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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health



National Institutes of Health Commercialization Assistance Program
(NIH-CAP)

Company Profile

Industry Sector: BIOPHARMACEUTICAL

Company Overview:

Specializing in controlled-environment growth of plants bearing pharmaceutical products. The company has experience with genetically engineered plants and has developed the first cGMP protocols for use with pharmaceuticals produced using plants. Through working closely with Roswell Park Cancer Institute, Cornell University's Boyce Thompson Institute for Plant Research, and Arizona State University's Biodesign Institute via their work in vaccine-bearing plants, Quantum Tubers Corporation is currently producing potatoes bearing HBsAg surface antigen for hepatitis B vaccine production.

A company has been formed around the production of hepatitis B vaccine to be administered in an oral dosage. A successful FDA clinical trial has been done using healthy humans in a double-blind trial with very positive results. The company is taking the

TARGET MARKETS: USA, followed by India then China. The technology makes it possible to do local biomass manufacturing at local costs for processing.

Management

Leadership:

Robert G. Britt, Chairman and CEO
RC Suresh, Board Member – Chairman of Suresh Group of Companies-India/Kuwait
Dr. Robert Y. Ni, Board Member – CEO World Technology & Trade, Inc.
Leadership team to be staged during the first three years

Scientific Advisory Board: Dr

Yasmin Thanavala, Ph.D., Professor and Member-Department of Immunology, Roswell Park Cancer Institute
Hugh S. Mason, Ph.D., Associate Professor – Biodesign Institute, University of Arizona
Thomas L. German, Ph.D., Professor – Department of Entomology, University of Wisconsin-Madison

Key Value Drivers

Technology:

Plant-derived vaccine and biopharmaceuticals using genetically engineered plants as the biomanufacturing factory for multiplication of pharmaceutical proteins. The complete controlled-environment production system is key to the biomass component of the technology. The hepatitis B vaccine as tested is absorbed through the mucosal membranes of the human gut and provides vaccination without injection and will remain stable for use in hostile environments.

Competitive Advantage: Lower Cost, Shelf Stable, Orally administered, Safety. Costs for production of biomass from plants for the production of biopharmaceutical products can be multiplied at a fraction of the production costs and time required for other Pharma products. Further, the edible nature of the plant-derived pharma provides for oral dosage which means no cold-chain, no needles, and a shelf-stable product that can be shipped into third-world countries to be administered. Additionally, the transmission of viruses and prions that are an issue with animal-derived drugs cannot be passed to humans through pharmaceuticals produced using plants.

Product Pipeline

Plant-derived hepatitis B Vaccine: Positioned by Management to be the very first plant-derived pharmaceutical to reach the commercial marketplace.

Future Candidates for Plant-derived production: Many biopharmaceuticals and follow-on pharmaceuticals are ideal candidates for production using plants as the factory. To name just a few candidates; HIV vaccine, Human-Papillomavirus vaccine, Norwalk-like viruses for travelers' diarrhea prevention, Plague vaccine, cholera vaccine, rabies vaccine, hepatitis C vaccine, diabetes vaccine, human blood components, and many other biopharmaceutical treatments are targets for plant-derived production.

A very special category is production of treatments for rare and orphan diseases in the form of personalized biopharma production. This is very neatly done using the Quantum Tubers controlled-environment growth chamber methodology for separation of biopharmaceutical production and control of genetically engineered plants.