

FACT SHEET

CORPORATE	
Operational:	2005
	Private
Industry:	Biopharmaceutical
Product:	Vector Vaccines Platform and manufacturing human E.C7 Cell Line
Stage:	Clinical
Staff:	9 Full Time Employees

Etubics is a clinical-stage biotech company with technology that enables the rapid, cost-effective development and commercialization of a new class of therapeutic and preventative vaccines. We have commenced clinical trials in the United States utilizing our first vaccine candidate for the treatment of colon cancer and are ready to initiate clinical trials on vaccine candidates targeted towards breast cancer treatment and influenza protection. To date approximately \$20 million has been spent developing our technology. We are currently raising capital to advance two additional products to the clinics, expand our infrastructure, and expand corporate and scientific relationships. Our primary goal is to license one major market product in the near term.

Cell Mediated Immunity

Hard to treat diseases, such as HIV, malaria and select influenzas and cancers, are not destroyed by antibodies alone and require a new generation of vaccines. Most vaccines work by eliciting antibodies, but fail to stimulate the other arm of immunity called cell mediated immunity (CMI). Our technology elicits both antibodies and a CMI response, allowing for researchers to target difficult diseases as well as emerging ones.

Limitations of Previous Adenovirus Vector Vaccine Technologies

It is well established that the adenovirus vectors can be used as means of vaccination. However, previous adenovirus technologies had significant limitations that inhibit their commercial viability. Many individuals are immune to the adenovirus itself, causing the vaccine to be cleared from their bodies before it can have a therapeutic or preventive effect. Even those individuals without an existing immunity quickly develop an immunity to the adenovirus delivery platform after just one immunization, reducing or eliminating

TARGET DISEASES
Therapeutic Vaccines
<ul style="list-style-type: none"> • Colon Cancer • Breast Cancer • Throat Cancer caused by HPV
Prevention Vaccines
<ul style="list-style-type: none"> • Influenza • HIV • Malaria

CONTACT
Kimberly Jones 206.838.2978 ext 110 kimberly@etubics.com

the effectiveness of the boosting vaccination. Adenovirus vectors also have a small insertion space, allowing for only a small portion of the target disease gene to be inserted and limiting the number of diseases that the technology can be used for. In addition, previous adenovirus technology has been associated with rare adverse effects, significantly reducing commercial interest in the technology. Though promising, previous adenovirus technology simply has not overcome these limitations.

The Etubics Adenovirus Solution

Etubics' adenovirus vector platform seeks to leverage the advantages of the adenovirus, while overcoming historical immunity and safe delivery issues of earlier technology. Twelve years of research and development in collaboration with the University of Michigan, Duke University and others has led to development of our proprietary adenovirus platform that has the following novel attributes:

- **Stealth Like Vaccine Delivery.** The additional genetic deletions in the Company's novel vectors allow the vaccine platform to be delivered multiple times to the same patient.
- **Generates Cell-Mediated Immunity and Antibody Responses.** Etubics believes that CMI responses may provide the greatest treatment value or protection from hard to treat diseases. Data shows that Etubics can induce CMI even in the presence of adenovirus immunity.
- **Rapid Application for Emerging Diseases.** Etubics can create and manufacture a vaccine within 3 months as the vaccine is created in a human cell lines and is based off of our patented platform.
- **Manufacturing Efficiency.** Etubics can quickly and efficiently scale up production within months of regulatory clearance.
- **Potential To Treat A Wide Range Of Diseases.** Etubics vector vaccine candidates have one of the largest carrying capacities, allowing the platform to work with a wide variety of cancers and other diseases.

E.C7 Cell Line

Together, Etubics' adenovirus platform and E.C7 human cell line serve as a gene delivery platform that can be used to efficiently develop preventative and treatment vaccines against a wide range of infectious diseases and cancers.

Etubics' Ad5 viral vectors are created by removing a stretch of DNA from the virus, making it incapable of replicating in humans. To create the vaccine, the vector is filled with DNA from a disease target. When injected, the new vaccine delivers target protein to "antigen presenting cells" resulting in a robust cell-mediated and antibody immune response directed against the target disease.