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**Price in USD (as of date of report): \$1.30**

**Corporate Overview**



Founded in 2011, **OncoSec Medical Inc. (OMI)** is an advanced-stage biomedical company focused on commercializing therapeutic oncology products. The basis for OMI's core technology is a novel, enhanced delivery system using a form of cell membrane stimulation known as electroporation. Using this system to deliver a proven chemotherapy or an immunotherapy, these therapies can effectively destroy cancerous cells while sparing surrounding healthy tissue and reducing or eliminating detrimental treatment outcomes associated with other "standard of care" therapies such as surgery, chemotherapy and radiation. OMI's near-term development and commercialization goals are to seek marketing approval in Europe and initiate pivotal clinical trials in the US by 2012.

**Website:** [www.oncosec.com](http://www.oncosec.com)

**Stock Data**

Industry: Biotechnology  
 Market Cap: \$68.5M  
 Cash & STI (mrq): \$1.1M\*  
 52 Week Range: \$1.11 – \$1.99  
 Revenue (FY 2010): N/A

**Price Target:** **\$2.90**  
 Avg. Volume (3 month): 86,133  
 Float: 20.1M  
 Shares Outstanding: 52.7M  
 Enterprise Value: \$67.4M

\*Includes \$1.1M gross aggregate proceeds raised post most recent quarter ("mrq")

**Highlights**

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- OncoSec's ablation platform selectively destroys cancer cells while leaving healthy tissue intact, dramatically improving patient quality of life
- Electroimmunotherapy platform allows activation of both innate and adaptive immunity to kill cancer cells, resulting in both a local and systemic effect
- Efficacy and strong safety profile shown in Phase 1 - 4 clinical trials of 400+ patients: cutaneous (BCC, SCC, melanoma), head & neck, breast, prostate, pancreatic tumors
- Electroporation-mediated plasmid delivery could be a powerful new tool for effective gene transfer
- Targeting multi-billion dollar markets

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**Business Description**

Unless otherwise indicated, we use “OMI” and “the Company” in this report to refer to the business of OncoSec Medical Inc. OMI is an advanced-stage biomedical company focused on commercializing therapeutic oncology products. Founded in 2011 and located in San Diego, the company is committed to bringing patients new and improved treatment alternatives to existing therapies that have untoward side-effects and where improvements to the patient’s treatment and personal well-being are both desirable and achievable.

The basis for OMI’s core technology is a novel, enhanced delivery system using a form of cell membrane stimulation known as electroporation. Using this system to deliver a proven chemotherapy or an immunotherapy, these therapies can effectively treat cancerous cells while sparing surrounding healthy tissue and reducing or eliminating detrimental treatment outcomes associated with other “standard of care” therapies such as surgery, chemotherapy and radiation.

The science behind OMI's delivery technology, called the Oncology Medical System (OMS), is based on the application of brief electrical pulses to the cancer cells of various solid tumor types. The pulses create a temporary, reversible increase in the permeability of cells’ membranes, a process known as electroporation.

When a chemotherapeutic or immunotherapeutic agent is first locally injected into a selected tumor and surrounding tissue, the subsequent application of electroporation creates temporary pores in the cell membrane that allows significantly increased entry of these agents into the cell. The agents can then perform their intended function: the chemotherapeutic will kill rapidly dividing cells, i.e. cancerous cells; the immunotherapy will stimulate the body’s immune system in order to enhance its cancer-killing capabilities.

These new ElectroOncology therapies can be selectively applied to specific parts of the body affected by a tumor(s). They can minimize or avoid the detrimental cosmetic and functional effects of surgery while reducing or eliminating the toxic side effects of chemotherapy and radiation.

OMI’s near-term development and commercialization goals are to seek marketing approval in Europe and initiate pivotal clinical trials in the U.S. by 2012.

## Outlook & Conclusion

### Outlook

#### DNA Delivery With OMS –ElectroImmunotherapy

Data from a first-in-man phase I clinical trial demonstrated that a DNA-based immunotherapy (plasmid IL-12) against metastatic melanoma, delivered using OMI's electroporation delivery technology (OMS), was safe and well-tolerated. Despite starting from nominal dose levels and without reaching dose-limiting toxicity, this therapy achieved evidence of durable local and systemic tumor regression. The results from this study suggest that electroporation-mediated delivery of DNA-based immunotherapies could be a powerful new tool for treating local and metastatic cancers.

This investigator-sponsored Phase 1 clinical study was designed to assess safety, tolerability and clinical responses against metastatic melanoma after administration of plasmid-based IL-12 delivered intratumorally by OMI's electroporation system (OMS). Twenty four patients were treated at seven escalating dose levels. No dose-limiting toxicity was noted. Observations from these results include:

- The experimental regimen was safe and well tolerated
- There was a dose-dependent increase in IL-12 protein expression in the treated lesions
- Tumors treated with OMS-ElectroImmunotherapy demonstrated marked lymphocytic infiltrates associated with tumor necrosis

Clinical response:

- Of 79 locally treated lesions that were biopsied, 90% (71 of 79) achieved complete regression.
- Of 19 patients with both treated and untreated distal lesions, three (15%) showed complete regression of all lesions (including distal untreated lesions), suggesting a systemic effect of the therapy
- 8 additional patients (42%) showed a systemic response resulting in stable disease or objective regression of untreated lesions

OMI plans to initiate a Phase II melanoma trial before the end of 2011.

#### Drug Delivery With OMS - ElectroChemotherapy

Bleomycin has been approved by the FDA, the Health Protection Branch in Canada and across the EU, and has been used as a chemotherapeutic

agent in North America for the treatment of certain cancers for more than 30 years. Bleomycin, combined with electroporation, is highly selective and effective in killing cancerous cells. When delivered via electroporation, Bleomycin's cytotoxicity increases several thousand-fold over application without electroporation. The local injection of Bleomycin at the concentrations recommended for electroporation do not appear to harm normal healthy tissue. These factors contribute to the apparent tissue preservation feature of OMS that may provide differentiating attributes for OMI's tumor ablation system over that of its competitors.

Previously, OMS was developed for head and neck ("H&N") and cutaneous cancers, and to date, this technology has been used to treat over 400 patients. A Phase II trial using OMS to treat late stage recurrent H&N squamous cell carcinoma produced a 25% complete response and 57% objective response, which are excellent results for this disease stage. In a subsequent European early stage oral cavity squamous cell carcinoma trial, 16 out of 20 patients (80%) showed no viable cancer cells after four weeks, which demonstrates OMS's potential as a primary treatment for H&N cancer. In a cutaneous cancer trial, 130 of 146 tumors (89%) demonstrated a complete response.

Results to date suggest OMS, using significantly smaller chemotherapeutic doses of Bleomycin than in conventional chemotherapy, matches or exceeds tumor response and survival results of current traditional therapies, i.e. primarily surgery, while preserving healthy tissue, minimizing systemic drug exposure and undesirable side effects, affording improved quality of life outcomes and potentially lower treatment costs. It is critical that ElectroChemotherapy may preserve a patient's appearance and ability to speak, smell, eat, or taste, which may uniquely enhance the quality of life of patients suffering from the harsh side effects of cancer and its associated standards of care such as surgery or radiation. It may also provide cost advantages compared to surgery.

### **Conclusion**

The Electroimmunotherapy approach likely requires further validation in the form of one or many advanced stage clinical trials prior to a potential collaborator's involvement. With that said, should the planned Phase II melanoma clinical trial, scheduled to commence in the second half of 2011, produce results similar to that of the Phase I, in terms of efficacy and safety, the value of this program will increase considerably. IL-12 alone or recombinant IL-12 is not very effective, however in combination with OMS, it has shown to become highly effective in

creating both a local and systemic effect in clinical studies to date. Should future clinical studies further validate both a local and systemic effect in rare cancer indications, we believe this combination could receive Orphan designation as it serves an important, unmet market, with no therapeutic options.

As for the ElectroChemotherapy approach, OMI intends to advance a commercialization strategy that leverages previous in-depth clinical experiences, previous CE approvals for the electroporation-based devices and late stage clinical studies (Phase III/IV) in the United States and Europe. OMI will seek regulatory approvals to initiate specific studies in target markets to collect clinical, reimbursement, and pharmacoeconomic data in order to advance their commercialization strategy. This strategy includes seeking approval from the FDA to initiate pivotal registration studies in the United States for select rare cancers that have limited, adverse or no therapeutic alternatives. OMI will expand the addressable markets for the OMS therapies through the addition of relevant indications.

Finally, OMI could partner and/or co-develop these ElectroOncology therapies in developing geographic locations, such as Eastern Europe and Asia, where local resources are best leveraged and appropriate collaborators can be secured. We believe the ElectroChemotherapy segment represents a highly attractive partnership candidate based on strong efficacy and safety data from advanced clinical trials to date. In addition, the size of the markets this platform technology serves and could serve, which could represent billions of dollars in revenues on an annual basis, further strengthen the value proposition to a potential partner.

#### **Valuation**

Wall Street analysts expect [Bristol-Myers Squibb's](#) new "Holy Grail" cancer drug Yervoy™ to make at least \$1.7 billion a year in revenues. OMI's DNA IL-12 in combination with OMS could eventually compete with Yervoy™ and challenge its position as the market leader and become the therapeutic option of choice, if approved. DNA IL-12 has a ways to go prior to commercialization, however, clinical data to date is impressive.

We thought it to be prudent to highlight the fact that M&A in oncology is alive and well as evidenced by recent deals that are listed below:

- J&J acquisition of Cougar Biotechnology (\$894M)
- Amgen acquisition of BioVex (\$970M)
- Daiichi Sankyo acquisition of Plexxikon (\$935M)

- Gilead acquisition of Calistoga Pharmaceuticals (\$375M)
- Astellas acquisition of OSI (\$4B)

OMI trades at a discount relative to anticipated growth. We have assigned a **12-month target price of \$2.90** to the Company, which is based on our risk adjusted net present value calculation, which we conservatively estimate to be \$182,000,000. We understand there is significant execution risk for OMI. With that said, the current valuation doesn't reflect the potential upside. We highly doubt OMI will continue to trade at a discount for much longer. We will look to revise our price target higher upon initiation of the Phase II trial and upon updates on the progress of the ElectroChemotherapy program.

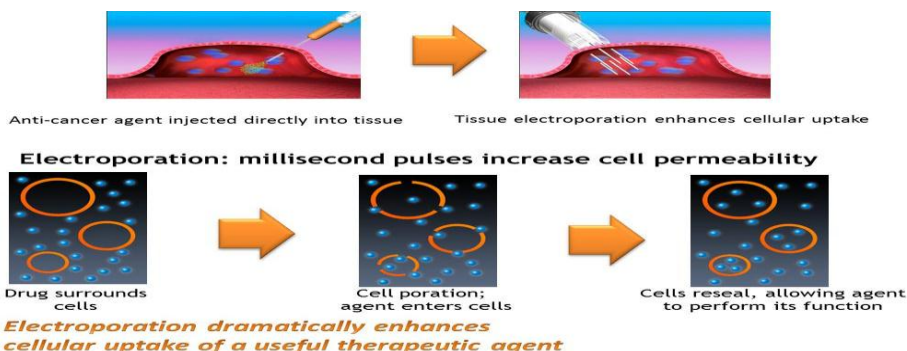
## OMS

### The OncoSec Medical System (OMS)

Most drugs and DNA-based therapeutics must enter the target cell through its membrane in order to perform their intended function. However, the effectiveness of these medicines is limited as gaining entry into target cells through the outer membrane can be a significant challenge. In the 1970s, it was discovered that the brief application of high-intensity, pulsed electric fields to the cell resulted in a temporary and reversible increase in the permeability of the cell membrane. As a consequence, it was also demonstrated that there was a subsequent increase in the ability of both small and large molecules to move between the cell exterior and interior via the newly formed membrane pores.

The transient, reversible nature of the electrical permeabilization of cell membranes and the resulting increase in intracellular delivery of therapeutic agents is the underlying basis of OncoSec's therapeutic approach. Enabling this enhanced delivery is the OncoSec Medical System ("OMS"). The OMS consists of an electrical pulse generator console and various disposable applicators specific to the individual tumor size, type and location. While the extent of membrane permeabilization depends on various electrical, physical, chemical, and biological parameters, research with OMS has demonstrated an increase in cellular uptake of chemical molecules from 6,000-8,000-fold above baseline. Once inside the cell, the membrane permeability decreases, thereby trapping the molecules within the cell and allowing them to perform their function. The enhanced delivery of these agents results in the ability to not only improve cytotoxicity and therapeutic value but also to lower the required doses and thereby provide a potentially safer treatment.

Below is an illustration of the electroporation process and what transpires on a cellular level upon introduction of a therapeutic:



The Company’s ElectroOncology business is composed of two different therapeutic approaches: ElectroImmunotherapy and ElectroChemotherapy. The Company’s ElectroImmunotherapy products are based on the use of electroporation to enhance the local delivery of DNA-based cytokines as immunotherapy agents intended to produce both a local and systemic immune response for the treatment of various cancers. OMI’s ElectroChemotherapy utilizes its electroporation system for the local delivery of the chemotherapeutic drug bleomycin to treat solid tumors. OMI’s electroporation platform for the delivery of therapeutic agents facilitates the killing of cancerous cells, while leaving healthy normal tissues unharmed. Below is an illustration of the anti-cancer agents OMI is using in combination with the OMS system.



**ElectroImmunotherapy**

**DNA Delivery With Electroporation - ElectroImmunotherapy**

The greatest obstacles to making DNA-based immunotherapies a reality has been the lack of safe, efficient, and economical delivery and expression of plasmid-DNA constructs into target cells. The use of OMS in this approach has been validated with multiple sets of interim data from multiple clinical studies assessing DNA-based immunotherapies against cancers. OMI believes that electroporation should become the

method of choice for plasmid-DNA delivery into cells in many clinical applications.

OncoSec's ElectroImmunotherapy uses the OMS electroporation system to create optimal conditions to deliver plasmid DNA into tumor cells and induce optimal responses to gene-based immunotherapeutic cytokines. The cytokine-encoding plasmid is first injected with a syringe/needle into the selected tumor. Using a remote control, the pulse generator is switched on and electrical pulses are generated and delivered through an attached electrical cord into the injected tissue through an electrode-needle array on the applicator. When the DNA injection is followed by electroporation of the target tissue; transfection is significantly greater with resultant gene expression generally enhanced from 100 to 1000-fold. The ability of OMS to efficiently increase gene expression, makes many DNA-based candidates potentially feasible without unduly compromising safety or cost as a result of the simple delivery method, and low-dose required to achieve therapeutic activity.

A **Phase I clinical trial** in metastatic melanoma was previously completed using electroporation to deliver plasmid-DNA encoding for the cytokine, IL-12. The study was designed to assess both the adaptive and innate immunity responses from the targeted delivery of the IL-12 into melanoma tumor cells. Published data have demonstrated that gene transfer utilizing in vivo DNA electroporation in metastatic melanoma showed that it was safe, effective, reproducible, and titratable. **90% of locally treated melanoma skin lesions achieved complete or partial regression. The findings also demonstrated 100% clearance of distant untreated lesions in 15% of the patients, suggesting a systemic immune response resulting from the localized treatment. In contrast, only 0.25% of melanoma skin lesions would be expected to spontaneously regress if left untreated.** These results are of great significance and thus the Company is now planning a Phase II clinical trial to assess IL-12 plasmid-DNA delivered using the OMS electroporation delivery system. This trial is expected to begin before the end of 2011.

Below is an illustration of the Phase I trial results:

- Dose escalation clinical study in patients with metastatic melanoma
- Treatment with OMS and IL-12 completed in 24 patients at University of Southern Florida, Moffitt Cancer Center
- US Phase I results reported in *Journal of Clinical Oncology* (Daud et al, 2008):
  - Study established efficacy, safety and tolerability
  - Evidence of systemic response (objective response) in 53% of patients with distal (remote) metastases that were untreated
  - **15% of patients demonstrated 100% clearance of distal, non-treated tumors; only 0.25% could be expected to spontaneously regress based on historic clinical data**



*Best in class Phase I study results support initiation of Phase II study*

### ElectroChemotherapy

#### Drug Delivery With Electroporation - ElectroChemotherapy

OncoSec's ElectroChemotherapy was formerly described as Selective Electrochemical Tumor Ablation (SECTA). The ElectroChemotherapy utilizes electroporation technology for the local delivery of the chemotherapeutic drug bleomycin to treat solid tumors. The approach has demonstrated safety and efficacy in a wide range of solid tumors including, basal cell carcinoma, squamous cell carcinoma, melanoma, breast, prostate, and pancreatic cancers. ElectroChemotherapy has been developed up to Phase III clinical trials in the United States for the treatment of recurrent head and neck cancer and in Phase I/II for the treatment of recurrent breast cancer. In addition, Phase IV pre-marketing studies to support the commercialization of the tumor therapy in Europe were also performed for the treatment of primary and recurrent head and neck cancers and cutaneous skin cancers. The previous sponsor of these studies (Inovio Pharmaceuticals, Inc.) elected not to conclude the clinical testing but rather monetize certain SECTA assets in order to pursue a more focused strategy for the development of DNA vaccines.

OMI believes that advantages of the ElectroChemotherapy system are both the preservation of healthy tissue and killing of cancerous cells at the margins of the tumor. OMI anticipates the system may therefore afford advantages over surgery in preserving function and improving the quality of life for cancer patients who would otherwise face significant morbidity associated with cancer surgery or other methods of treatment. In addition, the Company believes that the ElectroChemotherapy approach will have pharmacoeconomic advantages over existing therapies and will be more readily accepted by both physicians and patients alike. A summary of clinical data from for

patients treated using the ElectroChemotherapy system is provided below:

(H.Lee Moffitt Cancer Center - University South Florida)

Type	# of Patients	Objective Response*	Complete Response
Basal Cell Carcinoma	18	56 of 56 (100%)	51 of 56 (91.1%)
Melanoma	10	84 of 85 (98.8%)	75 of 85 (88.2%)
Squamous Cell Carcinoma	1	1 of 1 (100%)	0 of 1 (0%)
Kaposi's Sarcoma	1	4 of 4 (100%)	4 of 4 (100%)
Totals	30	145 of 146 (99.3%)	130 of 146 (89.0%)

\* Complete response (CR) + partial response (PR)  
Heller et al., Cancer Vol. 83 (1), July 1, 1998

*Complete response is similar to treatment by surgery, without removal of healthy tissue*

## Market Analysis

The primary front line treatment of solid tumors involves surgical resection and/or radiation to debulk and control tumor growth prior to initiating systemic therapy with chemotherapeutic agents. Because of the concern of microscopic disease in the tissue surrounding a tumor and that it is often difficult or impossible for surgeons to determine the border, or margins, between healthy and diseased tissue, surgeons will often remove, or resect an area outside of the obvious tumor mass to ensure that they have excised all of the cancerous tissue. This can result in the loss of function and appearance of the surrounding tissues and organs, reducing the patient's quality of life. Examples include the loss of speech from resection of tumors on the tongue or larynx or loss of erectile function from resection of the prostate. Recent advances in non-surgical forms of tumor ablation, such as cryoablation, microwave and high frequency radio ablation therapy, fail to fully satisfy the clinical need to preserve normal healthy tissue. Given the desire for improved outcomes in the surgical resection of a large number of solid tumors such as those of the head and neck, skin, pancreas, breast and prostate, we believe that there will be significant demand for OncoSec's ElectroChemotherapy from patients, dermatologists and surgical oncologists.

### Current Treatment Practices

#### Surgery

In 90% of cases, the primary treatment for localized and operable tumors or lesions is surgical resection alone or in combination with other modalities such as radiation therapy. Surgery can be highly

effective for treating early stage cancers given the ability to cut an appropriate margin around the tumor in order to avoid recurrence from microscopic disease populating the periphery of the tumor mass. . However, accessibility of a tumor often prevents the use of surgery or limits the margin that can be removed, especially at sites such as the tongue where the loss of tissue results in the loss of critical function such as speech. The drawback to resecting tissue is potential disfigurement or debilitating effects on organ function. Surgery also requires additional cost in the form of hospitalization and post-operative care.

#### Radiation Therapy

Radiation therapy's high-energy rays generated by an external machine or by radioactive materials placed directly into or near the tumor are used to damage and stop growth of malignant cells, which are more sensitive to the effects of radiation. Radiation is often used in combination with surgery and chemotherapy. In cases where a tumor is inoperable or unresponsive to chemotherapy, radiation is often used palliatively to limit the complications of disease progression. Radiation therapy has a number of significant side effects, in that it damages healthy cells surrounding the target area and takes several weeks to administer. It may also be costly due to the number of procedures and cost of administration.

#### Chemotherapy

Post-surgery or in cases where surgery is contraindicated, chemotherapy is often used to treat systemic disease and may frequently be combined with radiation therapy. Typically it is used under the following circumstances:

- When cancer is disseminated, requiring treatment of systemic or metastatic disease;
- Where the prognosis for local-regional disease is poor due to the likelihood of disease progression;
- Where surgery is contraindicated, e.g. certain liver or pancreatic carcinoma; and
- For palliation, to achieve tumor shrinkage to ameliorate tumor symptoms or complications.

The cytotoxicity (i.e. their ability to kill cancerous cells) of many existing anti-cancer drugs is well proven, but with proven undesirable side effects including alopecia (loss of hair), nausea, vomiting, myelosuppression and in some cases drug resistance.

Surgery and radiation cannot be used where treatment poses a risk to nearby nerves, blood vessels, or vital organs. All of these practices have limited efficacy in treating cancers of certain organs, such as the pancreas.

### **Alternative Treatments**

#### Radio Frequency Ablation

This modality uses radio frequency energy to heat tissue to a high enough temperature to ablate it, or cause cell death. An ablation probe is placed directly into the target tissue. An array of several small, curved electrodes is deployed from the end of the probe. Once sufficient temperatures are reached, the heat kills the target tissue within a few minutes. This treatment has been proven efficacious in treating some solid tumors but suffers from not being tumor specific in destroying healthy as well as malignant tissue.

#### Photodynamic Therapy

Photodynamic therapy ("PDT") uses intravenous administration of a light-activated drug that accumulates in malignant cells. A non-thermal laser is used to activate the drug, producing free radical oxygen molecules that destroy the cancer. PDT has low risk of damage to adjacent normal tissue, the ability to retreat, and can be used concurrently with other treatment modalities. A major side effect of PDT is patient photosensitivity that can last up to eight weeks. Other side effects include nausea and vomiting. This method is limited by the shallow depth of penetration of the laser light which makes it more applicable to surface lesions on the skin or esophagus.

#### Cryoablation

Cryoablation is a technique being used to treat liver, kidney, prostate, and breast cancer. This method uses liquid nitrogen filled probes inserted into the tumor mass with image guided surgery to freeze cancer cells. Necrosis (cell death) occurs and the dead cells are naturally sloughed off into the body. Cryoablation has been most commonly adopted for use in treating prostate carcinoma where surgery can often lead to impotence. The technology is claimed to limit nerve damage in the prostate allowing for the retention of bladder and sexual function. Therefore, it may afford advantages over surgery and brachytherapy (see below).

### Brachytherapy

Brachytherapy involves the local implantation of radioactive seeds into or near a tumor mass. It has been most widely used in prostate and breast carcinoma in situ. The seeds decay over time resulting in the local destruction of malignant cells. The problem with brachytherapy, in addition to the concomitant destruction of nascent healthy tissue, is the investment and training required to administer the therapy. Recent reports also suggest that the therapy may not produce durable responses (i.e. long term cures). Consequently, brachytherapy does not appear to be growing in acceptance in the marketplace.

### Biological Therapy or Immunotherapy

This treatment encompasses many approaches focused on invoking an immune response against a cancer, including vaccine-based treatments and treatments using monoclonal antibodies. The use of monoclonal antibodies as therapeutic agents has had a dramatic impact on the treatment of certain tumors. When the antibodies target growth factor receptors required for tumor cell growth, they can often block the stimulation needed for cell growth and/or cause antibody-mediated cell killing of the tumor cell. Thus products like Herceptin®, Erbitux®, Rituxin® and Avastin® have proven beneficial especially when used in combination with a chemotherapeutic drug regime. In this role these new therapies will likely provide notable benefit in the form of improved tumor control that will reduce the incidence of metastases, but they will not replace the primary front line cancer therapies, for which surgery is the current therapeutic mainstay.

The use of vaccination has long held interest as another potential modality that could prove beneficial in treating and limiting systemic disease. The problem has been that tumors do not necessarily display antigens unique to the tumor cell that the immune system can use to specifically target for selective destruction of malignant tissue. It turns out that even if tumors do express tumor antigens, the immune system can become tolerant of these “self-antigens” and ignore those cells. As a result, it has proven difficult to use conventional vaccination strategies to break or overcome tolerance and generate immune responses against tumor cells.

### Addressable Markets

#### BREAST CANCER

This is a malignant tumor that develops from the cells of the breast. It is the most common cancer among women (excluding skin cancers). It is the second leading cause of cancer death in women, after lung cancer.

According to the American Cancer Society ("ACS"), 207,090 women in the U.S. were diagnosed with breast cancer in 2010. 39,840 women died from breast cancer in 2010.

*Source: ACS*

#### HEAD AND NECK CANCER

The cancer refers to a diverse group of cancers that involve this region of the body, with the exclusion of thyroid gland, skin, lymph glands, and brain. There are roughly 40,000 reported cases in the US and 88,000 in the EU every year; they are more common in men than in women. Most of these origin from the tissues that line the airways in nostrils, salivary glands, and throat, as well as inside the mouth, gums, tongue, and the upper part of esophagus.

*Source: ACS*

#### SKIN CANCER

This is the most common of all cancers, and is divided into non-melanomas and melanomas. Non-melanomas (usually basal cell and squamous cell cancers) are the most common cancers of the skin, and they are called so because they develop from skin cells other than melanocytes. More than 1 million cases of non-melanoma skin cancer are diagnosed yearly in the United States and over 380,000 in the EU.

Melanoma is a cancer that begins in the melanocytes. Melanoma tumors are often brown or black (but this is not always the case) because most of these cells make melanin. It most often appears on the trunk of fair-skinned men and on lower legs of fair-skinned women, but it can appear on other places as well. Melanoma accounts for about four percent of skin cancer cases, however, it causes most skin cancer deaths.

*Source: ACS*

#### ADDITIONAL MARKETS

Although OMI is not currently targeting the markets mentioned below, these markets would be ideal for ElectroOncology therapies:

Prostate Cancer: Prostate cancer is the most common type of cancer found in American men, other than skin cancer. The American Cancer Society estimates that there were about 217,730 new cases of prostate cancer in the United States in 2010. About 32,050 men died of this disease. Prostate cancer is the third leading cause of cancer death in men, after lung cancer and colorectal cancer.

Pancreatic Cancer: The American Cancer Society predicted that, in 2010, about 43,140 people in the United States were found to have pancreatic cancer and about 36,800 died of the disease.

Liver Cancer: The American Cancer Society estimates that 24,120 new cases of primary liver cancer and bile duct cancer were diagnosed in the United States during 2010. It is about twice as common in men as in women. About 18,910 people died of liver cancer in the United States during 2010. This cancer is many times more common in developing countries in Africa, and East Asia than in the United States. In many of these countries it is the most common type of cancer. *Source: ACS*

Another point worth noting is that OncoSec's ElectroOncology therapies may potentially be used in conjunction with surgery. Surgery could be performed to remove a solid tumor and an ElectroOncology therapy would treat the tumor bed. Another combination treatment could be for breast cancer: ElectroOncology could shrink the breast cancer tumor and, rather than having a mastectomy, the patient could have a lumpectomy. ElectroChemotherapy would be used initially to treat the tumor and reduce it in size and a surgeon could remove the remaining tumor, which would be a lot smaller. This approach is easier on the patient, reducing risk of complication since the surgeon is removing a smaller tumor. The physical appearance of the patient is also preserved to an extent as less tissue is being removed.

#### Inovio Purchase Agreement

On March 24, 2011, OMI completed the acquisition of certain assets of Inovio Pharmaceuticals, Inc. ("Inovio") pursuant to an Asset Purchase Agreement dated March 14, 2011, by and between the Company and Inovio (the "Agreement"). OMI acquired certain assets (the "Purchased Assets") related to certain non-DNA vaccine technology and intellectual property relating to selective electrochemical tumor ablation ("SECTA") (the "Acquisition"). These technologies use electroporation to facilitate delivery of chemotherapy agents or nucleic acids encoding cytokines into tumors and/or surrounding tissue for the treatment of tumors. The Purchased Assets include, among other things:

1. certain equipment, machinery, inventory and other tangible assets of Inovio related to the SECTA technology;
2. certain engineering and quality documentation related to the SECTA technology;
3. the assignment of certain contracts (the "Assigned Contracts") related to the SECTA technology; and

4. certain of Inovio's patents, including patent applications, and trademarks, and all goodwill associated therewith related to the SECTA technology (the "Assigned IP").

OMI did not assume any of the liabilities of Inovio except with respect to all liabilities under the Assigned Contracts and Assigned IP arising after the closing date of the Agreement. OMI paid Inovio \$250,000 up front and will pay Inovio an additional \$2,750,000 in scheduled payments over a period of two years from the closing date and a royalty on commercial product sales related to the SECTA technology.

Pursuant to a cross-license agreement dated March 21, 2011, OMI granted Inovio a fully paid-up, exclusive, worldwide license to certain of the SECTA technology patents in the field of gene or nucleic acids, outside of those encoding cytokines, delivered by electroporation. Inovio also granted OMI a non-exclusive, worldwide license to certain non-SECTA technology patents in the SECTA field for the following consideration:

1. a fee for any sublicense of the Inovio technology;
2. a royalty on net sales of any business OMI develops with the Inovio technology; and
3. OMI must repay Inovio for any amount Inovio pays to the licensor of the Inovio technology that is a direct result of the license.

## Risks

### Risks

As the majority of the Company's resources are focused on two emerging products in the development stage, the Company expects to incur additional losses for the foreseeable future and will require additional financial resources. The continuation of the Company's research and development activities and the commercialization of its products is dependent upon the Company's ability to successfully complete its research and development programs, protect its intellectual property, obtain strategic partner support and finance its cash requirements on an ongoing basis. The Company's current capital resources are insufficient to execute all of its planned clinical trials.

The Company plans to prioritize its current capital resources prior to initiating its proposed U.S. Phase II trial assuming regulatory approvals to do so are obtained, however, it is still in the process of gathering the required third-party service provider costing proposals to execute the studies and has not yet committed any funds for this purpose. Also, the Company will require additional capital in order to see trials through to

completion. If the amount of capital raised is insufficient to fund all of the Company's research and development initiatives, management will be required to delay or discontinue one or more of its product development programs. It is not possible to predict the outcome of future research and development activities or the financing thereof. The Company expects that its growth and future prospects will be largely dependent on the success of one or both of its drug candidates.

We encourage investors to view all risks listed in the Company's most recent Super 8K on file with the Securities Exchange Commission dated March 24, 2011.

### Management Bios

#### **Punit Dhillon, Director, President and Chief Executive Officer**

In March 2011, Mr. Punit Dhillon was appointed Chief Executive Officer. Mr. Dhillon was formerly Vice President of Finance and Operations at Inovio until March 2011. In his corporate finance role, Mr. Dhillon was pivotal to the company raising over \$125 million through multiple financings and several licensing deals including early stage deals with Merck and Wyeth. Mr. Dhillon was responsible for implementation of Inovio's corporate strategy, including achievement of annual budgets and milestones. He was also instrumental to the successful in-licensing of key intellectual property and a number of corporate transactions, including the acquisition and consolidation of Inovio AS, a Norwegian DNA delivery company, and the recent merger with VGX Pharmaceuticals ("VGX"), which solidified Inovio's position in the DNA vaccine industry. Mr. Dhillon has played an effective role as head of operations for Inovio. He recently completed the integration of VGX with Inovio, including achieving cost-cutting of over 30% through the synergy assessment of both companies, consolidating four operating locations to two bi-coastal offices, and managing the existing shareholders from both companies.

Prior to joining Inovio, Mr. Dhillon worked for a corporate finance law firm as a law clerk. He also worked with MDS Capital Corp. (now Lumira Capital Corp.) as an intern analyst. Mr. Dhillon is an active member in his community and co-founder of Inbalance Network Inc., an organization focused on promoting an active lifestyle and grass roots community involvement, including scholarships to support students pursuing post-secondary education. Mr. Dhillon has a Bachelor of Arts with honors in Political Science and a minor in Business Administration from Simon Fraser University.

**Avtar Dhillon - M.D. Chairman**

Dr. Dhillon served as President and Chief Executive Officer of Inovio Pharmaceuticals, Inc. (NYSE Amex: INO) from 2001 to 2009, as President and Chairman of Inovio from 2009 until 2009, and as Executive Chairman since 2009. During his tenure at Inovio, Dr. Dhillon led the successful turnaround of the company through a restructuring, acquisition of technology from several European and North American companies, and a merger with VGX Pharmaceuticals to develop a vertically integrated DNA vaccine development company with one of the strongest development pipelines in the industry. Dr. Dhillon led nine successful financings, raising over \$136 million for Inovio and concluded several licensing deals valued at over \$200 million that included global giants, Merck and Wyeth (now Pfizer).

Prior to joining Inovio, Dr. Dhillon was vice president of MDS Capital Corp. (now Lumira Capital Corp.), one of North America's leading healthcare venture capital organizations. In 1989, Dr. Dhillon started a medical clinic and subsequently practiced family medicine for over 12 years. Dr. Dhillon has been instrumental in successfully turning around struggling companies and influential as an active member in the biotech community. Dr. Dhillon was previously a consultant to Cardiome Pharma Corp., a biotechnology company listed on the Toronto Stock Exchange and NASDAQ. While at Cardiome, Dr. Dhillon led a turnaround based on three pivotal financings, establishing a clinical development strategy, and procuring a new management team.

In his role as a founder and board member of companies, Dr. Dhillon has been involved in several early stage healthcare focused companies listed on the Toronto Stock Exchange and TSX Venture Exchange, which have successfully matured through advances in their development pipeline and subsequent M&A transactions. Most recently, he was a founding board member (2003) of Protox Therapeutics, Inc., a publicly traded specialty pharmaceutical company. Dr. Dhillon maintained his board position until the execution of a financing of up to \$35 million with Warburg Pincus in November 2010.

Dr. Dhillon currently sits on the Board of Directors of BC Advantage Funds, the largest Venture Capital Corporation in British Columbia. Dr. Dhillon was also a member of the Securities Practice Advisory Committee to the British Columbia Securities Commission from 1998 to 2001. Dr. Dhillon has a Bachelor of Science with honors in Human Physiology, and an M.D. from the University of British Columbia.

**James M DeMesa, M.D. - Director**

Dr. DeMesa has been a practicing physician and has served as a senior executive with several international pharmaceutical and biotech companies in the areas of corporate management, regulatory affairs, and pre-clinical and clinical pharmaceutical and medical device product development. Most recently, in 2008, Dr. DeMesa retired from his role as President, Chief Executive Officer and a director of Migenix Inc., a public biotechnology company focused on infectious and neurodegenerative diseases.

From 1997 to 2001, he was President, Chief Executive Officer and a director of GenSci Regeneration Sciences Inc., a public biotech company involved in the field known as orthobiologics, which is the use of biotechnology to treat musculoskeletal disease and injury. From 1992 to 1997, he was Vice President, Medical and Regulatory Affairs at Biodynamics International, Inc., and from 1989 to 1992 was Vice President, Medical and Regulatory Affairs of Bentley Pharmaceuticals. Dr. DeMesa is a co-founder of CommGeniX, a medical communications company, and MedXcel, a medical education company.

Dr. DeMesa is a member of the Board of Directors of Stem Cell Therapeutics, a public biotechnology company based in Calgary, and Induce Biologics, a private Toronto-based biotechnology company.

Dr. DeMesa attended the University of South Florida where he received his B.A. (Chemistry), M.D. and M.B.A. degrees and did his medical residency at the University of North Carolina. He is the author of two books and speaks regularly to companies and organizations throughout North America.

**Michael Cross, Ph.D. - Chief Business Officer**

In March 2011, Dr. Michael Cross was appointed Chief Operating Officer. Dr. Cross has nearly two decades of life sciences venture capital and biotech industry experience. Prior to joining OncoSec, Dr. Cross was in senior roles in venture investing and portfolio management at both GrowthWorks as Vice President and Jovian Capital as Senior Vice President in Toronto. In these roles he served on the Boards of both private and public life sciences and biotech companies. Previous to Jovian, Michael lead operational responsibilities as COO of a public oncology company, Viventia Biotech, where he helped bring an anti-cancer product into worldwide pivotal clinical trials. In addition, Dr. Cross was Managing Director of a contract manufacturing organization that he helped build and sell for its shareholders.

From 1996 to 2003, Dr. Cross held a variety of increasingly senior positions at MDS Inc. and MDS Capital and helped start MDS Proteomics. Before joining MDS, Dr. Cross was with the Department of National Defence, including serving as a Post-Doctoral Fellow with the Trauma and Physiology Group of the Defence Research Agency in Toronto. Dr. Cross received his Masters in Business Administration and his Doctorate in Philosophy from the University of Toronto.

**Caryn Peterson, Vice President, Regulatory Affairs**

Caryn Peterson brings to OncoSec more than 30 years of pharmaceutical industry experience in research and development, operations, and regulatory affairs. Prior to joining OncoSec, she led worldwide regulatory affairs for Syndax, a late-stage oncology company. Peterson also managed regulatory affairs at Ascenta Therapeutics and FeRx Inc., both oncology focused companies. She also worked in regulatory affairs at Amylin Pharmaceuticals, with a focus on first-in-class diabetes therapies. She is a founder and general partner of DSC-Associates, a pharmaceutical consulting group specializing in providing preclinical and clinical strategies to streamline product development. Ms. Peterson has authored several research publications and been a co-inventor on multiple patents.

**Veronica Vallejo - Corporate Secretary and Controller**

In March 2011, Veronica Vallejo was appointed Secretary and Treasurer, and serves as Controller and Principal Financial Officer of OncoSec. Ms. Vallejo joined the company in February of 2011. Prior to OncoSec, Ms. Vallejo worked in public accounting since 1997, most recently working as a Senior Manager with Mayer Hoffman McCann P.C. from 2001 to 2010. Veronica has extensive experience in public company matters and all finance and accounting functions, including SEC reporting filings such as Annual and Quarterly Reports, as well as Registration Statements. Ms. Vallejo also has substantial experience with integrated audits under the provisions of PCAOB's AS 5. Her specialized accounting experience includes areas such as revenue recognition and complex debt and equity transactions. Ms. Vallejo's industry experience includes work in the following industries: biotech, manufacturing & distribution, technology, and VC-backed companies. Veronica holds a B.S. in Business Administration with an emphasis in accounting from San Diego State University. She is a certified public accountant and a member of the American Institute of Certified Public Accountants.

**Legal Notes & Disclosures**

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