



## COMPANY OVERVIEW

Quantum Immunologics (QI) is a privately-held biotechnology company dedicated to improving the treatment outcomes and quality of life for cancer patients via the research, development and commercialization of innovative immunotherapeutic and diagnostic products. QI's technology is based upon the Oncofetal Antigen/immature Laminin Receptor Protein (OFA), a well-conserved, cancer-specific antigen expressed on the cell surface of over 500 cancer lines tested to date. Extensive research has demonstrated that this immunogen is found only to be present on: 1) cancer cells; and 2) fetuses through the mid-gestational period. These features make the ubiquitous OFA an optimal and previously unexploited target for QI's autologous dendritic cell therapy (ADCT), as well as other immunotherapeutic applications and diagnostic modalities involving its proprietary OFA monoclonal antibodies and peptides. These characteristics also create the potential for developing immunotherapies for a wide array of cancer types and oncology markets.

## PRODUCT PIPELINE

Therapeutic Agent	Preclinical	Phase I	Phase II	Phase III
Autologous Dendritic Cell Therapy (ADCT)				
<b>QI-BR-01 Triple Negative Breast Cancer</b>				
<b>QI-XX-01 Next Cancer Line</b>				
Monoclonal Antibodies				
<b>Lymphoma</b>				
<b>Breast Cancer</b>				
<b>Sandwich ELISA Cancer Diagnostic</b>				

## QI'S CLINICAL PROGRAMS

### *Autologous Dendritic Cell Therapy (ADCT)*

QI has recently completed patient enrollment and treatment segments of an FDA-authorized Phase I/IIa clinical trial designed to study the safety of its OFA-based ADCT in Stage IV metastatic breast cancer patients. QI has recently attended an "end-of-phase" meeting with FDA regulators as part of its transition to the next phase of the study. QI is planning a Phase IIb, OFA-based ADCT on Stage III triple-negative breast cancer patients in a 2:1 randomized, double blinded, placebo controlled 120-patient study.

As compared to some immunotherapeutic treatments, QI's ADCT manufacturing process has the advantage of only requiring one aphaeresis to produce a sufficient number of cells for several immunotherapeutic injections. This attribute not only minimizes patient inconvenience, but also provides QI a lower cost structure. The QI ADCT manufacturing process and resulting positive impact on cost of goods sold provides QI with greater economic flexibility when trying to address the large unmet medical need of triple negative breast cancer patients, given that approximately 22% of all breast cancer patients (currently estimated to exceed 2,000,000 cases in the US, G5 countries of Europe, and Japan) are triple negative patients.



QI is currently in the process of obtaining bids from contract manufacturing organizations for the manufacture and processing of its OFA-loaded vaccines in a cGMP facility, and CRO's to manage the multicenter study. Because of the ubiquitous nature of the OFA protein, QI is also exploring additional clinical studies targeting other cancers.

#### ***OFA Antibodies***

QI has been conducting pre-clinical research on the anti-cancer effects of its proprietary OFA monoclonal antibodies. At QI's research facility in Ann Arbor, Michigan, under the direction of Drs. Kent Johnson and James Varani from the University of Michigan, QI has conducted *in vivo* studies testing the cancer-killing abilities of the antibodies in lymphoma cells in a mouse tumor model. These recently completed studies show marked inhibition of tumor growth and metastasis. In addition, QI has performed a study using a breast cancer cell line in a mouse tumor model. Once again, similar results were observed in terms of inhibition of tumor growth and metastasis. Current antibody studies are being conducted to ascertain the precise mechanism of action.

#### ***Additional OFA-Related Research***

QI has concluded extensive immunohistochemical testing to quantify the OFA-receptor density levels on several cancers, which confirms high levels across several cell types. More specifically and in support of the Phase IIb trial, QI has examined triple negative breast cancer cell lines for OFA levels of expression. The findings show OFA is expressed in triple negative breast cancer, and thus validates the use of the triple negative patient population for the Phase IIb study. Beyond that, given OFA's universality and specificity, QI is developing a cancer diagnostic test in a Sandwich ELISA format, which will provide the ability to detect the presence of minute levels of circulating OFA in the peripheral blood, thereby confirming or ruling out the presence of subclinical cancer cells. It is anticipated that this research could culminate in the filing of an application for a universal cancer diagnostic test.

#### **QI'S INTELLECTUAL PROPERTIES (IP)**

The antibody and peptide patent applications (61/163,808 and 61/163,810) noted below have recently entered the National Phase in Europe, Japan, Canada, Australia, and China. The following is a table of QI's intellectual properties:

Patent # / Application #	Priority Claimed	Summary
PCT/US1997/05685 US 6,335,174 - Granted US 6,534,060 - Granted	4/5/1996	OFA/iLRP Antigen Specific T-Lymphocyte Mediated Immune Response: Manipulation and Uses of OFA/iLRP Specific CD4, CD8 Cytotoxic and Suppressor T Cells and Interleukin-10
PCT/US2004/024518 US 7,718,768 - Granted	8/2/2002	Cancer Vaccines Containing Epitopes of OFA/iLRP: A Method of Using the Epitopes in Dendritic Cell Therapy
61/270,570 - Pending PCT Filing	7/9/2009	Vaccines with OFA/iLRP Loaded Autologous Dendritic Cells: A Method of Producing an Anti-Cancer Vaccine Comprising Autologous Monocyte-Derived OFA/iLRP Loaded Mature Dendritic Cells
61/163,808 -Pending PCT Filing	3/26/2009	OFA/iLRP Peptides for the Sensitization of Dendritic Cells for Cancer Therapy
61/163,810 - Pending PCT Filing	3/26/2009	OFA/iLRP Monoclonal Antibodies for Cancer Diagnostic Applications and Cancer Therapeutic Applications