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March 22, 2011

ImmunoCellular Therapeutics, Ltd. (OTCBB/IMUC)

Buy Targeting Cancer Stem Cells

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ICT-107 leads the emerging paradigm of immunotherapies against cancer stem cells

INVESTMENT HIGHLIGHTS

Initiating Coverage with a Buy Rating and Price Target of \$5 Immunocellular Therapeutic's ICT-107 is an immunotherapy for glioblastoma multiforme (GBM) that has shown promising improvement in survival benefit. Trading at a 66% discount to comparable companies with mid-stage immunotherapies in development (\$122 MM), we believe IMUC shares represent a significant value proposition (adjusted enterprise value \$49 MM), therefore, we rate IMUC shares a Buy and set a year-end 2011 price target of \$5.

Targeting Stem Cells Key to Defending Cancer Growth and Metastasis By targeting cancer stem cells (CSCs), IMUC's strategy actively directs the body's own defenses against the primary driver of tumorigenesis and tumor growth, potentially decreasing the ability of cancer cells to evade immune system detection and enhancing the ability of the patient to mount a persistent defense.

ICT-107 – A Next-Generation Dendritic Cell-Based Immunotherapy The six antigens IMUC uses to make ICT-107 show high levels of expression in CSCs. In results from a Phase I study presented at the American Society of Clinical Oncology (ASCO) meeting in June 2010, survival results observed in GBM patients treated with ICT-107 compared favorably to GBM patients treated with standard of care (SOC), i.e., median not yet reached vs. >14.6 months with SOC. If confirmed in the ongoing randomized, controlled Phase II study, we believe the results with ICT-107 will strongly support a paradigm change in the treatment of glioblastoma and make ICT-107 a new blockbuster therapy.

Efficacy is Paramount but Key to Commercial Success is Manufacturing Dendritic cell vaccines are made individually for a particular patient through an intensive procedure. Compared to the low yields and gross margins achieved with the manufacture of the prostate cancer vaccine, Provenge, IMUC estimates much better economics with ICT-107, which could help the company realize a faster path to profitability.

IMUC – A Value Approach to Treating Cancer We believe the scientific rationale for using an immunotherapy approach in targeting cancer stem cells sound, and IMUC at the forefront of using the immunotherapy approach. With ICT-107 demonstrating promising data in GBM, we believe the company poised with a potential blockbuster cancer vaccine. We therefore recommend investors consider the value proposition in IMUC and buy the shares.

Current Price \$2.21

Price Target \$5.00

MARKET DATA 03/18/11

Stock Symbol	IMUC
Market	OTC BB
52 Wk Low - High	\$0.84 - \$2.55
Market Cap. (MM)	\$48.0
Shares Out (MM)	21.7
3-Month Av. Daily Vol (000s)	154.4
Insider Ownership	NA
Institutional Ownership	NA

BALANCE SHEET METRICS (12/31/10)

Cash (MM)	\$5
Debt (MM)	\$0
Debt/Capital	0%
Book Value / Share	\$0.17
Price / Book	12.72

EARNINGS DATA

FY - 12/31	2009A	2010E	2011E	
1Q - 03/31	(\$0.05)	(\$0.05)	A (\$0.11)	E
2Q - 06/30	(\$0.06)	(\$0.14)	A (\$0.13)	E
3Q - 09/30	(\$0.03)	(\$0.06)	A (\$0.11)	E
4Q - 12/31	(\$0.05)	(\$0.12)	E (\$0.09)	E
EPS (fully diluted)	(\$0.19)	(\$0.36)	E (\$0.44)	E
Revenue (MM)	\$0.3	\$0.0	E \$0.0	E

VALUATION METRICS

Price/Earnings	NM	NM	NM
Price/Revenue	160.2x	NM	NM



Source: BigCharts.com, FactSet.

Price target and ratings changes over the past 3 yrs:
 Initiated - March 21, 2010 - Buy -Price Target \$5.00

INVESTMENT SUMMARY

ImmunoCellular Therapeutics, Ltd. (OTCBB: IMUC) is a biopharmaceutical company that is developing next-generation immunotherapies for cancers. ImmunoCellular Therapeutics (IMUC) applies its expertise in immunology to target cancer stem cells (CSCs), which are malignant cells that comprise a small fraction of a tumor's cell population, but are responsible for its growth and the formation of metastases. IMUC's strategy lends itself to targeting cancers with a low survival rate that are lethal within months of discovery. The company has two lead programs: ICT-107, a dendritic cell-based immunotherapy in Phase II evaluation as a vaccine for glioblastoma, and ICT-121, an IND-stage, off-the-shelf vaccine that has broad potential, as it targets CD133, a CSC marker found on multiple solid tumors. At a >66% discount compared to comparable companies, we believe the shares represent a significant value proposition. Our analysis derives a potential fair value of \$5 for IMUC shares (comparable group mean enterprise value divided by IMUC's adjusted enterprise value, multiplied by the number of shares outstanding), and a Buy rating.

KEY POINTS

- **Targeting Stem Cells Key to Directing the Immune System to Fighting Cancer Progression and Metastasis**
ImmunoCellular Therapeutics' (IMUC) immunotherapy product candidates target cancer stem cells (CSCs), which are cells capable of giving rise to all types found in tumors and have been implicated with the formation, growth, and metastasis of malignant tumors. By targeting CSCs, IMUC's strategy actively directs the body's own defenses against the primary driver of tumorigenesis and tumor growth, potentially decreasing the ability of cancers cells to evade detection by the immune system and enhancing the ability of the patient to mount a persistent defense.
- **Using An Active Immunotherapy Strategy Induces a Persistent Immune Response Against Cancer**
IMUC is developing cancer vaccines, an active immunotherapy strategy, to stimulate the patient's own immune system to fight cancer. Cancer vaccines are a type of active immunotherapy that give the immune system a specific target to identify (e.g., tumor antigens) and attack. *Provenge*, which is a patient-specific prostate cancer vaccine developed by Dendreon Corp. (DNDN, Not Rated), is an active immunotherapy that uses dendritic cells (DCs) as antigen presenting cells. DCs play a central role in the immune response by processing antigens for presentation to helper T cells, cytotoxic T cells, as well as other immune system effector cells, and can be "trained" to present tumor antigens of interest specific for targeting a particular type of cancer. Results with *Provenge* validate the notion that using an active immunotherapy strategy induces a persistent immune response that can improve survival in patients with prostate cancer.
- **ICT-107 – A Next-Generation DC-Based Immunotherapy with Potential to Improve Survival**
IMUC's lead product is ICT-107, a DC-based cancer vaccine that, similar to *Provenge*, uses a patient's own DCs to stimulate the immune system to attack and destroy malignant cancer cells. ICT-107, however, is a next-generation cancer vaccine created by exposing DCs to six antigens, whereas DCs used to make *Provenge* are only exposed to one, i.e., prostate-specific antigen or PSA. The six antigens IMUC uses to make ICT-107 show high levels of expression in CSCs. By exposing DCs to these six antigens, ICT-107 not only has potential to induce a more robust immune response but is also targeted to CSCs, potentially leading to a more durable response. Although results between studies of two therapies are difficult to compare without conducting head-to-head trials, we believe the early ICT-107 data strong enough to compare with historical data. In results from a Phase I study presented at the American Society of Clinical Oncology (ASCO) meeting in June 2010, survival results observed in glioblastoma patients treated with ICT-107, for example, compared favorably to historical controls. Whereas the median overall survival (OS) observed after a median follow-up of 28 months was 14.6 months for patients with glioblastoma when treated with standard of care (i.e., radiotherapy plus temozolomide SOC), and 12.1 months when treated with radiotherapy alone, median OS with ICT-107 had not yet been determined after a median follow-up of 24 months, pointing to potential improved survival with ICT-107. (See more data below) We believe the data support ICT-107 as being the first active immunotherapy to target glioblastoma CSCs and demonstrate improved survival data. If confirmed in a larger controlled study, we believe the results with ICT-107 will strongly support a paradigm change in the treatment of glioblastoma and make ICT-107 a new blockbuster therapy.

- **Ongoing ICT-107 Phase II Trial Designed to Demonstrate Improved Survival Versus Standard of Care** In January 2011, IMUC initiated a randomized, double blind, controlled Phase II study to evaluate the safety and efficacy of ICT-107 versus placebo in newly diagnosed adult patients with glioblastoma multiforme (GBM) following tumor resection and chemoradiation. The primary objective of the study is to compare OS and PFS in patients treated with ICT-107 versus a placebo as control. Eligible patients will undergo tumor resection, followed by six weeks of chemotherapy (temozolomide) and radiation, and then a washout period. Vaccine will be made using DCs pulsed with purified tumor antigens to make ICT-107 as the final product, or with unpulsed DCs as placebo. Patients will receive at least four intradermal injections of ICT-107 or placebo plus additional follow-up injections, approximately every 3-6 months, during a maintenance phase and minimum 24-month post-surgical evaluation period. The final collection of primary outcome data is projected for year-end 2014, however, an interim analysis of results is planned after 17 months (based on 50% events). With the survival results observed so far in Phase I, we believe this trial has high potential for early termination and accelerated approval on interim data.
- **ICT-107 Targets Cancers that are Lethal Within Months of Discovery and Have a Low Survival Rate** As its first indication, ICT-107 is being developed for glioblastoma, a late stage type of brain cancer where patient survival is measured in months. Glioblastomas are highly malignant tumors that constitute approximately half of all gliomas and one-quarter of intracranial tumors in adults. Almost 10,000 people each year are diagnosed with GBM. The initial treatment is often surgical with an effort to remove this focal solid tumor. Unfortunately, at that time of discovery, most have extensive infiltration far from the contrast enhancing image of the solid tumor. Radiation therapy and chemotherapy are used in an effort to forestall the spread of microscopically infiltrative tumor and the return of a tumor mass. Despite current best therapies, these tumors are often life threatening with a low survival rate a year of diagnosis. In June 2010 the FDA granted Orphan Drug designation for ICT-107 for glioblastoma. ICT-107, however, potentially has broad applicability in other solid tumors including cancers of the breast, ovary, colon and skin, as shown by the high levels of expression of several CSC-associated antigens used to make ICT-107 (see more below). As with glioblastoma, these malignancies are associated with a low survival rate and low response to surgical intervention with some types often lethal within months of their discovery. We believe the selection of the most lethal types of malignancies favorable for the study of ICT-107 as the patient's condition promotes evaluation of therapy early in disease progression, thus, taking advantage of lessons learned from earlier studies with cancer vaccines.
- **Efficacy is Paramount but the Key to Commercial Success with ICT-107 is Manufacturing** Dendritic cell vaccines are made individually for a particular patient through an intensive procedure. The process begins with the isolation of immature DCs from the blood of the patient at the study site through an outpatient procedure called apheresis. The DCs are then exposed to synthetic tumor antigen peptides that induce immunogenic responses to the tumor, purified, and later injected back into the patient. Dendreon's estimates for the gross margins achievable with the manufacture of Provenge are around 40%, which is low even by standards for gross margins observed with complex biologic drugs. The GMP manufacturing process used to make ICT-107 is designed to produce approximately 20 doses per apheresis procedure, versus approximately five doses for Provenge, which according to the company's estimates, is adequate for 2-3 years of vaccinations per patient, and with COGS eventually expected to be 5-10%. We therefore believe the much better economics that IMUC may achieve with ICT-107 could help the company realize a faster path to profitability than current immunotherapies.
- **IMUC – A Value Proposition for an Emerging Approach to Treating Cancer** Hard lessons certainly were learned from the failures observed with previous cancer vaccines, and as a result, investment in companies focused on cancer immunotherapies is fraught with significant risk. We believe, however, that the scientific rationale for using an immunotherapy approach in treating cancer is sound, and with recent advances in understanding the underlying mechanisms by which tumor cells evade the immune system, such as the role of cancer stem cells in tumor growth and metastasis, and clinical trials better designed to measure appropriate endpoints, we believe promising new immunotherapies will successfully emerge from the approximately 150 studies actively evaluating the next wave of cancer vaccines. We believe ImmunoCellular Therapeutics at the forefront of using the immunotherapy approach against cancer stem cells, and with ICT-107 demonstrating promising improvement in survival benefit in glioblastoma, we believe the company poised with the next cancer vaccine with blockbuster potential. We therefore recommend investors consider the value proposition in IMUC and buy the shares.

PRODUCT CANDIDATES

ImmunoCellular Therapeutics' (IMUC) strategy is to target cancer stem cells (CSCs), which comprise only a small fraction of the cells in a tumor but are capable of giving rise to all cell types found in tumors. According to the stem cell theory of cancer, CSCs have been attributed to the formation, growth, and metastasis of malignancies. By targeting CSCs, IMUC's cancer immunotherapy product candidates target the primary driver of tumorigenesis and tumor growth, potentially decreasing the ability of cancers cells to evade detection by the immune system and enhancing the ability of the patient to mount a persistent defense.

FIGURE 1: IMMUNOCYLLULAR THERAPEUTICS, INC. – PRODUCT PORTFOLIO

	LEAD	DISCOVERY	PRE-CLINICAL	PHASE I	PHASE II	PHASE III	NDA	IN-MARKET	COMMERCIAL RIGHTS
	OPTIMIZATION								
Active Immunotherapies									
ICT-107 <i>Glioblastoma</i>									IMUC
ICT-121 <i>Glioblastoma</i>									IMUC
Monoclonal Antibodies									
ICT-109 <i>SCLC and Pancreatic Cancer</i>									IMUC
ICT-37 <i>Multiple cancers</i>									IMUC
ICT-69 <i>Multiple Myeloma</i>									IMUC

Source: Company reports

Antigen presenting cells (APCs) are able to induce both cellular (via cytotoxic T cells) and humoral (via helper T cells) immune responses against tumor cells. Dendritic cells (DCs) are APCs that play a central role in the immune response by processing antigens for presentation to helper T cells, cytotoxic T cells, as well as other immune system effector cells, however, most antigens are not actively presented to the immune system, resulting in tolerance by the immune system. By pulsing DCs with tumor antigens, the chance of these antigens being recognized by the immune system is improved, and the immune system trained to recognize tumor-specific antigens and attack antigen-bearing tumor cells.

ICT-107

Similar to the active immunotherapy strategy used by Dendreon to create the DC-based prostate cancer vaccine, Provenge, IMUC's lead immunotherapy candidate, ICT-107, uses the patient's own DCs to stimulate the immune system. ICT-107, however, is a next-generation cancer vaccine created by exposing DCs isolated from a patient's tumor tissue after surgical resection to six antigens, whereas the DCs used to make Provenge are only exposed to one, i.e., prostate-specific antigen or PSA. Instead of producing separate batches for each dose, as is used to make Provenge, IMUC also utilizes a single process that can produce up to 20 doses (see more below). As its first indication, ICT-107 is being developed for glioblastoma, a late stage type of brain cancer where patient survival is measured in months. ICT-107, however, potentially has broad applicability in other solid tumors, as shown by the high levels of expression of several CSC-associated antigens used to make ICT-107 (see Figure 2 below). In June 2010 the FDA granted Orphan Drug designation for ICT-107 for glioblastoma.

Clinical Data In May 2007, IMUC collaborators at Cedars-Sinai Hospital in Los Angeles, California, initiated a Phase I trial evaluating ICT-107 in patients with newly-diagnosed glioblastoma and recurrent glioblastoma. Nineteen patients (16 newly diagnosed, 3 with recurrent glioblastoma) were treated with three vaccinations, two weeks apart. The results of the study were presented at the American Society of Clinical Oncology (ASCO) meeting held, June 4-8, 2010, in Chicago, Illinois.

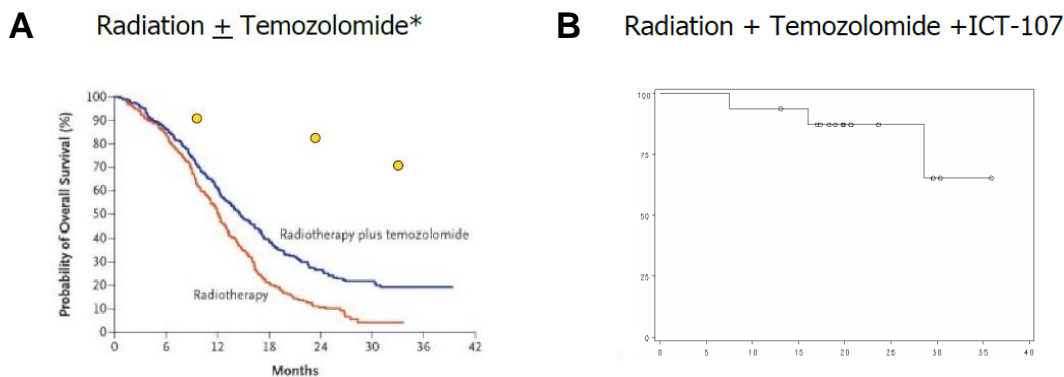
FIGURE 2: IMMUNOCeLLULAR THERAPEUTICS, INC. – ANTIGENS PULSED INTO DCs TO MAKE ICT-107

Antigens	Tumor Expression	CSC Expression
gp100	Melanoma, brain cancer	
Trp-2	Melanoma and brain cancer	High
Her-2/neu	Breast, ovarian cancer	Medium
MAGE-1	Melanoma, brain cancer	
AIM-2	Breast, ovarian, colon, brain	High
IL-13aR2	Brain cancer	

Source: Company reports

Although results between studies of two therapies are difficult to compare without conducting head-to-head trials, we believe the early ICT-107 data strong enough to compare with historical data. In the results from a Phase III study jointly conducted in 2004 by the European Organisation for the Research and Treatment of Cancer (EORTC) and the National Cancer Institute of Canada Clinical Trials Group (NCIC), the median overall survival (OS) observed after a median follow-up of 28 months was 14.6 months for patients with glioblastoma when treated with radiotherapy plus temozolomide standard of care (SOC), and 12.1 months when treated with radiotherapy alone (see A in Figure 3 below). In contrast, after a median follow-up of 24 months, median OS with ICT-107 had not yet been determined (see B in Figure 3).

FIGURE 3: IMMUNOCeLLULAR THERAPEUTICS, INC. – SURVIVAL IN COMBINATION WITH ICT-107 VS. STANDARD OF CARE



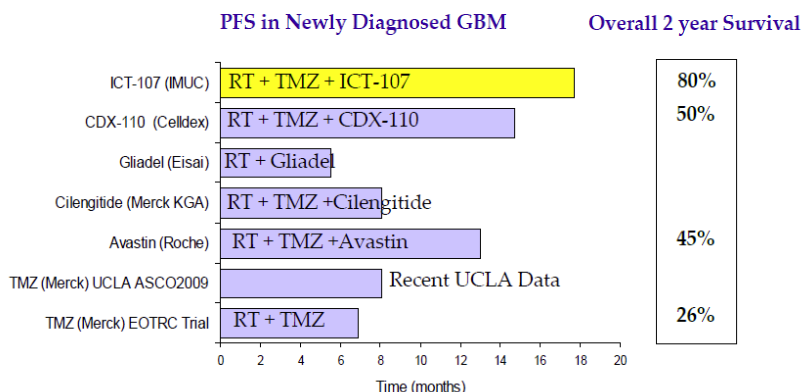
Source: Company reports

After a median follow-up of 24 months, patients vaccinated with ICT-107 plus SOC also demonstrated improved median progression-free survival (PFS) of 17.7 months versus 6.9 months with SOC alone, as well as improved PFS versus data from studies with competitor drugs (see Figure 4 below).

Results for Phase I clinical trial of ICT-107 also demonstrated a one year survival of 100% and a two year survival of 80% when ICT-107 was combined with surgery, radiation and chemotherapy. This compares favorably with historical 61.1% one-year and 26.5% two-year survival with SOC alone. The 12-month disease-free survival from the time of surgery was 75% with ICT-107, compared with the historical control of 26.9%, and was 49.2% at 18 months with ICT-107, compared with 18.4% from historical control data. Although the primary purpose of the small Phase I study with ICT-107 was to evaluate safety and immunogenicity, we believe the data support ICT-107 as being the first active immunotherapy to

target glioblastoma CSCs and demonstrate improved survival data. If confirmed in a larger controlled study, we believe the results with ICT-107 will strongly support a paradigm change in the treatment of glioblastoma.

FIGURE 4: IMMUNOCELLULAR THERAPEUTICS, INC. – PROGRESSION-FREE SURVIVAL WITH ICT-107 VS. COMPETITORS



Source: Company reports

ICT-107 Phase II Trial Design In January 2011, IMUC initiated a randomized, double blind, controlled Phase II study to evaluate the safety and efficacy of ICT-107 versus placebo in newly diagnosed adult patients with glioblastoma multiforme (GBM) following tumor resection and chemoradiation. The primary objective of the study is to compare OS and PFS in patients treated with ICT-107 versus a placebo as control. The study’s secondary objectives are to measure the immune response to ICT-107, and the rate of OS and PFS at six months after surgery, and then every three months until the end of the study. An estimated 200 patients in the study will be enrolled at 15 centers in the U.S. and Canada, and randomized in a 2:1 ratio to be vaccinated with either ICT-107 or control. Eligible patients will undergo tumor resection, followed by six weeks of chemotherapy (temozolomide) and radiation, and then a washout period. Vaccine will be made using DCs pulsed with purified tumor antigens to make ICT-107, or with unpulsed DCs as placebo (see more about manufacturing below). Patients will receive at least four intradermal injections of ICT-107 or placebo plus additional follow-up injections, approximately every 3-6 months, during a maintenance phase. The study will require a minimum 24-month post-surgical evaluation period. The final collection of primary outcome data is projected for year-end 2014, however, an interim analysis of results is planned after 17 months (based on 50% events).

Manufacturing ICT-107 Dendritic cell vaccines such as ICT-107 and Provenge are made individually for a particular patient to elicit a robust, targeted and persistent T cell response. The process requires the isolation of immature DCs from the blood of the patient through a process called apheresis to collect peripheral blood mononuclear cells (PBMCs). Patients undergo the apheresis as an outpatient procedure at the study site. Apheresis product is first sent to a central site where monocytes will be purified and cultured under laboratory conditions to promote proliferation (clonal expansion). The mature DCs are then exposed (pulsed) with synthetic peptides that correspond to immunogenic epitopes (i.e., immunogenic peptides) of the GBM tumor antigens listed above in Figure 2 to boost their immunogenicity. Prior to injection back into the patient, the pulsed DCs are pooled and formed into frozen aliquots, then shipped back to the patient site for later injection into the patient. The GMP-approved manufacturing process used to make ICT-107 is designed to produce approximately 20 doses per apheresis procedure, which according to the company’s estimates, is adequate for 2-3 years of vaccinations per patient, and with COGS expected to be 5-10%, result in much better economics than Provenge.

ICT-121

The second active immunotherapy product candidate in IMUC’s pipeline is ICT-121, a vaccine that consists of a CD133 epitope combined with the immune stimulant, granulocyte macrophage colony stimulating factor (GM-CSF). CD133 is an

antigen highly expressed by stem cells that give rise to numerous types of cancers (see more below). Whereas only 4,500 copies of CD133, for example, are found on hematopoietic stem cells, which are cells found in the bone marrow that give rise to all the blood cell types, 30,000 to 180,000 copies of CD133 may be found on CSCs. There is good evidence that glioblastoma stem-like cells (GSCs), in particular, are highly enriched with CD133 and can be targeted by the use of anti-CD133 antibodies. Due to the high level expression of CD133 in multiple tumor types, IMUC intended to develop ICT-121 as an “off-the-shelf” vaccine. The initial targets were glioblastoma and pancreatic cancer, another cancer in which patient survival is measured in months. IMUC’s proprietary use of CD133 may likely be directed toward the development of ICT-121 for glioblastoma as preclinical studies showed ICT-121 to be highly targeted for destroying cancer stem cells in brain tumors. IMUC is currently optimizing the formulation, stability and GMP manufacturing of ICT-121 and plans to file an IND to begin testing ICT-121 in humans later in 2011. After its initial evaluation for safety in humans, ICT-121 is expected to be partnered for further development.

Promising Monoclonal Antibody Product Candidates

IMUC’s passive immunotherapy program is comprised of monoclonal antibodies that target different sites on molecules associated with a large number of cancers. All of IMUC’s monoclonal antibody product candidates were produced using IMUC’s proprietary Differentiated Immunization for Antigen and Antibody Discovery (DIAAD) technology, which enables the rapid discovery of antigen targets and generation of monoclonal antibodies. As IMUC’s strategy is to become the first company focused primarily on the development of cancer stem cell therapeutics, the company also has CSC antibodies in early-stage development using proprietary CSC lines.

ICT-109 and ICT-37 Carcinoembryonic antigens (CEA) are highly glycosylated proteins attached to the exterior of the tumor cell membrane, where they function as cell adhesion molecules and play a role in tumorigenesis. ICT-109 is a monoclonal antibody that targets two types of CEA, CEACAM5 and CEACAM6, which have been implicated in the formation, proliferation, and migration of cancer cells. ICT-37 109 is a monoclonal antibody that targets an antigenic site found only on CEACAM5. CEACAM5 and CEACAM6 have been shown to impair cell differentiation, and thus, promote the preservation of cancer stem cells, which become a source of malignant growth. ICT-109 has shown in vitro and in vivo preclinical efficacy versus small lung cancer and pancreatic cancer. As CEACAM5 is associated with increased metastatic potential in cancer cells, ICT-37 is in preclinical evaluation in multiple cancers. Albeit in very early stage, ICT-109 and ICT-37 target unique epitopes on disease-specific antigens, and thus, could be attractive partnering opportunities.

ICT-69 The target of ICT-69 is CD28, which is a marker expressed on T cells. CD28 provides signals required for T cell activation, but is also a marker of tumor expansion in multiple myeloma. ICT-69 is a monoclonal antibody that has shown in vitro and in vivo preclinical efficacy versus multiple myeloma and ovarian cancer. Due to the role of CD28 in T cell activation, ICT-69 may also have potential applications in autoimmune disease. In September 2009 IMUC entered into a research and license option agreement with Roche Holdings Inc. (RHHBY, Not Rated) for the rights to evaluate the potential of ICT-69 in the diagnosis and treatment of multiple myeloma and ovarian cancer. Upon completion of the evaluation period, Roche has the right to acquire for an option exercise payment a commercial license for ICT-69 from IMUC, which would result in total payments due to the company of up to \$32 MM in the event that all developmental milestones are met. Royalties also will be payable to IMUC based on Roche’s worldwide sales of ICT-69 products.

Intellectual Property

The company has strong intellectual property surrounding its key technologies and product candidates. The IP portfolio includes more than 25 patents and patent applications (e.g., 7 issued, >18 pending). Vaccine patents and applications include certain antigens, composition of six antigens, method of use and manufacturing processes. Issued patents on monoclonal antibodies cover composition of matter, therapeutic treatments and diagnostics.

BRIEF OVERVIEW OF CANCER IMMUNOTHERAPY

The role of the immune system in counteracting the development of cancer was initially supported by individual clinical case reports, when it was observed that cancer occurs more frequently in individuals with weakened immune systems. In groundbreaking work in the late 1800s, a surgeon named, William Coley, noted that some cancer patients who were simultaneously suffering from bacterial infections had regression in their tumors. Coley concluded that, in trying to fight off the bacterial infection, the patients' immune systems had become highly activated and that this had given them some resistance to the tumor. After hundreds of clinical trials conducted to evaluate numerous candidates and decades of research by numerous scientists, in April 2010 Provenge became the first cancer immunotherapy to win FDA approval.

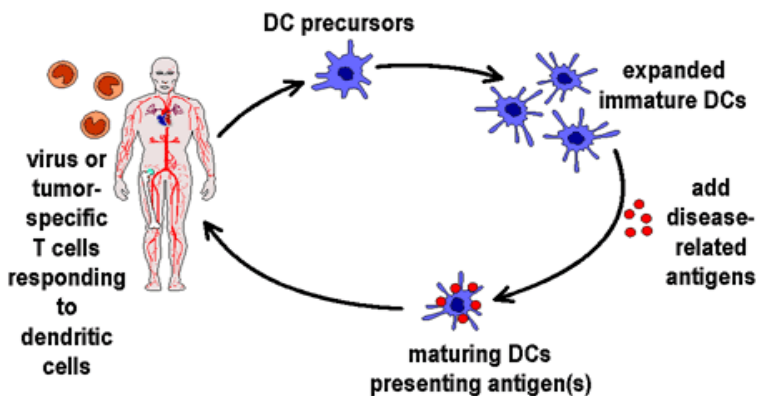
Immunotherapy Strategies

Tumor cells display a number of proteins on the cell surface that signal to the immune system that these cells are not normal, healthy cells. As a result, cancer patients often have specific antibodies circulating in their blood, demonstrating that the immune system has detected the tumor cells and is mounting a specific response. However, in many cases, the immune system response fails due to strategies that tumor cells use to evade immune detection. These strategies range from methods designed to hide tumor cells, to active incapacitation of immune cells by tumor-produced agents that lower the immune system's responses. Therefore, a prerequisite to a successful immunotherapy is the implementation of strategies to induce a robust immune response capable of recognizing and destroying tumor cells. Based on the types of antigens and method of their presentation used, the following immunotherapy strategies have been evaluated:

- Active immunotherapy – stimulate the body's own defenses to fight disease
- Passive immunotherapy – use immune system components (e.g., cytokines) created outside the body
- Non-specific immunotherapies – stimulate the body's immune system in very general ways, but may still show activity against cancer cells

Antigen Presentation We previously described antigen presentation in our initiation of coverage report on Vical Inc. (VICL, Buy) published on September 7, 2010 ("Harnessing the Immune Solution"). Briefly, antigen presentation is a process in the body's immune system by which antigen-presenting cells (APCs), such as macrophages, B-lymphocytes, dendritic cells and other types of cells, process and present antigens on their surfaces to effector cells in the immune system and enable their recognition, and inducing two major types of defense (i.e., adaptive and innate) against the target protein. The adaptive response is thought to be "specific" and is composed of highly specialized, systemic cells and processes that eliminate or prevent disease, whereas the innate response is "non-specific". There are many types of cells involved in the innate immune response, however, dendritic cells, which are present in tissues in contact with the external environment, have garnered the most research interest as their main function is antigen presentation.

FIGURE 5: IMMUNOCELLULAR THERAPEUTICS, INC. – DENDRITIC CELL-BASED IMMUNOTHERAPY



Source: DJSI research

Dendritic Cells Recent research shows that most antigens on tumor cells are not actively presented to the immune system, resulting in tolerance of tumor cells by immune system, however, if tumor antigens are pulsed to dendritic cells (DCs), then these DCs can actively present the antigens to the immune system. Consequently, the chance of these antigens being recognized by the immune system is improved, and the immune system trained to recognize tumor-specific antigens and to attack antigen-bearing tumor cells. When the antigens are derived from the patient's own tumor tissue, as with the process used to create Provenge, a personalized active immunotherapy can be created to further stimulate the immune system (see Figure 5 above). Recall, however, that this strategy still relies on a non-specific response, as the immune system may have already failed to mount a response adequate to eliminate the tumor cells, which may have already adapted and are evading immune detection prior to their removal for vaccine creation.

Cancer Stem Cells Certain tumors arise when stem cells lose the ability to regulate self-renewal. An active immunotherapy strategy that has gained interest recently is to target cancer stems cells (CSCs), which are found within tumors or hematological cancers. Research shows CSCs possess characteristics associated with normal stem cells, that is, the ability to give rise to all cell types found in a particular tissue, and as a result, are tumorigenic. Such cells are proposed to persist in tumors as a distinct population, evading immune system detection, and cause relapse and metastasis by giving rise to new tumors. As a result, development of specific therapies targeted at eliminating CSCs holds hope for improvement of survival and quality of life for cancer patients, especially for sufferers of metastatic disease. Special techniques are required to select for these cells from the vast number of cells that comprise a tumor, as they only comprise 1%-5% of the total. Selection hinges on the identification of cell surface markers, some of which are specific for their respective tissue types, while others are common to primary tumors found in a variety of organs. A list of markers found on stem cells (see table in Figure 6 below) shows how some markers can be found in multiple tumor types, while others are specific only for certain malignancies.

FIGURE 6: IMMUNOCELLULAR THERAPEUTICS, INC. – MARKERS TO IDENTIFY AND ISOLATE STEM CELLS

CANCER	CD44	CD24	CD133	ALDH1	ESA	B1	α6	CD138	CD34	CD166	CD20
Breast	+	-	+	+	+	+	+				
Colon	+		+	+	+					+	
Prostate	+		+	+			+	+			
Head and neck	+			+							
Pancreatic	+	+	+	+	+						
Lung			+								
Brain			+								
Liver			+								
Melanoma	+		+				+				+
Multiple myeloma				+				-	+		+
Leukemia	+			+						+	

Source: DJSI research

The stem cell surface marker, CD133, is a glycoprotein expressed in hematopoietic stem cells, endothelial progenitor cells, glioblastomas, neuronal and glial stem cells, and some other cell types. The physiological function of CD133 (also known as prominin-1) is not fully understood, however, it appears to organize the lipid topology of the cell membrane, thereby helping to prevent stem cell differentiation. This is supported by research that showed CD133 is expressed at low levels on progenitor cells in normal adult tissues, that is, until needed, and expressed at high levels in cancer stem cells. In line with this theory, CD133 is found expressed at high levels in brain, prostate, pancreatic, colon, primary liver, thyroid, and kidney cancers. In neuroblastoma cells, CD133 suppresses neuronal cell differentiation such as the growth of neurites. Finally, CD133⁺ stem cells isolated from these tumors are capable of differentiating in culture into malignant cells resembling those in the original tumor. ICT is using CD133 to develop ICT-107 for glioblastoma, as there is good evidence that glioblastoma stem-like cells (GSCs) can be enriched by the use of anti-CD133 antibodies. As can be seen in the table above, targeting CD133 with ICT-107 also has potential in melanoma, breast, colon, and other cancers.

Competitive Landscape

We believe several key takeaways were learned from past experience with cancer immunotherapies including:

- Cancer immunotherapy must be used in the appropriate populations. Important factors include patients with low burden disease, early-stage disease, and who have not been heavily pretreated.
- Appropriate clinical trial endpoints must be employed. This was especially evident with Provenge which was approved on overall survival although it showed no effect on progression-free survival and tumor response.
- A patient's immune status can affect their ability to mount an effective response to a vaccine approach. If a patient's immune system is healthier, for example, its response to an immunotherapy could lead to longer term tumor control through immune surveillance.

Cancer vaccines have yet to live up to their promise. Nevertheless, even after high profile failures by cancer immunotherapies in the past decade, there are once again several promising candidates currently in Phase III or about to enter Phase III in 2011 (see table in Figure 7 below). Ipilimumab, an investigational antibody against CTLA-4, is an immunotherapy developed by Bristol-Myers Squibb (BMY, Not Rated) that is in registration with a BLA for metastatic melanoma and a PDUFA date of March 26, 2011. We believe ipilimumab's approval, the approval of Provenge by the FDA in April 2010, and the identification of new targets for future monoclonal antibodies and vaccines, mark the emergence of the next era in cancer immunotherapy.

FIGURE 7: IMMUNOCELLULAR THERAPEUTICS, INC. – SELECT MID- AND LATE-STAGE IMMUNOTHERAPIES

Company	Product	Stage	Indication(s)
Bristol Myers-Squibb Co.	Yervoy (ipilimumab)	BLA (March 26, 2011 PDUFA)	Melanoma
Oncothyreon/Merck KGaA	Stimuvax	Phase III	Non-small cell lung cancer (NSCLC)
Biovest International Inc.	BiovaxID	Phase III	Non-Hodgkins Lymphoma (NHL)
GlaxoSmithKline plc	MAGE A3	Phase III	NSCLC, melanoma
Vical Inc.	Allovectin-7	Phase III	Melanoma
Bavarian Nordic A/S	Prostvac	Phase III	Prostate cancer
New Link Genetics Corp.	HyperAcute	Phase III	Pancreatic cancer
Prima BioMed Ltd.	Cvac	Phase III	Ovarian cancer
Celldex Therapeutics Inc.	Rindopepimut (CDX-110)	Phase IIb	Glioblastoma
Geron Corp.	GRNVAC1	Phase II	Acute myelogenous leukemia
TVAX Biomedical	TVI-Brain-1	Phase II	Recurrent glioma
Immatics Biotechnologies GmbH	IMA901	Phase II	Renal cell carcinoma, Colorectal cancer
Oxford Biomedica plc	TroVax	Phase II	Prostate cancer
Argos Therapeutics, Inc.	Arcelis (AGS-003)	Phase II	Renal cell carcinoma
ImmunoCellular Therapeutics, Inc.	ICT-107	Phase II	Glioblastoma

Source: DJSI research

Although the immunotherapy approach in our opinion represents a revolutionary cancer treatment modality especially for earlier stage cancer patients, with few exceptions, investigational cancer immunotherapies likely will continue to be initially evaluated in advanced-stage patients, as most cancer therapies have significant side effects and it is only ethical to subject a willing, advanced-stage patient to an unknown and possibly toxic new therapy. We are strong believers of the vaccine approach to treating cancer, as many of the therapies above that use this strategy are demonstrating very promising improvements in survival and duration of response without significant sacrifice in safety. We therefore believe the list of investigational immunotherapies above encompasses the next candidate that will win regulatory approval.

In addition to monoclonal antibodies and vaccines, other strategies used by therapies that target cancer stem cells include small molecule inhibitors of various components of cell proliferation and signaling, and apoptosis. For the purpose of brevity in this report, we focused only on immunotherapies.

GLIOBLASTOMA MARKET MODEL

Although they only represent ~2% of all cancers diagnosed in the U.S. each year, primary malignant brain tumors grow very rapidly. Of the 8.2 of every 100,000 people in the U.S. diagnosed, almost 40% are graded the most aggressive type, WHO Grade IV astrocytoma or glioblastoma multiforme (GBM). Despite advances in surgical resection and treatment, median survival of patients with GBM is still little more than one year after diagnosis (14.6 months) and SOC treatment. Long-term remission is possible, but GBM usually reappear and quickly develop resistance to temozolomide with only 20% of patients still alive after three years. As a result, GBM is an unmet medical need and remains one of the cancers under most active study with currently over 600 clinical trials actively recruiting test subjects or completed in the U.S.

When added to SOC, ICT-107 in Phase I testing showed better one- and two-year response rates, better survival, and better durable responses (median not yet reached more than two years after study initiation and >14.6 months) versus SOC alone. We believe the FDA approval in April 2010 of Provenge (sipuleucel-T) for prostate cancer had important implications on the view of therapeutic cancer vaccines. Therefore, with the potential to drive a paradigm change in the future treatment of GBM, we believe ICT-107 could become a blockbuster therapy.

FIGURE 8: IMMUNOCYLLULAR THERAPEUTICS, INC. – REVENUE MODEL FROM ICT-107 IN GLIOBLASTOMA MULTIFORME

	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E
Primary Malignant Brain Cancer, U.S.									
Prevalence	25,502	25,676	25,850	26,026	26,203	26,381	26,560	26,741	26,923
Newly-Diagnosed Glioblastoma Multiforme (GBM) Patients	9,330	9,393	9,457	9,522	9,586	9,652	9,717	9,783	9,850
Recurrent GBM Patients	3,266	3,266	3,288	3,310	3,333	3,355	3,273	3,277	3,296
Penetration									
Newly-Diagnosed GBM Patients	0%	0%	0%	0%	4%	10%	21%	36%	45%
Recurrent GBM Patients	0%	0%	0%	0%	0%	12%	26%	39%	42%
Patient Numbers									
Newly-Diagnosed GBM Patients	-	-	-	-	383	965	2,041	3,493	4,466
Recurrent GBM Patients	-	-	-	-	0	403	843	1,266	1,401
Potential Number of GBM Patients on ICT-107	-	-	-	-	383	1,368	2,883	4,758	5,866
Price per Vaccination	-	-	-	-	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
ICT-107 Sales in GBM, U.S. (000s)	-	-	-	-	\$46,015	\$139,977	\$295,440	\$495,066	\$619,933
Primary Malignant Brain Cancer, Ex-U.S.									
Prevalence	76,506	77,027	77,550	78,078	78,609	79,143	79,681	80,223	80,769
Newly-Diagnosed Glioblastoma Multiforme (GBM) Patients	25,695	25,870	26,046	26,223	26,401	26,580	26,761	26,943	27,126
Recurrent GBM Patients	8,993	8,993	9,054	9,116	9,178	9,240	9,303	9,366	9,136
Penetration									
Newly-Diagnosed GBM Patients	0%	0%	0%	0%	0%	0%	3%	17%	29%
Recurrent GBM Patients	0%	0%	0%	0%	0%	0%	11%	21%	31%
Patient Numbers									
Newly-Diagnosed GBM Patients	-	-	-	-	-	-	803	4,580	7,840
Recurrent GBM Patients	-	-	-	-	-	-	1,023	1,958	2,864
Potential Number of GBM Patients on ICT-107	-	-	-	-	-	-	1,826	6,538	10,704
Price per Vaccination	-	-	-	-	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
ICT-107 Sales in GBM, Ex-U.S. (000s)	-	-	-	-	\$0	\$0	\$157,741	\$667,096	\$1,112,600
Total ICT-107 Sales in GBM (000s)	-	-	-	-	\$46,015	\$139,977	\$453,181	\$1,162,163	\$1,732,532

¹Glioblastoma multiforme (GBM) is defined as WHO Grade IV astrocytoma.

²Ex-U.S. includes only Europe and Japan.

Source: Company reports and DJSI research.

We anticipate potential approval of ICT-107 in 2015 in our model. Using the design of the ICT-107 Phase I study and the ongoing Phase II trial as a starting point, we believe that an attractive price for a single ICT-107 injection could be \$5,000, as we believe ICT-107 will demonstrate superiority in a controlled, Phase II trial versus SOC alone, which our research found can reach >\$500,000. With the potential for >80% of patients to survive up to two years, each patient could require a total of \$55K worth of ICT-107 therapy, thus, we conclude that ICT-107 has potential to realize an opportunity worth more than \$2 BN in peak sales. We believe our model may be conservative as a course of Provenge therapy (three doses administered at approximately 2-week intervals) costs \$93K per patient versus initial estimates of \$50K, and Street estimates for Provenge's market opportunity are for ~\$1 BN within the first year, growing to \$5 BN in peak sales.

EXECUTIVE LEADERSHIP

Manish Singh, Ph.D., M.B.A., President, Chief Executive Officer and Director Dr. Singh previously served as Director of the venture capital firm, California Technology Ventures, where he was co-lead in investments in multiple biotechnology companies. He has 14 years of pharmaceutical industry experience, as a scientist at Cell Genesys, Chiron-Viagene, and Novartis, in various capacities including research, product development, manufacturing, and business development. Dr. Singh holds ten issued patents and patent applications.

John S. Yu, M.D., Chief Scientific Officer and Chairman Dr. Yu is an internationally renowned neurosurgeon on the faculty of Cedars-Sinai Medical Center in Los Angeles, California. He has conducted research focused on immune and gene therapies for brain tumors. Prior to Cedars-Sinai, Dr. Yu was also a neurosurgeon at Mass General Hospital and Harvard Medical School. He is a recipient of numerous awards, including the Preuss Award from the American Association of Surgeons and Congress of Neurologic Surgeons, and the Academy Award from the American Academy of Neurological Surgery.

James G. Bender, Ph.D., M.P.H., Vice President of Clinical Development Dr. Bender has more than 20 years of clinical development experience that includes work at Baxter Healthcare and work with a cancer vaccine at IDM Pharma and with stem cell and cancer vaccine products at Nexell Therapeutics. Dr. Bender is an author on more than 75 scientific publications and is listed as an inventor on 11 patents.

C. Kirk Peacock, CPA, Chief Financial Officer Mr. Peacock is a Certified Public Accountant with experience as the Chief Financial Officer of public and private companies, including CytRx, DigitalMed, and Ants.com. He is a Director and audit committee member of the investment company, Laird Norton Company LLC.

SCIENTIFIC ADVISORY BOARD

Keith L. Black, M.D., Chairman Dr. Black is Chairman of IMUC's Scientific Advisory Board. He serves as Chairman of the Department of Neurosurgery and Director of the Maxine Dunitz Neurosurgical Institute at Cedars-Sinai Medical Center. An internationally renowned neurosurgeon and scientist, Dr. Black joined Cedars-Sinai Medical Center in July 1997 and is an awardee of the Ruth and Lawrence Harvey Chair in Neurosciences. Prior to joining Cedars-Sinai, he served on the University of California, Los Angeles (UCLA) faculty for 10 years where he was Professor of Neurosurgery, and head of the UCLA Comprehensive Brain Tumor Program. Dr. Black also serves on the editorial boards of several peer-reviewed scientific journals.

George Peoples, M.D. Dr. Peoples is the Director of the Cancer Vaccine Development Program and Deputy Director of the U.S. Military Cancer Institute (MCI). Prior to MCI, Dr. Peoples held positions as Chief of Surgical Oncology at the Walter Reed Army Medical Center and Director of the Cancer Vaccine Developmental Laboratory. He received his M.D. from the Johns Hopkins School of Medicine and surgical training at Harvard Medical School's Brigham and Women's Hospital. Dr. Peoples is an author on multiple peer-reviewed publications, and has co-discovery credits on HER2/neu vaccines and a number of other anticancer vaccines from research at the M.D. Anderson Cancer Center.

Sherie Morrison, Ph.D. Dr. Morrison is a distinguished professor of Microbiology, Immunology and Molecular Genetics at UCLA and acted as department chair for 10 years. Prior to UCLA, Dr. Morrison served as professor in the Department of Microbiology at Columbia University College of Physicians and Surgeons, and completed post-doctoral fellowships at Columbia University, University of California, Berkeley and Albert Einstein College of Medicine. She is well published in research on the functional properties of antibodies and novel antibody-related proteins in this area.

Robert Martuza, M.D., Director Dr. Martuza has been Chief of Neurosurgery Service at Massachusetts General Hospital and Higgins Professor of Neurosurgery at Harvard Medical School since 2000. Dr. Martuza is a recognized authority on neurosurgery, has published numerous articles and books in the field of neurology, and has 11 patents issued or pending involving cell therapy.

VALUATION

Biotech companies that focus on immunotherapeutics such as vaccines for cancer currently trade at a mean enterprise value (EV) of \$122 MM (see Figure 9), which is more than 2.8 times the current \$43 MM EV of ImmunoCellular Therapeutics. With IMUC shares trading at a 66% discount, strong cash position and no debt versus competitors, we believe the stock represents a significant value proposition. By using the comparable group mean EV, dividing by IMUC's EV, and multiplying by the number of IMUC shares outstanding, we derive a value of \$8 per share. With the goal of ramping up its clinical programs in 2011, IMUC completed an equity offering of ~\$8.1 MM in February 2011, and thus, we adjust the company's EV to \$49 MM, resulting in an adjusted fair value of \$5.48 per share. At current prices, we therefore rate the shares a Buy and set a year-end 2011 price target of \$5.

FIGURE 9: IMMUNOCELLULAR THERAPEUTICS, INC. – COMPARABLE COMPANIES AND TARGET SHARE VALUATION

Company	Ticker	Price	SOS ¹	Mkt. Cap.	Cash ²		Debt ²		Enterprise Value	
		3/21/11		(\$ MM)	Total	/Share	Total	/Share	Total	/Share
AGENUS, INC.	AGEN	\$0.92	99	91	20	\$0.20	34	\$0.00	106	1.06
BIOVEST INTERNATIONAL, INC.	BVT	\$0.62	140	87	3	\$0.02	32	\$0.23	116	0.83
CELLDEX THERAPEUTICS, INC.	CLDX	\$3.89	32	125	61	\$1.90	0	\$0.00	64	1.99
CEL-SCI CORP.	CVM	\$0.55	207	114	21	\$0.10	1	\$0.01	94	0.45
GENEREX BIOTECHNOLOGY, INC.	GNBT	\$0.20	275	55	8	\$0.03	76	\$0.28	123	0.45
MICROMET, INC.	MITI	\$5.09	91	464	221	\$2.42	1	\$0.01	244	2.67
ONCOTHYREON, INC.	ONTY	\$3.56	30	107	33	\$1.11	0	\$0.01	74	2.46
PROVECTUS PHARMACEUTICALS, INC.	PVCT	\$0.94	86	81	10	\$0.12	0	\$0.00	71	0.82
VICAL, INC.	VICL	\$2.51	72	180	55	\$0.77	0	\$0.00	125	1.74
YM BIOSCIENCES, INC.	YMI	\$2.63	110	289	81	\$0.74	0	\$0.00	208	1.89
Median				110	27	\$0.47	0	\$0.00	111	\$1.40
Mean				159	51	\$0.74	14	\$0.05	122	\$1.44
IMMUNOCELLULAR THERAPEUTICS, INC. IMUC		\$2.21	22	48	6	\$0.29	0	\$0.00	42	\$1.92

All numbers are in \$ millions except per share data. EV = enterprise value

¹Shares outstanding (SOS) as of most recent reported quarter adjusted for effects of recent financing activities.

²As of most recent reported quarter.

IMUC Percent of Mean **-70%**

IMUC Percent of Mean **-66%**

Comparable EV Multiple (Mean/IMUC) 2.9

Target Price (comparable EV divided by IMUC shares out) \$6.47

Discount from Cash Net Proceeds of Financing in 2011 (\$MM) \$8

Adjusted IMUC EV (YE11) \$49

Adjusted Target Price \$5.48

Source: Company reports, FactSet and DJSI research.

Ratings of covered companies mentioned in this table: Vical Inc. (VICL, Buy)

FINANCIAL OUTLOOK

We tentatively include potential revenues beginning in 2015 only from ICT-107 in our model. We believe IMUC has a promising portfolio of immunotherapy product candidates, however, due to their early-stage nature, we do not include potential revenue contributions from them. As a result, we do not project IMUC will record any near-term incremental revenues that could be material to the valuation of the shares.

We estimate R&D expenses will primarily be driven by development costs for IMUC's product candidates, ICT-107 and ICT-121, which is due to enter Phase I testing in 2011. We anticipate R&D and G&A expenses will accelerate in 2011 onward with the advancement of IMUC's second lead product candidate, progresses and costs significantly begin to consume cash reserves. We have modeled financing activities in the years, 2011–2015, to coincide with the demonstration of value-creating clinical milestone results and favorable market conditions.

We project IMUC will record a loss of \$12.7 MM or (\$0.44) per share in 2011. IMUC has not provided guidance regarding its operating expenses, therefore, our estimates use the best available information only. With the recent financing, which we estimate resulted in net proceeds to IMUC of \$7.6 MM, we project the company will end 2011 with approximately \$3 MM in cash reserves, which after adjusting for non-cash charges associated with changes in the fair value of warrant liabilities, is sufficient to last until mid-2012. Based on our revenue and expense projections, we estimate IMUC will not become profitable for some time, but may potentially realize the company's first quarter of profitability in 2015. As the company intends to out-license development of its monoclonal antibody immunotherapies, we view additional partnerships and revenues, potentially in 2011 onward, as upside to our projections.

FIGURE 10: IMMUNOCELLULAR THERAPEUTICS, INC. – KEY MILESTONES

Date	Milestone
2Q11	Announce peer-reviewed publication of results from Phase I trial of ICT-107 in patients with glioblastoma
2011	Initiate Phase I trial for an off-the-shelf vaccine
2011	Announce potential partnership of antibody technology platform
4Q11	Complete enrollment of patients with newly-diagnosed glioblastoma in Phase II trial evaluation of ICT-107
2Q12	Interim analysis of Phase II trial of ICT-107 in glioblastoma
2012	Potential initiation of additional trials with ICT-107 (recurrent and pediatric glioblastoma)

Source: Company reports.

INVESTMENT RISKS

The key risks are:

- **Development Risk** Although ICT-107 previously has demonstrated promising results in Phase I evaluation, there is no guarantee that it will be successful in achieving the primary endpoint of the ongoing Phase II trial (i.e., improved survival versus SOC). Further, with more than 600 clinical studies ongoing in GBM, we anticipate the ongoing Phase II trial could face a delay in full enrollment. There is currently significant interest in evaluating Avastin (bevacizumab), an anti-angiogenic therapy marketed by Roche Holdings SA (RHHBY, Not Rated) that received accelerated approval for GBM in 2009. Although enrollment in the Roche-sponsored post-approval trials is complete, should Avastin demonstrate positive results in the front-line, newly diagnosed GBM setting this year, further enrollment could face a hurdle as the Phase II clinical trial design does not include Avastin as a component of SOC.
- **Regulatory Risk** We also acknowledge our model may be aggressive with its timeline as it assumes that positive results from the ongoing Phase II evaluation of ICT-107 will be sufficient to gain its approval with the FDA. We have also noted above that immunotherapies previously evaluated have met with a negative regulatory fate. We believe, however, that the design of the ICT-107 Phase II clinical trial design incorporates lessons from previous failures and is robust. Additionally, we believe the approval of Provenge paved a path for the regulatory process and the bar (i.e., improved survival) for the future evaluation of investigational immunotherapies such as ICT-107.
- **Commercialization Risk** Given the company's lack of prior experience with the successful completion of pivotal trials, submission for regulatory approval and product commercialization, we believe IMUC will need to bear close scrutiny regarding the successful conduct of the ongoing ICT-107 Phase II trial. We believe collaborating with an experienced partner would help mitigate commercialization risk.
- **Financial Risk** Based on our analysis of the historical costs of mid-stage clinical trials, we anticipate the cost to conduct the planned third Phase III trial with ICT-107 ranges from \$25MM to \$35 MM. As by our estimates, IMUC currently has cash reserves adequate to finance operating burn only through mid-2012, we believe the company needs to conduct successful financing activities every year through 2015 in order to fund operations and achieve value-creating clinical milestones.
- **Market Risk** IMUC shares are offered by the NASD but listed on the over-the-counter (OTC) bulletin board (BB). OTCBB stocks are not considered especially large or stable and considered very risky. Because these stocks tend to trade infrequently, their share price is also more volatile. IMUC, however, is required to file current financial statements with the SEC, and as such, we believe the company can meet our, and investors', requirements for transparency and provide information adequate for an appropriate analysis of investment value and risk. We anticipate continued IMUC share price appreciation and potential future listing on the Nasdaq or AMEX.

FIGURE 11: IMMUNOCELLULAR THERAPEUTICS, INC. – QUARTERLY INCOME STATEMENT

Income Statement (\$MMs)											
Fiscal Year Ends December 31											
	2009A	1QA	2QA	3QA	4QE	2010E	1QE	2QE	3QE	4QE	2011E
Product Revenues	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ICT-107 (Glioblastoma)	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	\$ 0.3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Licensing, Royalties and Other revenue	0.3	-	-	-	-	-	-	-	-	-	-
Cost of Goods Sold	-	-	-	-	-	-	-	-	-	-	-
Gross Profit	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R&D Expenses	1.0	0.2	0.5	1.1	1.4	3.2	1.5	1.7	1.8	2.0	7.0
SG&A Expenses	1.7	0.5	0.6	0.5	0.6	2.2	0.7	0.8	0.8	0.9	3.2
Stock-Based Compensation	0.3	0.1	0.2	0.2	0.1	0.7	0.1	0.1	0.2	0.2	0.6
Total Operating Expenses	2.9	0.8	1.4	1.8	2.1	6.1	2.3	2.6	2.8	3.1	10.8
Income (Loss) from Operations	(2.6)	(0.8)	(1.4)	(1.8)	(2.1)	(6.1)	(2.3)	(2.6)	(2.8)	(3.1)	(10.8)
Interest Income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Change in Fair Value of Warrant Liability	-	(0.0)	(0.3)	0.6	(0.4)	(0.1)	(0.7)	(0.9)	(0.3)	(0.1)	(1.9)
Net Income (Loss), B4 Taxes	(2.6)	(0.8)	(1.7)	(1.2)	(2.5)	(6.2)	(3.0)	(3.5)	(3.0)	(3.2)	(12.7)
Loss (Benefit) Extraordinary Items	-	-	1.0	-	-	1.0	-	-	-	-	-
Income Tax Expense (Benefit)	-	-	-	-	-	-	-	-	-	-	-
Net Income (Loss)	(2.6)	(0.8)	(2.6)	(1.2)	(2.5)	(7.1)	(3.0)	(3.5)	(3.0)	(3.2)	(12.7)
EPS, Fully Diluted	(\$0.19)	(\$0.05)	(\$0.14)	(\$0.06)	(\$0.12)	(\$0.36)	(\$0.11)	(\$0.13)	(\$0.11)	(\$0.09)	(\$0.44)
Fully Diluted Shares	13.7	15.0	19.2	21.0	21.9	19.3	26.2	27.2	28.2	34.3	29.0

All figures in millions except, per share numbers

Source: Company Reports, DJSI Research.

FIGURE 12: IMMUNOCELLULAR THERAPEUTICS, INC. – ANNUAL INCOME STATEMENT

Income Statement (\$MMs)							
Fiscal Year Ends December 31							
	2009A	2010E	2011E	2012E	2013E	2014E	2015E
Product Revenues	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 46.0
ICT-107 (Glioblastoma)	-	-	-	-	-	-	-
Total Revenue	\$ 0.3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 46.0
Licensing, Royalties and Other revenue	0.3	-	-	-	-	-	-
Cost of Goods Sold	-	-	-	-	-	-	4.6
Gross Profit	0.3	0.0	0.0	0.0	0.0	0.0	41.4
R&D Expenses	1.0	3.2	7.0	11.6	16.9	21.1	29.1
SG&A Expenses	1.7	2.2	3.2	4.6	5.9	6.9	8.4
Stock-Based Compensation	0.3	0.7	0.6	0.5	0.7	1.6	2.2
Total Operating Expenses	2.9	6.1	10.8	16.8	23.4	29.6	39.6
Income (Loss) from Operations	(2.6)	(6.1)	(10.8)	(16.8)	(23.4)	(29.6)	1.8
Interest Income	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Change in Fair Value of Warrant Liability	-	(0.1)	(1.9)	0.0	0.0	0.0	0.0
Net Income (Loss), B4 Taxes	(2.6)	(6.2)	(12.7)	(16.7)	(23.4)	(29.5)	1.9
Loss (Benefit) Extraordinary Items	-	1.0	-	-	-	-	-
Income Tax Expense (Benefit)	-	-	-	-	-	-	-
Net Income (Loss)	(2.6)	(7.1)	(12.7)	(16.7)	(23.4)	(29.5)	1.9
EPS, Fully Diluted	(\$0.19)	(\$0.36)	(\$0.44)	(\$0.40)	(\$0.41)	(\$0.52)	\$0.03
Fully Diluted Shares	13.7	19.3	29.0	41.6	57.4	57.1	58.7

All figures in millions except, per share numbers

Source: Company Reports, DJSI Research.

IMPORTANT DISCLOSURES:

Price Chart



Price target and ratings changes over the past 3 years:

Initiated – March 21, 2011 – Target \$5.00

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	Company Coverage		Investment Banking	
Ratings Distribution	# of Companies	% of Total	# of Companies	% of Totals
Buy	19	79%	7	37%
Neutral	5	21%	4	80%
Sell	0	0%	0	0%
Total	24	100%	11	46%

Information about valuation methods and risks can be found in the “VALUATION” and “RISKS” sections of this report.

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