Zacks Small-Cap Research

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Immunovaccine Inc. (V.IMV)

IMV: on track to advance clinical programs--Outperform

Current Recommendation	**Outperform**
Prior Recommendation	N/A
Date of Last Change	07/09/2012
Current Price (10/24/2012)	$0.35
Twelve- Month Target Price	**$0.75**

OUTLOOK

Immunovaccine Inc. (IMV) is a clinical stage biotech company focused on the development of its DepoVax™ vaccine adjuvanting platform technology. DepoVax is a unique vaccine delivery technology with very broad application and many advantages over existing vaccine technologies including long lasting and improved immune response.

IMV has built a diversified pipeline with candidates for multiple cancers and several infectious disease vaccines. DPX-0907 generated positive Phase I results and data from the DPX-Survivac Phase I trial will be available in 4Q12.

We rate the Company shares as Outperform based on its fundamentals.

SUMMARY DATA

52-Week High	**$0.62**
52-Week Low	**$0.27**
One-Year Return (%)	**N/A**
Beta	**4.06**
Average Daily Volume (sh)	**40,000**
Shares Outstanding (mil)	**64**
Market Capitalization ($mil)	**$22**
Short Interest Ratio (days)	**N/A**
Institutional Ownership (%)	**7.3**
Insider Ownership (%)	**4.4**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**N/A**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2012 Estimate	**N/A**
P/E using 2013 Estimate	**N/A**
Zacks Rank	**N/A**

Risk Level	**High,**
Type of Stock	**Small-Blend**
Industry	**Med-Biomed/Gene**
Zacks Rank in Industry	**N/A**

ZACKS ESTIMATES

Revenue
(in millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2011	0.00 A	0.00 A	0.00 A	0.00 A	0.00 A
2012	0.00 A	0.00 A	0.00 E	0.00 E	0.00 E
2013					0.00 E
2014					2.00 E

Earnings per Share
(EPS is operating earnings before non recurring items)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2011	-$0.03 A	-$0.04 A	-$0.03 A	-$0.03 A	-$0.13 A
2012	-$0.02 A	-$0.03 A	-$0.03 E	-$0.03 E	-$0.11 E
2013					-$0.11 E
2014					-$0.09 E

Zacks Projected EPS Growth Rate - Next 5 Years % **N/A**

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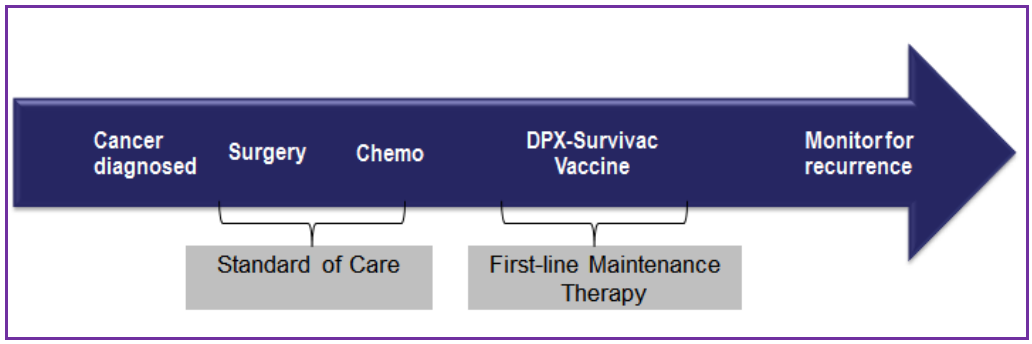
WHAT'S NEW

Positive Interim Results from Phase I Study of DPX-Survivac Reported

On October 9, 2012, Immunovaccine Inc. (IMV) announced **positive interim results** from the Company's **Phase I** clinical trial of DPX-Survivac, an ovarian cancer vaccine candidate.

As a reminder, Immunovaccine initiated a **Phase I** clinical trial of DPX-Survivac and vaccinated the first patient in December 2011. The Phase I clinical trial is being conducted in eight clinical sites in the US and Canada. The Phase I is an open label clinical trial designed to evaluate sequentially the safety of two DPX-Survivac dosing regimens in approximately 15 patients. The goal of the Phase I clinical trial is to establish the safety and immune activity of DPX-Survivac in patients with **advanced ovarian cancer**.

IMV intends to use DPX-Survivac alone or in combination with low dose oral cyclophosphamide as a **first line maintenance therapy** following standard surgery/ radiation/ chemotherapy. The therapeutic cancer vaccine is intended to stimulate an immune response to attack the circulating cancer cells that remain in a patient's body after surgery and radiation/chemotherapy. This treatment approach has the potential to combat micro-metastases and keep the cancer in remission and prevent metastasis.



Immunovaccine has completed the **first cohort** of the Phase I trial. The first cohort consists of three patients given three doses of DPX-Survivac over a period of six weeks. Results from the first cohort demonstrated that DPX-Survivac was well tolerated with no serious adverse events reported, and that the vaccine is immunogenic as a **monotherapy**.

Current interim results showed that, to date, all nine patients receiving DPX-**Survivac in combination with** cyclophosphamide produced a targeted immune response following only one or two vaccine administrations. Patients receiving a higher dose (0.5 mL) of DPX-Survivac in combination with cyclophosphamide (n=3) produced immune responses after only one vaccination and generally exhibited higher antigen specific immunity than those receiving the combination with a lower (0.1 mL) DPX-Survivac dose (n=6), suggesting dose-related activity. Importantly, patients in the two cohorts experienced consistent immune responses that were detected at two consecutive time points. Specifically, the first three patients enrolled in the 0.5 mL dose cohort in combination with low dose cyclophosphamide demonstrated an average stimulation factor of 350 times (350x) following the second vaccination, and in one patient greater than 850 times (850x), over baseline responses.

Additional results from the interim analysis showed that patients receiving DPX-Survivac without cyclophosphamide were capable of producing antigen specific immune responses. The interim analysis also showed the vaccine to be safe and well tolerated with no systemic side-effects or dose limiting toxicities reported to date. Adverse events were limited to expected local reactions at the site of vaccination.

Final results from the study, including a more extensive safety and immunogenicity analysis of all cohorts, are expected **by the end of the year**.

Phase II Trial of DPX-Survivac is on Schedule

Based on existing clinical data, Immunovaccine has already received clearance from U.S. FDA and Health Canada for the initiation of a Phase II trial of DPX-Survivac immediately following the completion of the ongoing Phase I study.

The **Phase II** trial will be a randomized, double-blinded, placebo-controlled study with a single vaccine dose selected based on the Phase I results. The Phase II trial will assess the clinical benefit of DPX-Survivac in patients with advanced ovarian cancer.

Phase I/II Clinical Design Cleared by US FDA and Health Canada	
Phase 1	**Phase 2**
Dose-finding Safety Study	Safety and Efficacy Study
Non-randomized	2:1 Randomized
Open Label	Double Blinded
Uncontrolled	Placebo Controlled
Primary endpoint: safety	Primary endpoint: Progression Free Survival
15 subjects	250 Subjects
9 USA & 2 Canadian Centers	Approx. 75 USA & 5 Canadian Centers
0.1 and 0.5 mL DPX-Survivac	Best dose DPX-Survivac
+/- immune modulation (cyclophosphamide)	+ immune modulation (cyclophosphamide)
9 weeks of Treatment	57 weeks of Treatment
Last follow up at 6 months	Last follow up at 18 months

DepoVax Cocaine Vaccine Shows Promise in Exploratory Study

On October 24, 2012, Immunovaccine announced **positive results** from a preliminary study of an anti-**cocaine vaccine** in collaboration with Weill Cornell Medical College. The vaccine, which added Immunovaccine's DepoVax adjuvanting technology to Weill Cornell's novel anti-cocaine vaccine (dAd5GNE), was being evaluated in rodents for its ability to produce antibodies capable of blocking cocaine from being delivered to the brain in an effort to prevent its physiological effect.

The study showed that the **DepoVax-enhanced cocaine vaccine** produced high levels of target antibodies that were able to sequester cocaine in the blood of immunized mice and block its delivery to the brain.

Immunovaccine plans to build on this proof of concept work and is currently evaluating opportunities to further develop the program. Further potential studies would aim to confirm these results and explore the duration of immunity produced by the vaccine. The aim of this program is to develop an anti-cocaine vaccine that is able to effectively induce and maintain a sufficient immune response without requiring frequent immunizations.

In March 2012, Immunovaccine and Weill Cornell announced a research agreement to explore the company's DepoVax platform technology with a vaccine being developed for treating cocaine addiction. The project builds on earlier cocaine vaccine work, funded by the National Institute on Drug Abuse (NIDA) of the National Institutes of Health (NIH), at Weill Cornell. The goal of this particular study was to evaluate the ability DepoVax to trigger a strong immune response with Weill Cornell's dAd5GNE vaccine.

There is a large market for cocaine vaccines. According to industry data, cocaine abuse is estimated to affect approximately 4.8 million Americans annually with an additional one million Americans using crack cocaine at least once each year. A safe and effective anti-cocaine vaccine has the potential to significantly address the healthcare and societal problem associated with cocaine abuse and addiction. There currently are no anti-cocaine vaccines approved by the FDA.

These positive findings have the potential to pave the way for a powerful and effective anti-cocaine vaccine that does not require frequent immunizations (a critical consideration for a treatment of this type). It is also important to note that there are currently no anti-cocaine vaccines approved for use so this represents a potentially first-of-its-kind vaccine development program.

KEY POINTS

- We maintain our Outperform rating on Immunovaccine (IMV). Our 12-month price target stays at $0.75 per share.

- IMV's key strength lies in its unique proprietary vaccine delivery and adjuvanting technology DepoVax™. DepoVax is a **lipid depot-based** vaccine delivery and enhancement technology, which produces a strong, long-lasting and high-quality immune response that has a specific and sustained immune effect.

- DepoVax is chemically stable and versatile, and can be used in various applications. Based on its DepoVax platform, IMV has built a diversified pipeline, which includes therapeutic cancer vaccines, infectious disease vaccines and animal health vaccines.

- Cancer vaccine DPX-0907 has completed **Phase I** studies, which demonstrated an excellent safety profile and initial antigen specific immune response. IMV is developing plans for further clinical trials for this candidate. Advancing clinical development of DPX-0907 through partnerships will create value for the Company and its shareholders.

- Second cancer vaccine candidate DPX-Survivac is also in **Phase I/II** trial. Initial data has demonstrated that DPX-Survivac is safe and well tolerated for humans and specific immune response has been observed. Full Phase I data will be available in 4Q12.

- In addition to therapeutic cancer vaccines, IMV is also developing vaccines for **infectious diseases** and **animal health**. Though these candidates are in preclinical studies, they will provide long term growth for the Company. Ongoing and prominent partnerships and collaborations for these two programs also boost its balance sheet by providing much needed funds for its operations.

- Current valuation is attractive. We encourage investors to collect shares at this point.

OVERVIEW

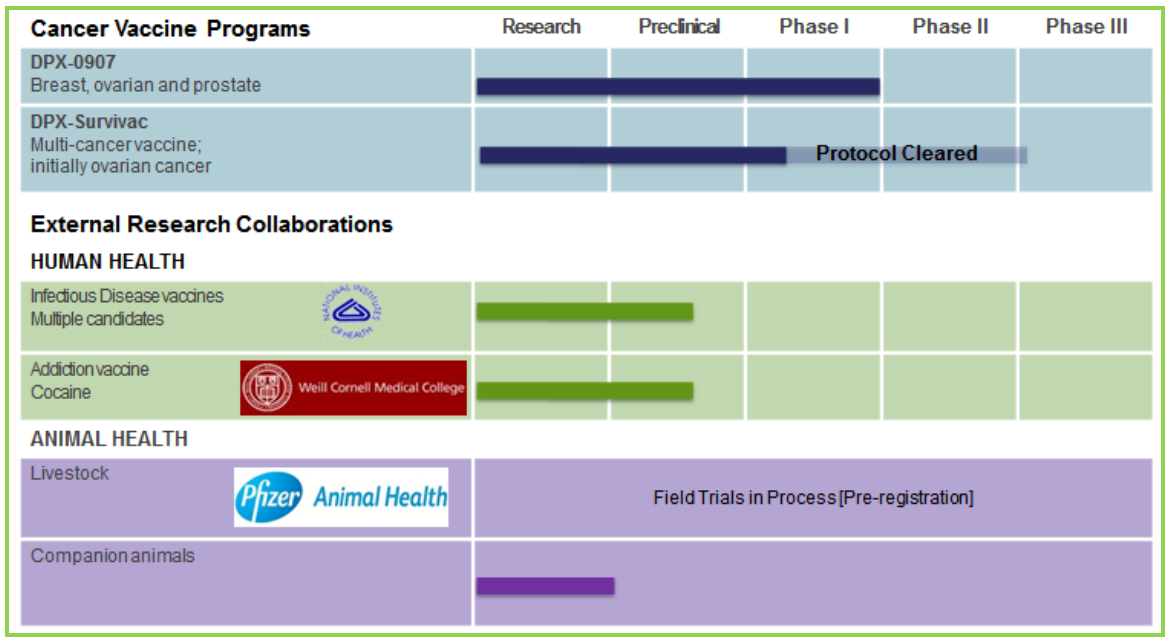
Immunovaccine (IMV) is a clinical stage biotechnology company focused on the development and advancement of its DepoVax™ vaccine-adjuvanting platform technology through therapeutic cancer and infectious diseases vaccine candidates.

IMV's core technology is the patented **DepoVax™** platform. DepoVax is a **vaccine delivery system**, which produces a strong, high-quality immune response that has a specific and sustained immune effect. Based on the DepoVax technology, IMV had established a diversified pipeline focused on therapeutic

cancer vaccines, **infectious disease** vaccines as well as vaccines for **animal health**. All of the Company's vaccines in human and animal health utilize this adjuvanting platform to improve their effectiveness against cancer and infectious disease and for drug addiction and animal health.

The Company's therapeutic cancer vaccines include two **Phase I** candidates: **DPX-0907** for breast, ovarian and prostate cancer, and **DPX-Survivac** for multiple cancers. IMV has research collaborations for infectious diseases and other cancer vaccine candidates with several leading biotechnology companies and research organizations, including the National Institutes of Health and the National Cancer Institute. In addition to the Company's human health vaccine strategy, it continues to capture value from animal health vaccine applications. IMV has ongoing partnerships with several of the world's leading animal health companies including Pfizer Animal Health, which has licensed the Company's vaccine delivery technology platform to develop vaccines for livestock.

Immunovaccine is headquartered in Halifax, Nova Scotia, Canada. The Company's common shares are listed on the TSX Venture Exchange (TSX-V) under the ticker symbol "**IMV**".



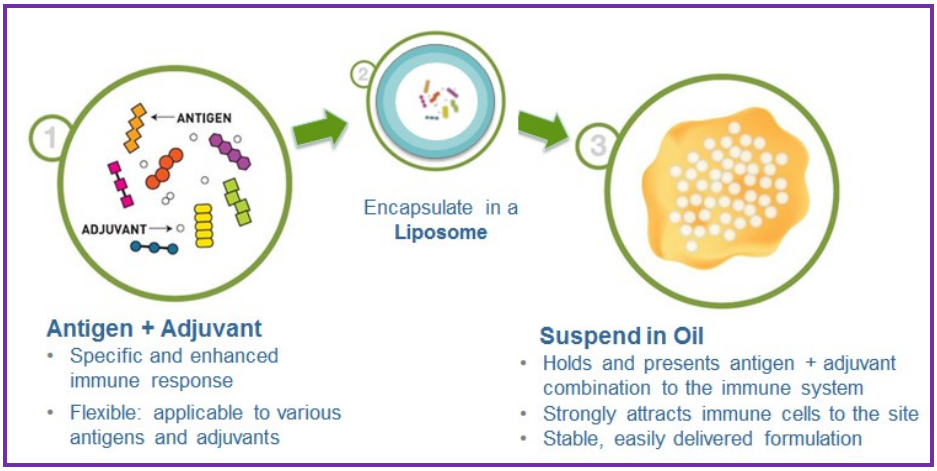
Source: Company presentation

INVESTMENT THESIS

DepoVax, a Novel Adjuvanting Technology Platform

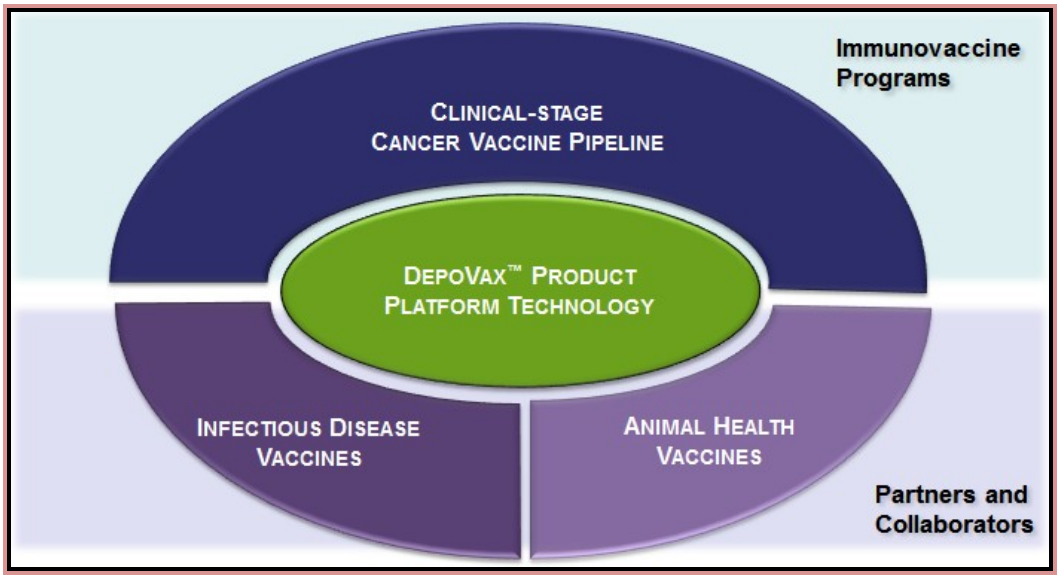
Central across IMV's entire product pipeline is the **DepoVax** delivery and adjuvanting technology. IMV's DepoVax technology is a **lipid depot-based** vaccine delivery and enhancement technology.

The patented DepoVax platform is a combination of antigens plus adjuvanting immune enhancers formulated in liposomes, and then suspended in oil. Due to its ability to retain the active components in the oil phase, the DepoVax platform creates a long-lasting "depot effect" that prolongs the exposure of vaccine antigens to immune cells at the site of vaccination. This is believed to elicit a potent humoral and/or cellular immunity with as little as one dose.



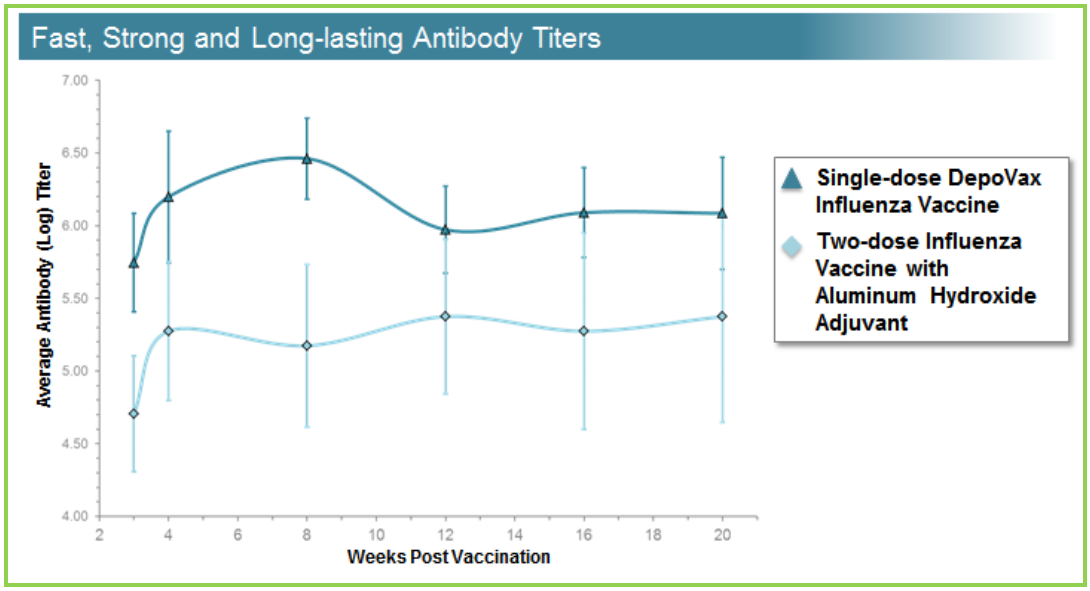
This unique formulation is also **chemically stable**. DepoVax-based products are lyophilized and anticipated to be stored in a dry format which provides the added benefit of an extended shelf life. The DepoVax formulation is easy to re-suspend and administer.

One of the significant advantages of the DepoVax platform is its **versatility**. The DepoVax platform can be combined with a variety of antigens, including recombinant proteins, synthetic peptides and nucleic acids, viruses and a wide range of adjuvants, which provides the flexibility to develop many different vaccine products using a single platform. This has enabled the Company to work with a variety of vaccine candidates, including those in cancer, infectious diseases and animal health.



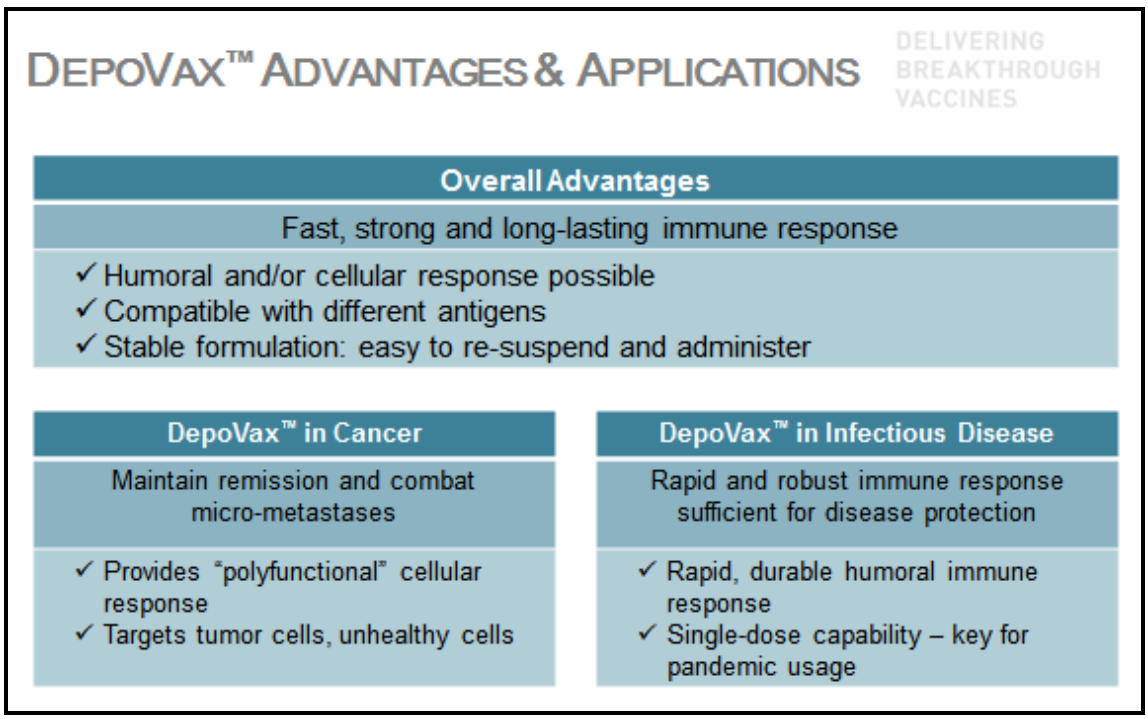
DepoVax-formulated vaccines have the ability to induce rapid and robust immune responses that are believed to protect against disease agents with as little as one dose. The potential **single-dose capability** is a key factor for developing rapid response vaccines for pandemics and disease outbreaks. The Company has tested the platform with several commercial vaccines such as H5N1 pandemic influenza and hepatitis B, and performed other research collaborations with anthrax, and melioidosis. In all cases, the pre-clinical studies in animals demonstrated significantly higher immune responses after a single dose with the DepoVax platform when compared to two or three doses of a control vaccine or other commercially available vaccines.

The following chart demonstrates improved immune response for single-dose DepoVax influenza vaccine compared to control vaccine. The potential single-dose capability is an important feature of DepoVax, which will allow IMV to rapidly capture market share from its competitors once a product is approved by health authorities.



The DepoVax platform is also **easy to use and scalable**.

Currently, there are a couple of technologies that are designed to facilitate vaccine product development. All of these platforms carry their own advantages and disadvantages. But DepoVax holds many advantages over its competitors. The following chart is a competitive analysis comparing the DepoVax platform to other platform technologies in development.



DPX-Survivac Targets Multiple Cancers

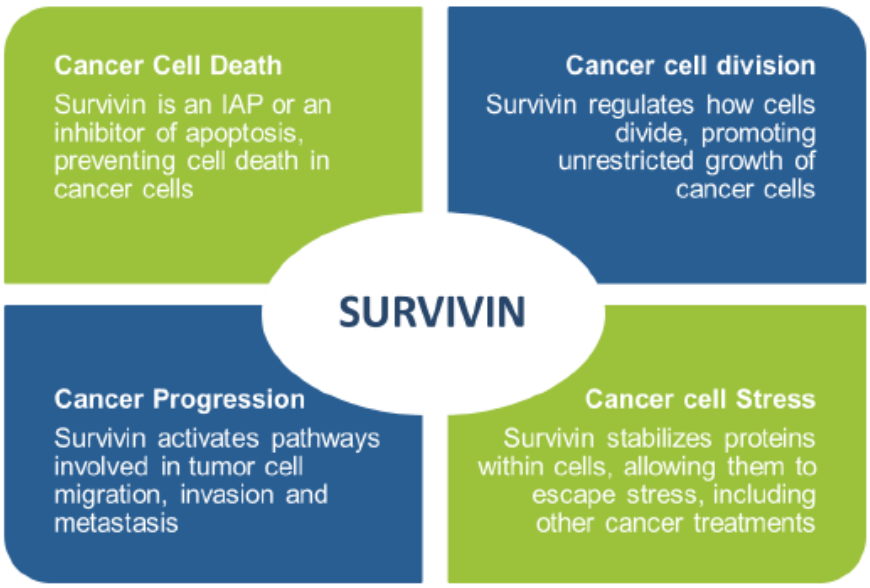
IMV currently has two clinical stage cancer vaccines: DPX-Survivac and DPX-0907.

We think the principles behind a successful anti-cancer vaccine will include the right antigen, the right vaccine delivery technology and the right therapeutic strategy. Antigens used in both DPX-Survivac and DPX-0907 specifically target tumor cells without harming normal, healthy cells. These antigens are combined with the Company's DepoVax platform to optimize the presentation of these antigens in the body, resulting in an enhanced immune response.

DPX-Survivac uses survivin-based antigens, which were in-licensed from **Merck KGaA**, on a world-wide exclusive basis, and formulated in the DepoVax vaccine delivery platform.

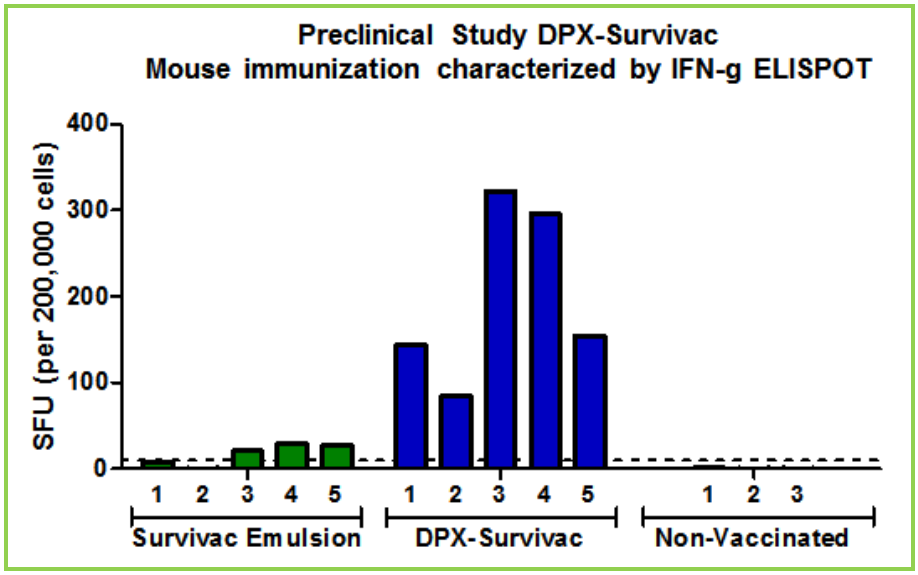
Survivin is a major tumor-associated antigen over-expressed in many cancers including ovarian cancer, non-small cell lung cancer (NSCLC), breast cancer, and melanoma, making it a viable target for immunotherapy. Survivin is essential for the survival of cancer cells and is an inhibitor of programmed cell death (apoptosis). A vaccine that disrupts survivin would lead to an increase in apoptosis and a decrease in tumor growth. Survivin is recognized as a promising antigen for cancer treatment based on its specificity, over-expression in cancer cells and immunogenicity potential. DepoVax will deliver the survivin-based antigens in a lipid depot-based format designed to generate a strong and prolonged immune response.

Due to the overexpression of Survivin in many tumor types, DPX-Survivac could have broad commercial potential as a therapeutic cancer vaccine, which can be explored in multiple solid tumors and hematological cancers. IMV chose to focus on **ovarian cancer** initially, but intends to proceed with pre-clinical testing of DPX-Survivac in a broader range of cancer indications to evaluate additional opportunities.



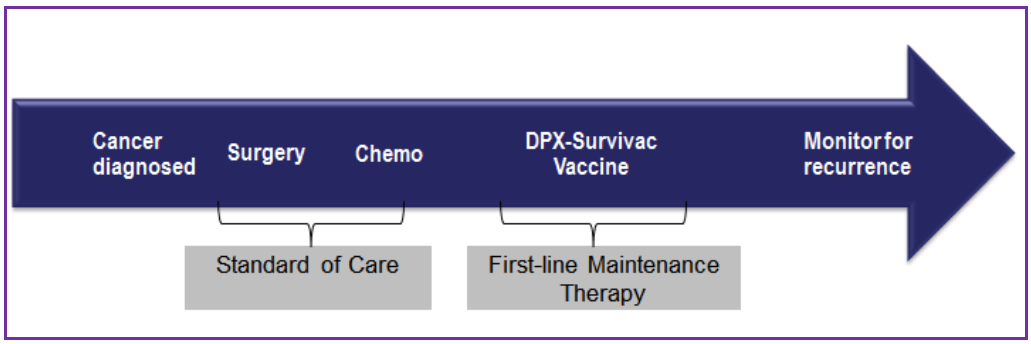
DPX-Survivac is based on EMD 640744 from Merck KGaA. Immunovaccine obtained the exclusive worldwide licensing rights for EMD 640744, which are investigational therapeutic survivin-based cancer antigens designed to target multiple solid tumors and hematological malignancies. Immunovaccine is building on the current Phase I clinical trial for EMD 640744 by formulating the survivin-based antigens in its DepoVax delivery platform to create DPX-Survivac. DPX-Survivac development is based on supportive data from **EMD 640744.** Merck KGaA finished a Phase I trial of EMD 640744, which was determined to be safe and well tolerated in over 200 patients. Evidence of immune responses for EMD 640744 was also observed in the Phase I clinical study.

In pre-clinical studies, DPX-Survivac was also demonstrated to be well tolerated and safe and has demonstrated improved immune response in many animal models, even compared to Survivac emulsion formulation.



DPX-Survivac Has Entered into Clinical Trials

IMV intends to use DPX-Survivac as a **first line maintenance therapy** following standard surgery/ radiation/ chemotherapy. The therapeutic cancer vaccine is intended to stimulate an immune response to attack the circulating cancer cells that remain in a patient's body after surgery and radiation/chemotherapy. This treatment approach has the potential to combat micro-metastases and keep the cancer in remission and prevent metastasis.



The existing clinical data from both DPX-0907 and the survivin antigens facilitated clearance by the FDA and Health Canada for a combined Phase I and Phase II protocol for testing DPX-Survivac in patients with advanced ovarian cancer.

Phase I/II Clinical Design Cleared by US FDA and Health Canada	
Phase 1	**Phase 2**
Dose-finding Safety Study	Safety and Efficacy Study
Non-randomized	2:1 Randomized
Open Label	Double Blinded
Uncontrolled	Placebo Controlled
Primary endpoint: safety	Primary endpoint: Progression Free Survival
15 subjects	250 Subjects
9 USA & 2 Canadian Centers	Approx. 75 USA & 5 Canadian Centers
0.1 and 0.5 mL DPX-Survivac	Best dose DPX-Survivac
+/- immune modulation (cyclophosphamide)	+ immune modulation (cyclophosphamide)
9 weeks of Treatment	57 weeks of Treatment
Last follow up at 6 months	Last follow up at 18 months

Immunovaccine initiated a **Phase I** clinical trial of DPX-Survivac and vaccinated the first patient in December 2011. The Phase I clinical trial is being conducted in eight clinical sites in the US and Canada. The clinical plan foresees a seamless transition from the Phase I into the Phase II. The Phase I is an open label clinical trial designed to evaluate sequentially the safety of two DPX-Survivac dosing regimens in approximately 15 patients. The goal of the Phase I clinical trial is to establish the safety and immune activity of DPX-Survivac in patients with **advanced ovarian cancer**.

Immunovaccine has completed the **first cohort** of the Phase I trial. The first cohort consists of three patients given three doses of DPX-Survivac over a period of six weeks. Results from the first cohort demonstrated that DPX-Survivac was well tolerated with no serious adverse events reported, and that the vaccine is immunogenic as a monotherapy. The Phase I trial is expected to complete patient enrollment in Q3 2012 with study results expected in Q4 2012.

IMV is also evaluating DPX-Survivac **in combination with oral metronomic cyclophosphamide** in the current **Phase I trial**. The rationale for this combination is that in a preclinical study, the combination of metronomic cyclophosphamide and DepoVax resulted in effective and long-lasting tumor control in the C3 tumor model. The combination therapy will also be evaluated in the proposed Phase II trial.

The **Phase II** clinical trial will be a randomized, placebo-controlled, double-blinded trial designed to enroll approximately 250 patients. The vaccine will be administered to patients who will also receive an immune-modulating drug to enhance the effect of the vaccine on cancer cells. The primary endpoint of the Phase II trial will be **progression-free survival**.

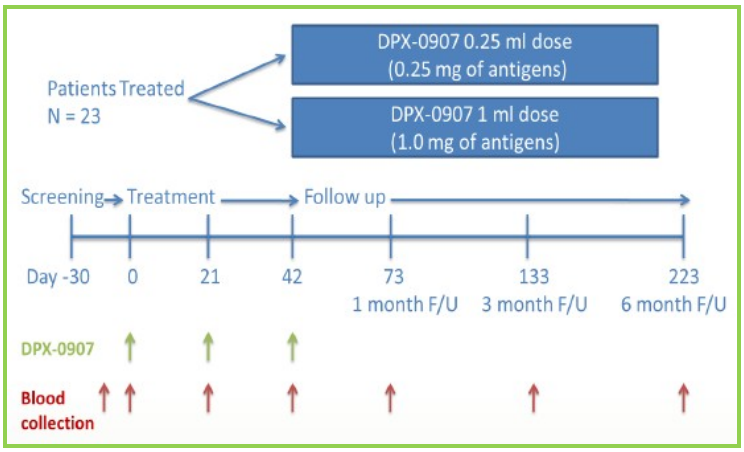
We believe IMV's development strategy for DPX-Survivac is prudent. Based on existing safety and efficacy data developed by **Merck KGaA**, DPX-Survivac is expected to elicit a strong and long-lasting immune response with a favorable safety profile.

DPX-0907: Therapeutic Vaccine for Breast/Ovarian/Prostate Cancer

DPX-0907 combines the Company's DepoVax delivery technology with **seven HLA-A2-restricted cancer-specific antigens** licensed from **Immunotope**. The vaccine is designed to stimulate an immune response specific to cancer antigens which are believed to be involved in critical tumor cell processes, and is expected to kill tumor cells without injury to normal, healthy cells. The seven peptide antigens in DPX-0907 are believed to be present on the surface of breast, ovarian and prostate cancer cells. In pre-clinical studies, the seven antigens could not be found on the surface of normal cells.

Peptide	Function	Cancer Pathways
Topoisomerase II (P4)	an enzyme that controls and alters the topologic states of DNA during transcription	Tumor cell replication
Integrin b8 Subunit precursor (P5)	mediates cell-cell and cell-extracellular matrix interactions and this complex plays a role in human airway epithelial proliferation	Tissue invasion and metastasis
Abi-binding protein 3C (P7)	key regulator of cell/tissue structural organization	Insensitivity to anti-growth signals
TACE/ADAM17 (P13)	functions as a tumor necrosis factor-alpha converting enzyme; binds mitotic arrest deficient 2 protein; and also plays a prominent role in the activation of the Notch signaling pathway	Promotes self-sufficiency of tumor cells
Junction plakoglobin (p14)	a major cytoplasmic protein which is the only known constituent common to submembranous plaques of both desmosomes and intermediate junctions. This protein forms distinct complexes with cadherins and desmosomal cadherins and is a member of the catenin family	Tissue invasion and metastasis
EDDR1 (p15)	a receptor tyrosine kinase which plays a key role in the communication of cells with their microenvironment	Tissue invasion and metastasis
BAP31 (P3)	a multi-pass transmembrane protein of the endoplasmic reticulum that is involved in the anterograde transport of membrane proteins from the endoplasmic reticulum to the Golgi and in the caspase 8-mediated apoptosis	Evading cell death

The Company completed a **Phase I** clinical trial of DPX-0907 and the results of the trial were reported in June 2011 and updated at the 2012 ASCO meeting. The Phase I trial was conducted at five centers in the US. In this open-label, dose-escalating trial, patients received three injections (0.25 mL or 1 mL doses) of the active immune therapy DPX-0907, three weeks apart. The study involved 23 late stage cancer patients, including 13 prostate cancer, 7 ovarian cancer, and 3 breast cancer patients.



The Phase I trial met the primary objective of **safety** with overall results demonstrating that DPX-0907 is generally well-tolerated by all patients and is safe at both dose levels with no dose limiting toxicities. The most common adverse events were grades 1 and 2 injection site reactions. There were no vaccine related serious adverse events reported. Final safety was assessed in 11 patients in the 0.25 mL dose group and 11 patients in the 1 mL dose group.

The Phase I trial also met its secondary objective, which was to assess whether administration of DPX-0907 could generate an **immune response** specific to the seven cancer antigens. Immunovaccine performed a detailed analysis of patients' blood samples that showed **cell-mediated immunity** (CMI) to vaccine targets in all 3 breast cancer patients, 5 of 6 ovarian cancer patients, and 3 of 9 prostate cancer patients. Both dose levels produced a targeted immune response in vaccinated patients. DPX-0907 vaccination resulted in the activation of antigen-specific immune responses characterized by CD8+ T cells producing one or more of IFNγ, TNFα and IL-2, which means the induction of the immune response by DPX-0907 is multi-functional. This is believed to be important in controlling cancer.

The immunogenicity results were based on an analysis of 9 evaluable patients in the 0.25 mL dose group and 9 evaluable patients in the 1 mL dose group.

Patient ID	Indication	Vaccine Dose	$CD8^+$ T cell population	Multi-cytokine positivity	Cytokines		
					IFNγ	TNFα	IL-2
04-06	Breast	0.25mL	Total	Double	+	+	-
			Total	Triple	+	+	+
			T_{CM}	Double	+	+	-
			T_{CM}	Triple	+	+	+
01-13	Breast	0.25mL	Total	Double	+	+	-
			T_{CM}	Double	+	+	-
05-14	Ovarian	0.25mL	Total	Double	+	+	-
			Total	Triple	+	+	+
			T_{CM}	Double	+	+	-
			T_{CM}	Triple	+	+	+
03-17	Prostate	0.25mL	Total	Double	+	+	-
04-19	Breast	1.0mL	T_{CM}	Double	+	+	-
			T_{CM}	Triple	+	+	+
05-07	Ovarian	1.0mL	Total	Double	+	+	-
			T_{CM}	Double	+	+	-
01-22	Ovarian	1.0mL	Total	Double	-	+	+
04-10	Prostate	1.0mL	Total	Double	+	+	-
				Double	+	-	+
			Total	Triple	+	+	+
01-18	Prostate	1.0mL	Total	Single	+	-	-
				Single	-	+	-
				Single	-	-	+
			T_{CM}	Single	+	-	-

Further encouraging immune responses data were observed in advanced stage ovarian, breast and prostate cancer patients. Study results indicated that DPX-0907 possesses favorable immune induction potential as 73 percent of immune responders generated a response following the first vaccination. Further, in 83 percent of responders, the responses were detected at ≥ two time points following vaccination and 64 percent maintained a persistent response at one month following a third vaccination.

Immunovaccine is developing further plans and exploring opportunities for commercialization of DPX-0907. The Company is considering investigator funded trials or partnership opportunities at various stages of clinical development, including the **Phase II** clinical studies.

DepoVax for Infectious Diseases

A significant component of IMV's business strategy is leveraging the DepoVax platform within infectious and other diseases. Pre-clinical studies have indicated that the platform may allow the development of single-dose vaccines for a wide range of infectious diseases by generating a stronger immune response more quickly than is possible with existing delivery methods. The Company's goal will be to advance at least one of these collaborations into human clinical trials in the next two years.

Immunovaccine has entered into a research collaboration to advance the development of next generation **bio-defense** vaccines against the most threatening biological agents. These novel vaccine candidates will be evaluated as part of a study funded by the US National Institutes of Health (NIH), which was initiated in the first quarter of 2012.

The study combines the DepoVax technology platform with four biodefense vaccine candidates, developed in collaboration with an undisclosed commercial partner. Earlier results from initial studies warranted further development of the vaccine candidates. These novel vaccine candidates will now be tested in a non-human primate challenge model by the NIH's National Institute of Allergy and Infectious Diseases (NIAID).

The study will evaluate the potential for these novel vaccine candidates to protect against **anthrax** and **multi-filoviruses** (e.g. Marburg). These bio-terrorism agents are classified as Category A by the US Centers for Disease Control and Prevention. Category A agents have the greatest potential for adverse public health impact with mass casualties because they are easily transmittable and have a high fatality rate.

Preliminary research with an anthrax antigen demonstrated that the DepoVax-based vaccine was able to raise higher antibody levels, as compared to three doses of an alum-adjuvanted control vaccine. Persisting high antibody levels were induced within four weeks following a single dose of anthrax antigen with DepoVax.

Data generated from these research studies is expected to facilitate access to various funding mechanisms to move these types of vaccine candidates into Phase I clinical trials within the next 12 months.

IMV also has an ongoing research collaboration with Weill Cornell Medical College to advance a vaccine for treating **cocaine addiction**. The project combines Cornell's novel cocaine antigen with Immunovaccine's DepoVax platform to strengthen the immune response shown in research animals in previous studies at the College.

The College's previous studies used a viral vector platform linked to a cocaine analog to formulate the vaccine candidate. These results showed the anti-cocaine vaccine raised antibody levels high enough to sequester the cocaine molecules before the drug reached the brains of the mice and prevented cocaine-related hyperactivity.

The new study will determine if the addition of the DepoVax adjuvanting technology will trigger an even stronger and longer-lasting immune response. By blocking the effects of the drug, the vaccine could become one of several methods of intervention intended to help people in rehabilitation programs. Data generated from these research studies is expected to facilitate access to various funding mechanisms that are focused on developing treatments for addictions within the next 12 months.

DepoVax for Animal Health

While currently IMV's main focus is on the human health market and activities, the animal health market remains an important section of the Company's strategy. In 2008, IMV signed its first license agreement with Pfizer Animal Health, which represents the Company's first step in validating the DepoVax platform technology. IMV now has four licensing agreements with Pfizer for the use of the Company's delivery

technology in cattle and other livestock vaccine applications. These license agreements include upfront signing fees, milestone payments and royalties from future vaccine sales.

In May 2012, the Company entered into a research collaboration with another world's leading animal health company to develop next generation companion animal vaccines. Under terms of the collaboration, IMV will combine multiple vaccine candidates provided by its unnamed research partner with the DepoVax technology. The resulting vaccine products, which are expected to deliver long-lasting, single-dose protection against several of the most common infectious diseases effecting dogs and cats, will then be advanced through veterinary studies in several indications by IMV's research partner.

Immunovaccine intends to pursue additional licensing and revenue opportunities within the animal health market to help fund the research and development of its human health vaccine candidates.

According to industry sources, the world animal health market is a multiple billion dollar market, which reached approximately US$20 billion in 2008. The animal vaccine market, subdivided into **livestock, companion animal** and other smaller segments including equine, poultry and aquatic, makes up approximately 20% of the total animal health market and is projected to reach US$5.6 billion by 2015. Europe is the leading market for veterinary vaccines followed closely by North America. Asia-Pacific is the fastest growing market for veterinary vaccines.

There are only a few players in the animal vaccine market including Pfizer, Boehringer Ingelheim, Merial, Merck Animal Health, Novartis and AgriLabs. While the livestock vaccine market is based on high volumes and lower pricing, the companion animal market is less sensitive to price and is focused on safety of the products.

The majority of today's vaccines for both market segments require a booster administration, which increases the handling costs for the livestock market and has the potential to decrease safety in the companion animal market. Therefore, a vaccine that requires fewer doses (one dose, in some cases) for efficacy could be a significant innovation and have the potential to replace existing products in both segments. IMV's DepoVax-based vaccines have the potential to capture a significant market share of the animal health market.

IMV will continue to monetize its DepoVax platform for animal health. This will provide non-dilutive financing for advancing its human vaccine development.

Experienced Management Team and Advisors

John J. Trizzino, Chief Executive Officer and Director

John Trizzino, B.S., M.B.A., is a U.S.-based senior executive with more than 25 years of experience advancing strategic initiatives for publicly traded biotechnology companies, primarily within the vaccine market. Prior to joining Immunovaccine, he was the Senior Vice President at Novavax Inc., where he provided strategic direction and successfully negotiated profitable joint venture and licensing agreements, including a $179M BARDA contract. Prior to joining Novavax, Mr. Trizzino held senior executive positions at MedImmune Inc., which was acquired by AstraZeneca, and ID BioMedical Inc., which is now part of GlaxoSmithKline Inc. He began his extensive career in vaccines at Henry Schein Inc. leading commercial marketing efforts and executing a series of successful commercialization and distribution agreements. Mr. Trizzino is a graduate of Long Island University and received his master's degree in business administration from New York University's Leonard N. Stern School of Business.

Kimberly Stephens, CFO

Ms. Kimberly Stephens is a Chartered Accountant with over 12 years of financial management experience across several industries, including her previous position as Director of Finance for a Canadian subsidiary of an international company, Germanischer Lloyd. Ms. Stephens gained public

company experience with her role as the Director of Finance for SolutionInc, and was an Audit Manager in the Assurance and Advisory group of PricewaterhouseCoopers.

Dr. Marc Mansour, Chief Science Officer

Dr. Marc Mansour has over 12 years of experience in the biotechnology industry. He led the development of the Corporation's unique depot based vaccine adjuvanting platform, bringing it from concept to clinical application. He oversees preclinical and clinical activities relating to the Company's two clinical stage cancer vaccines. He also manages product development interactions in infectious diseases with commercial partners (Pfizer) and scientific collaborators at the NIH, and other institutions.

Vicki Morgan, Director of Business Development

As director of business development, Ms. Morgan leads and facilitates Immunovaccine's corporate alliances around the globe. She identifies research collaborations and evaluates licensing opportunities for the discovery and development of innovative vaccines. Most recently she has worked with several small start-up companies in the life sciences sector, functioning as the Business Development lead, to license key technologies and develop corporate strategy for company positioning and growth through New Perspectives, Inc. Prior to New Perspectives, Ms Morgan held a position with Nektar Therapeutics as Director of Business Development responsible for licensing activities of Nektar's proprietary products in gastroenterology, pain and oncology therapeutics. Ms. Morgan is a member of the Licensing Executives Society and served on the Advisory Board of Envion International. She received her undergraduate degree in Psychology and an M.B.A. from Miami University, Oxford, Ohio.

Dr. W. Martin Kast, Scientific Advisor

Dr. Kast holds a number of prestigious positions including the Walter A. Richter Cancer Research Chair, Professor of Molecular Microbiology & Immunology, Obstetrics & Gynecology and Urology, Director Beckman Center for Immune Monitoring and Co-Leader Tumor-Micro-Environment Program at the Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA. In 2010 he was named Eminent Scientist of the Year and North American Immunologist of the Year.

Dr. Neil Berinstein, Scientific Advisor

Dr. Berinstein obtained his Medical Doctoral Degree at the University of Manitoba and completed training programs at the University of Toronto in Internal Medicine and Medical Oncology and at Stanford University in the area of Immunotherapy for cancer. Dr. Berinstein was a founding director of the Advanced Therapeutics Program at the Toronto-Sunnybrook Regional Cancer Centre with a long track record in fundamental research and a significant publication record in the area of normal and malignant B cell biology and cancer immunotherapy. Dr. Berinstein was Global Program Head of Sanofi Pasteur's cancer vaccine program from 1998-2009. He is a Full Professor in the Department of Medicine at the University of Toronto. He currently is Chief Scientific Officer at IRX THerapeutics. He is a member of the Executive Committee of the Cancer Research Institute Cancer Immunotherapy Consortium. He has published over 100 research papers and a similar number of research abstracts.

Dr. Walter Storkus, Scientific Advisor

Dr. Storkus currently is a Professor (Tenure) with Departments of Dermatology & Immunology at the University of Pittsburgh. Past positions include Head of Research – Division of Surgical Oncology, Department of Surgery and Professor (Tenure) for Departments of Surgery & Pathology, as well as Departments of Surgery, Dermatology and Immunology at the University of Pittsburgh. Dr. Storkus has memberships in professional and societies throughout the United States.

Dr. Michel Klein, Scientific Advisor

Dr. Klein currently is Chairman of VaxiBio Inc., a new vaccine biotechnology company recently registered in Canada with a subsidiary in Taiwan. His experience includes Vice President Biotechnology Research – Pasteur Mérieux Connaught Canada, Professor of Immunology – University of Toronto, Corporate Vice President, Science and Technology – Aventis Pasteur Group and Chief Executive Officer, CANVAC – Canadian Network for Vaccines and Immunotherapeutics.

Irene Clement, Senior Regulatory Advisor

Ms. Clement is a founding partner of Clement Strategies Inc., a regulatory and bio-business consulting company. She is an accomplished Senior Regulatory Professional with 27 years of experience in the Biologics industry, 22 in Regulatory Affairs. She has a proven track record in dealing with regulatory authorities worldwide, including Health Canada, US FDA, European and WHO agencies. Ms. Clement's previous positions include Vice President Regulatory Affairs for ID Biomedical (subsequently became GSK), Vice President of Regulatory Affairs at Shire Biologics and Director Regulatory Affairs at Aventis Pasteur Ltd. Mrs. Clement has been responsible for global license maintenance activities for approximately 30 products in over 70 countries. She has also obtained numerous license approvals in Canada, the US, EU, Japan, Australia and other countries.

VALUATION AND RECOMMENDATION

We maintain our Outperform rating on Immunovaccine (V-IMV). Our 12-month price target stays at $0.75 per share.

IMV has developed a unique vaccine delivery and adjuvanting platform DepoVax, which creates a unique depot that attracts antigen presenting cells to the injection site to potentially generate a rapid and robust immune response. IMV's DepoVax platform holds many competitive advantages over existing vaccine delivery technologies.

Based on its DepoVax platform, Immunovaccine has built a diversified pipeline comprised of therapeutic cancer vaccines, and vaccines for infectious diseases and animal health. The Company has taken its platform technology and proprietary cancer vaccine into Phase I human trials and has demonstrated its safety and immunogenicity potential.

The Company is also capitalizing on the broad potential of its delivery platform by creating new DepoVax-based vaccines through multiple development collaborations.

In addition to the Company's human health vaccine strategy, it continues to capture value from animal health vaccine applications. The Company has several animal health partners including Pfizer Animal Health, which has licensed the Company's platform to develop vaccines for livestock. The Company will continue to monetize its DepoVax platform for application in both livestock and companion animals.

In terms of valuation, we think Immunovaccine shares are undervalued. Currently, the shares are trading at $0.35 per share, which values the Company at $22 million in market cap based on 64 million shares outstanding. This is a deep discount. As we discussed above, the Company's cancer vaccine candidate DPX-0907 has completed Phase I clinical studies, and another lead candidate DPX-Survivac has also entered into a Phase I clinical trial.

We think Immunovaccine shares should be trading at between $0.50 and $1.00 per share, which values the Company at between $28.5 and $57 million. Our price target of $0.75 corresponds to a market cap of $48 million, which we think is fair for Immunovaccine at this point.

Keep in mind the following risks:

- **Cash burn concern:** As of June 30, 2012, IMV had $5.1 million in cash. Based on its monthly cash burn of $0.61 million per month, current cash can only last through 1Q2013. Further financing is needed by the end of this year.

- **Regulatory risk**: IMV's two lead cancer vaccine candidates are still in the early stage of clinical development, which poses higher risks. Any clinical failure could deny or delay the approval, and share price will suffer.

PROJECTED INCOME STATEMENT

	2010 A (Dec)	2011A (Dec)					2012E (Dec)					2013E (Dec)	2014E (Dec)	2015E (Dec)	2016E (Dec)
$ in million except per share data	FYA	Q1	Q2	Q3	Q4	FYA	Q1	Q2	Q3E	Q4E	FYE	FYE	FYE	FYE	FYE
R&D and Contract revenue	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
License and Up-front revenue	$0.08	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2.00	$5.00	$7.50
Product Sales	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5.00
Total Revenues	**$0.08**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$2.00**	**$5.00**	**$12.50**
YOY Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	*150.0%*	*150.0%*
CoGS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gross Income	**$0.08**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$2.00**	**$5.00**	**$12.50**
Gross Margin	100%	-	-	-	-	-	-	-	-	-	-	-	-	*100.0%*	*100.0%*
R&D	$2.63	$1.24	$1.42	$0.97	$0.61	$4.24	$0.55	$0.78	$0.95	$1.00	$3.28	$4.00	$5.50	$7.00	$9.00
% SG&A		-	-	-	-	-	-	-	-	-	-	-	-	-	
SG&A	$1.97	$0.34	$0.40	$0.34	$0.50	$1.58	$0.57	$0.47	$0.58	$0.60	$2.22	$2.60	$3.00	$3.80	$4.50
% R&D		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	$1.05	$0.26	$0.19	$0.16	$0.19	$0.80	$0.24	$0.33	$0.24	$0.24	$1.05	$1.00	$1.00	$1.00	$1.00
% Other		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Income	**($5.57)**	**($1.8)**	**($2.0)**	**($1.5)**	**($1.3)**	**($6.6)**	**($1.4)**	**($1.6)**	**($1.8)**	**($1.8)**	**($6.5)**	**($7.6)**	**($7.5)**	**($6.8)**	**($2.0)**
Operating Margin		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Net	($0.1)	($0.0)	($0.0)	($0.0)	($0.1)	($0.2)	($0.0)	($0.0)	($0.0)	($0.0)	($0.2)	($0.2)	($0.3)	($0.4)	($0.5)
Pre-Tax Income	**($5.65)**	**($1.9)**	**($2.0)**	**($1.5)**	**($1.4)**	**($6.8)**	**($1.4)**	**($1.6)**	**($1.8)**	**($1.9)**	**($6.7)**	**($7.8)**	**($7.8)**	**($7.2)**	**($2.5)**
Income taxes(benefit)	$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
Tax Rate		*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%*
Reported Net Income	**($5.65)**	**($1.9)**	**($2.0)**	**($1.5)**	**($1.4)**	**($6.8)**	**($1.4)**	**($1.6)**	**($1.8)**	**($1.9)**	**($6.7)**	**($7.8)**	**($7.8)**	**($7.2)**	**($2.5)**
YOY Growth		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Margin		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Deluted Shares Out	*47.8*	*54.0*	*54.0*	*54.0*	*54.0*	*54.0*	*56.6*	*63.5*	*63.5*	*64.0*	*61.9*	*74.0*	*85.0*	*95.0*	*105.0*
Reported EPS	**($0.12)**	**($0.03)**	**($0.04)**	**($0.03)**	**($0.03)**	**($0.13)**	**($0.02)**	**($0.03)**	**($0.03)**	**($0.03)**	**($0.11)**	**($0.11)**	**($0.09)**	**($0.08)**	**($0.02)**
YOY Growth		-	-	-	-	-	-	-	-	-	-	-	-	-	-
One time charge	0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Non GAAP Net Income	**($5.65)**	**($1.9)**	**($2.0)**	**($1.5)**	**($1.4)**	**($6.8)**	**($1.4)**	**($1.6)**	**($1.8)**	**($1.9)**	**($6.7)**	**($7.8)**	**($7.8)**	**($7.2)**	**($2.5)**
Non GAAP EPS	**($0.12)**	**($0.03)**	**($0.04)**	**($0.03)**	**($0.03)**	**($0.13)**	**($0.02)**	**($0.03)**	**($0.03)**	**($0.03)**	**($0.11)**	**($0.11)**	**($0.09)**	**($0.08)**	**($0.02)**

Source: Company filing and Zacks Investment Research

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