 1% of the total value, respectively. This analysis suggested a 12-month target price of $2.55.

NPV driven sum-of-the-parts analysis

HuMab-5B1	Pancreatic cancer- 1st line		
	Adjusted NPV =	$69.2	
	PV per share =	$2.03	80%
HuMab-5B1-PET	Pancreatic cancer		
	Adjusted NPV =	$9.6	
	PV per share =	$0.28	11%
Cancer vaccines	Sarcoma /ovarian cancer		
	Adjusted NPV =	$1.0	
	PV per share =	$0.03	1%
Cash			
	Adjusted NVP =	$7.0	
	NVP per share =	$0.21	8%
	Total =	$2.55	100%

Source: Laidlaw & Company estimates

Yale Jen, Ph.D.
yjen@laidlawltd.com

For the peer comparable analysis, we have chosen a group of oncology-focused companies (especially early stage developers) as comparable peers. As such, our peer comparable analysis suggested a 12-month target price for MBVX of $2.60.

Comparable analysis

Company	Ticker	Rating	Target Price ($)	Price ($) (4/8/16)	Shares Outstanding (MM)	Market Cap ($ MM)	Cash ($ MM)	Debt ($ MM)	Tech Value ($ MM)	Most Advanced Development Stage	Major Indication
ImmunoCellular Therapeutics	IMUC	NR	NA	0.29	92	27	23	0	4	Phase II/III	Brain cancer
Idera Pharmaceuticals	IDRA	NR	NA	1.91	121	232	60	0	171	Phase II	DLBCL
Rexahn Pharmaceuticals	RNN	NR	NA	0.33	213	70	23	0	46	Phase I/II	Solid tumors
Ignyta	RXDX	NR	NA	8.17	32	264	132	0	132	Phase II	NSCLC, BCC
Kura Oncology	KURA	NR	NA	3.65	21	78	86	0	-8	Phase II	PTCL
ESSA Pharma	EPIX	NR	NA	3.25	27	89	20	0	69	Phase II	Prostate cancer
Affimed N.V.	AFMD	Buy	15.00	4.22	33	140	83	0	57	Phase I/II	HL, NHL
Prima BioMed	PBMD	NR	NA	0.94	65	61	7	0	55	Phase II	Breast cancer
Sorrento Therapeutics	SRNE	NR	NA	6.65	38	255	136	4	123	Phase II	Multiple
Average						202	*68*	*3*	72		
MabVax Therapeutics	MBVX	Buy	2.50	0.70	29	20	4	0	17	Phase I/II	Pancreatic cancer

MBVX share fair value matching its Phase I/II oncology peers = $2.60

Potential upside = 272%

Source: Company reports and Laidlaw & Company estimates

Together, we assigned our blended 12-month target price for MBVX of **$2.50**.

Yale Jen, Ph.D.
yjen@laidlawltd.com

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.

Yale Jen, Ph.D.
yjen@laidlawltd.com

Management

David Hansen, has been MabVax Therapeutics CEO and Chairman of the Board of Directors since 2014, in addition to having cofounded the company in 2006. Prior to cofounding MabVax, he served as CEO of Telik. Prior to Telik from 1998 to 2006, Mr. Hansen served as Vice President of Commercial Development and Senior Vice President of Corporate Development at Avanir Pharmaceuticals. Additionally, he served as President and Chief of Operations Officer of Avanir's subsidiary Xenerex Biosciences. Prior, from 1989 to 1999, Mr. Hansen served in multiple management roles at Dura Pharmaceuticals. Prior, he had additional management experience with Schering-Plough, Key Pharmaceuticals and Bristol-Myers Squibb. He holds a B.S. degree in Chemistry from University of Oregon.

Gregory P. Hanson, MBA has served as CFO of MabVax Therapeutics since 2014. Prior to joining MabVax from 2008 to 2014, Mr. Hanson served as the Managing Director of First Cornerstone. Prior from 2008 to 2010, Mr. Hanson served as Senior Vice President of Brinson Patrick Securities and also served on the firm's Life Sciences Advisory Board. From 2006 to 2008, he was CFO of Mast Therapeutics. Prior to Mast from 1998 to 2006, Mr. Hanson served as CFO of Avanir Pharmaceuticals. Mr. Hanson was also the past President and continues as a Board Member of San Diego Financial Executives International. Mr. Hanson holds an MBA degree rom the University of Michigan.

Wolfgang W. Scholz, Ph.D. serves as Vice President of Antibody Discovery and as a cofounder of MabVax Therapeutics. Prior from 2000 to 2008, Dr. Scholz was Senior Director at Avanir Pharmaceuticals and cofounder of its subsidiary Xenerex Biosciences. Prior, Dr. Scholz held positions with increasing responsibilities at Tanabe Research Laboratories. Dr. Scholz holds a Ph.D. degree from the University of Kiel, Germany.

Paul W. Maffuid, Ph.D. has served as VP of Pharmaceutical Development and Operations of MabVax since July 2014. Prior to joining MabVax from 2011 to 2014, he was Executive Vice President of Pharma Operations at AAIPharma Services Corporation. Prior to AAIPharma, He managed Biopharmalogics, Inc. From 2008 to 2009, He was Senior VP of Irvine Pharmaceutical Services. Prior from 2001 to 2008, Dr. Maffuid was VP of Pharmaceutical Development for Arena Pharmaceuticals. He also held management roles at Magellan Laboratories (2000–2001), Cabrillo Laboratories (1998–2000) and Amylin Pharmaceuticals (1994–1998). Dr. Maffuid holds a Ph.D. degree from the University of California, San Diego.

Philip O. Livingston, M.D. served as Chief Science Officer of MabVax Therapeutics since 2012. Prior to MabVax until 2011, Dr. Livingston was Professor of Medicine in the Joan and Sanford Weill Medical College at Cornell University, and Attending Physician and Member in Memorial Sloan-Kettering Cancer Center for more than 30 years. Dr. Livingston holds an M.D. degree from Harvard Medical School.

Yale Jen, Ph.D.
yjen@laidlawltd.com

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%

Yale Jen, Ph.D. 212-953-4978

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

Yale Jen, Ph.D.
yjen@laidlawltd.com

MabVax Therapeutics – Balance Sheet

($'000)	2013	2014	1Q15	2Q15	3Q15	4Q15	2015	1Q16E	2Q16E	3Q16E	4Q16E	2016E
Assets												
Cash and cash equivalents	354	1,477	4,739	7,184	4,539	4,084	4,084	6,121	2,678	4,578	6,151	6,151
Short term investments	0	0	-	-	-	-	0	-	-	-	-	0
Liquid assets	***354***	***1,477***	***4,739***	***7,184***	***4,539***	***4,084***	***4,084***	***6,121***	***2,678***	***4,578***	***6,151***	***6,151***
Grants receivable		84	240	137	133	758	758	348	195	0	0	0
Prepaid expenses, other current assets, and deferred financing costs	44	349	303	242	1,010	467	467	375	405	425	453	453
Total Current Assets	399	1,911	5,282	7,562	5,682	5,309	5,309	6,844	3,278	5,003	6,604	6,604
Property and equipment, net	24	57	82	82	110	135	135	135	135	135	135	135
Goodwill and other long term assets	14	6,837	6,837	6,837	6,953	6,953	6,953	6,952	6,932	6,452	6,162	6,162
Total Assets	**437**	**8,805**	**12,200**	**14,481**	**12,744**	**12,397**	**12,397**	**13,932**	**10,345**	**11,590**	**12,901**	**12,901**
Liabilities and Stockholders' Equity												
Accounts payable	67	1,313	2,066	982	2,332	3,002	3,002	2,985	3,021	3,121	3,289	3,289
Accrued compensation	169	230	319	451	489	563	563	560	601	625	647	647
Accrued clinical operations and site costs	774	494	517	360	373	391	391	400	413	422	437	437
Related party liabilities	240	0	-	-	-	-	0	-	-	-	-	0
Accrued lease contingency fee		591	591	591	591	591	591	591	591	591	591	591
Other accrued expenses and warrant liability	25	338	446	553	1,199	412	412	431	429	449	472	472
Total current liabilities	1,275	2,966	3,939	2,936	4,984	4,958	4,958	4,967	5,055	5,208	5,437	5,437
Total Liabilities	1,275	2,966	3,939	2,936	4,984	4,958	4,958	4,967	5,055	5,208	5,437	5,437
Series E preferred stock	12,525	1,838	-	0	0	0	0	-	-	-	-	-
Series A and B preferred stock		4,030	-	-	-	-	-	-	-	-	-	-
Series C and D preferred stock		1	2	2	2	2	2	2	2	2	2	2
Common stock, $0.01 par value	2	28	125	252	259	284	284	303	313	323	363	363
Additional paid-in capital	608	24,492	53,078	62,631	64,119	67,754	67,754	72,754	72,754	77,754	82,754	82,754
Accumulated deficit	(13,973)	(24,550)	(44,944)	(51,339)	(56,620)	(60,602)	(60,602)	(64,094)	(67,779)	(71,697)	(75,655)	(75,655)
Total Stockholders' Equity	(837)	5,839	8,262	11,546	7,760	7,439	7,439	8,965	5,290	6,382	7,464	7,464
Total Liabilities and Stockholders' Equity	**437**	**8,805**	**12,200**	**14,481**	**12,744**	**12,397**	**12,397**	**13,932**	**10,345**	**11,590**	**12,901**	**12,901**

Yale Jen, Ph.D. 212-953-4978

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

Yale Jen, Ph.D.
yjen@laidlawltd.com

MabVax Therapeutics – Cash Flow Statement

($'000) Cash Flows From Operating Activities:	2013	2014	1Q15	2Q15	3Q15	4Q15	2015	1Q16E	2Q16E	3Q16E	4Q16E	2016E
Net income (loss)	(4,045)	(7,918)	(2,447)	(6,396)	(5,280)	(3,982)	(18,105)	(3,493)	(3,684)	(3,918)	(3,958)	(15,053)
Adjustments to reconcile net loss to net cash used in operating activities:												
Depreciation and amortization	35	12	4	5	6	6	21	6	6	6	6	24
Stock-based compensation	327	605	83	1,389	1,495	1,497	4,464	40	50	510	350	950
Change in fair value of warrant liability, purchase rights and warrant purchase rights		(475)	(20)	0	0	0	(20)	0	0	0	0	0
Issuance of restricted common stock for services		0	0	1,958	0	0	1,958	0	0	0	0	0
Changes in operating assets and liabilities:												
Prepaid expenses and other current assets	13	(117)	44	169	(405)	(8)	(199)	92	(30)	(20)	(28)	15
Prepaid expenses - clinical operations	540	0	0	0	0	0	0	0	0	0	0	0
Grants receivable	20	(84)	(155)	103	3	(624)	(673)	409	153	195	0	758
Accounts payable	22	1,246	753	(1,085)	1,081	882	1,631	(17)	36	100	168	286
Other receivables		28	2	(108)	108	0	2	(1)	(1)	(1)	(1)	(4)
Accrued clinical operations and site costs	128	(279)	23	(157)	14	18	(103)	9	13	9	15	46
Accrued compensation	80	(789)	88	132	38	74	332	(3)	41	24	22	85
Related party liabilities	45	0	0	0	0	0	0	0	0	0	0	0
Other accrued expenses	(16)	109	200	107	329	(470)	166	19	(2)	20	23	61
Net Cash from Operating Activities	**(2,851)**	**(7,662)**	**(1,424)**	**(3,882)**	**(2,612)**	**(2,608)**	**(10,525)**	**(2,938)**	**(3,418)**	**(3,075)**	**(3,401)**	**(12,833)**
Cash flows from investing activities:												
Acquisitions of property and equipment	(9)	(45)	(29)	(6)	(33)	(10)	(78)	(25)	(25)	(25)	(25)	(100)
Proceeds from acquisition of Telik, Inc.		1,497										
Net Cash from Investing Activities	**(9)**	**1,452**	**(29)**	**(6)**	**(33)**	**(10)**	**(78)**	**(25)**	**(25)**	**(25)**	**(25)**	**(100)**
Cash Flows From Financing Activities:												
Issuances of preferred stock, net of issuance costs	2,793	2,974	0	0	2,500	0	2,500	0	0	0	0	0
Issuances of common stock, net of issuance costs		2,884	4,715	6,332	(2,500)	2,163	10,710	0	0	0	5,000	5,000
Proceeds from exercise of stock options		0	0	1	0	0	1	0	0	0	0	0
Proceeds from exercise of Series B warrant		2	0	0	0	0	0	0	0	0	0	0
Proceeds from exercise of Series C-1 warrant		1,473	0	0	0	0	0	0	0	0	0	0
Proceeds fromsenior secured term loan								5,000	0	5,000	0	10,000
Repayments of credit facility		0	0	0	0	0	0	0	0	0	0	0
Net proceeds from issuance of Series B redeemable convertible preferred stock		0	0	0	0	0	0	0	0	0	0	0
Net Cash Provided by Financing Activities	**2,793**	**7,332**	**4,715**	**6,332**	**0**	**2,163**	**13,211**	**5,000**	**0**	**5,000**	**5,000**	**15,000**
Net increase (decrease) in cash	**(67)**	**1,123**	**3,262**	**2,444**	**(2,645)**	**(455)**	**2,607**	**2,037**	**(3,443)**	**1,900**	**1,574**	**2,067**
Cash at beginning of period	421	354	1,477	4,739	7,184	4,539	1,477	4,084	6,121	2,678	4,578	4,084
Cash at end of period	**354**	**1,477**	**4,739**	**7,184**	**4,539**	**4,084**	**4,084**	**6,121**	**2,678**	**4,578**	**6,151**	**6,151**

Yale Jen, Ph.D. 212-953-4978

Source: Bloomberg LP; Company reports; Laidlaw & Company estimate

Yale Jen, Ph.D.
yjen@laidlawltd.com

DISCLOSURES:

ANALYST CERTIFICATION

The analyst responsible for the content of this report hereby certifies that the views expressed regarding the company or companies and their securities accurately represent his personal views and that no direct or indirect compensation is to be received by the analyst for any specific recommendation or views contained in this report. Neither the author of this report nor any member of his immediate family or household maintains a position in the securities mentioned in this report.

EQUITY DISCLOSURES

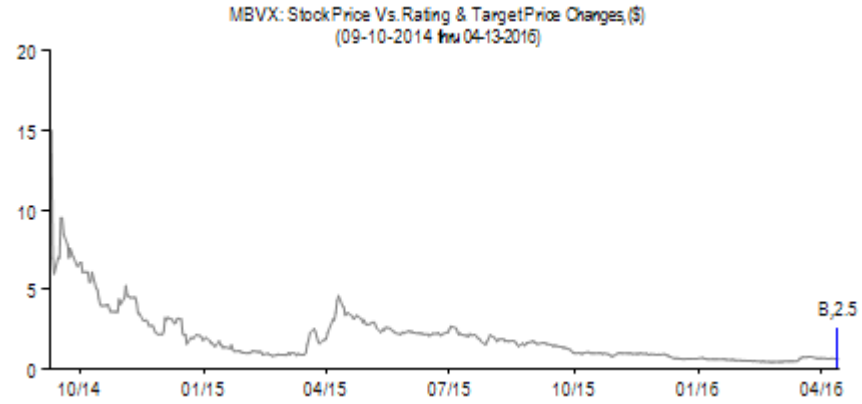
For the purpose of ratings distributions, regulatory rules require the firm to assign ratings to one of three rating categories (i.e. Strong Buy/Buy-Overweight, Hold, or Underweight/Sell) regardless of a firm's own rating categories. Although the firm's ratings of Buy/Overweight, Hold, or Underweight/Sell most closely correspond to Buy, Hold and Sell, respectively, the meanings are not the same because our ratings are determined on a relative basis against the analyst sector universe of stocks. An analyst's coverage sector is comprised of companies that are engaged in similar business or share similar operating characteristics as the subject company. The analysis sector universe is a sub-sector to the analyst's coverage sector, and is compiled to assist the analyst in determining relative valuations of subject companies. The composition of an analyst's sector universe is subject to change over time as various factors, including changing market conditions occur. Accordingly, the rating assigned to a particular stock represents solely the analyst's view of how that stock will perform over the next 12-months relative to the analyst's sector universe.

Additional information available upon request.

‡ Laidlaw & Company has received compensation from the subject company for investment banking services in the past 12 months and expects to receive or intends to seek compensation for investment banking services from the company in the next three months.
The member or affiliate managed or co-managed a public offering of securities for the subject company in the past 12 months;

RATINGS INFORMATION

Rating and Price Target Change History



3 Year Rating Change History

Date	Rating	Closing Price ($)
04/13/2016	Buy (B)	0.65*

3 Year Price Change History

Date	Target Price ($)	Closing Price, ($)
04/13/2016	2.50	0.65*

** Previous Close4/12/2016*

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%

ADDITIONAL COMPANIES MENTIONED

Juno Therapeutics Inc. (JUNO – Not Rated)
Celgene Corporation (CELG – Not Rated)
Merrimack Pharmaceuticals (MACK – Not Rated)
OBI Pharma (4174.TWO – Not Rated)
United Therapeutics Corporation (UTHR – Not Rated)
NewLink Genetics Corporation (NLNK – Not Rated)
Prima Biomed Ltd. (PBMD – Not Rated)
Transgene (TNG FP – Not Rated)

Quest PharmaTech, Inc. (QPT – Not Rated)
Bavarian Nordic A/S (BAVA – Not Rated)
Vaxil Bio (VXL – Not Rated)
Bristol-Myers Squibb Company (BMY – Not Rated)
Kyowa Hakko Kirin (4151 – Not Rated)
Roche Holding AG (RHHBY – Not Rated)
Prothena Corporation plc (PRTA – Not Rated)
Sanofi (SNY – Not Rated)
ImmunoGen, Inc. (IMGN – Not Rated)
ImmunoCellular Therapeutics (IMUC – Not Rated)
Idera Pharmaceuticals (IDRA – Not Rated)
Rexahn Pharmaceuticals (RNN – Not Rated)
Ignyta (RXDX – Not Rated)
Kura Oncology (KURA – Not Rated)
ESSA Pharma (EPIX – Not Rated)
Affimed N.V. (AFMD – Buy)
Sorrento Therapeutics (SRNE – Not Rated)

ADDITIONAL DISCLOSURES

As of the date of this report, neither the author of this report nor any member of his immediate family or household maintains an ownership position in the securities of the company (ies) mentioned in this report.

This report does not provide individually tailored investment advice and has been prepared without regard to the individual financial circumstances and objectives of persons who receive it. Laidlaw & Co (UK), Ltd. recommends that investors independently evaluate particular investments and strategies, and encourages investors to seek the advice of a financial adviser. The appropriateness of a particular investment or strategy will depend on an investor's individual circumstances and objectives. The securities, instruments, or strategies discussed in this report may not be suitable for all investors, and certain investors may not be eligible to purchase or participate in some or all of them. This report is not an offer to buy or sell or the solicitation of an offer to buy or sell any security/instrument or to participate in any particular trading strategy.

Associated persons of Laidlaw & Co (UK), Ltd not involved in the preparation of this report may have investments in securities/instruments or derivatives of securities/instruments of companies mentioned herein and may trade them in ways different from those discussed in this report. While Laidlaw & Co (UK), Ltd., prohibits analysts from receiving any compensation. Bonus or incentive based on specific recommendations for, or view of, a particular company, investors should be aware that any or all of the foregoing, among other things, may give rise to real or potential conflicts of interest.

With the exception of information regarding Laidlaw & Co (UK), Ltd. this report is based on public information. Laidlaw & Co (UK), Ltd makes every effort to use reliable, comprehensive information, but we make no representation that it is accurate or complete and it should not be relied upon as such. Any opinions expressed are subject to change and Laidlaw & Co (UK), Ltd disclaims any obligation to advise you of changes in opinions or information or any discontinuation of coverage of a subject company. Facts and views presented in this report have not been reviewed by, and may not reflect information known to, professionals in other Laidlaw & Co (UK), Ltd business areas. Laidlaw & Co (UK), Ltd associated persons conduct site visits from time to time but are prohibited from accepting payment or reimbursement by the company of travel expenses for such visits. The value of and income from your investments may vary because of changes in interest rates, foreign exchange rates, default rates, prepayment rates, securities/instruments prices. market indexes, operational or financial conditions of companies or other factors. There may be time limitations on the exercise of options or other rights in securities/instruments transactions. Past performance is not necessarily a guide to future performance. Estimates of future performance are based on assumptions that may not be realized. If provided, and unless otherwise stated, the closing price on the cover page is that of the primary exchange for the subject company's securities/instruments.

Any trademarks and service marks contained in this report are the property of their respective owners. Third-party data providers make no warranties or representations of any kind relating to the accuracy, completeness, or timeliness of the data they provide and shall not have liability for any damages of any kind relating to such data. This report or any portion thereof may not be reprinted, sold or redistributed without the written consent of Laidlaw & Co (UK), Ltd. This report is disseminated and available primarily electronically, and, in some cases, in printed form.

The information and opinions in this report were prepared by Laidlaw & Co (UK), Ltd. For important disclosures, please see Laidlaw & Co (UK), Ltd.'s disclosure website at www.Laidlawltd.com, or contact your investment representative or Laidlaw & Co (UK), Ltd at 546 Fifth Ave, 5th Floor, New York, NY 10036 USA.

NOTES:

Yale Jen, Ph.D.
yjen@laidlawltd.com