



Large Scale Biology Uses Technology to Produce Personalized Medicine and Therapeutics

OWENSBORO, Ky. — Large Scale Biology is an integrated biotechnology company that focuses on product development and bio-manufacturing of protein and peptide therapeutics and vaccines. The company's bio-manufacturing facility in Owensboro grows proteins in tobacco and other plants, then extracts and purifies them.

At its core, it is bioinformatics technology that intersects biology and the computational sciences, which include mathematics, statistics, and computer science. According to Gary M. Wolfe, vice president of informatics systems at LBSC, computer skills are very important for work in bioinformatics, especially UNIX and the programming languages C and PERL. These languages are powerful for text processing and flexible with Web applications. Wolfe believes strongly that a bioinformatics platform must effectively integrate laboratory information management systems with data analysis and discovery applications. The data generated must be stored and tracked in a relational database. Once the data is in an ordered format, it becomes straightforward to write programs for analysis, and generally speaking, it enables the Company to create a discovery platform.

Since the summer of 2000, LSBC has been producing in tobacco plants completely individualized therapeutic vaccines to treat patients with the cancer known as B-cell non-Hodgkin's lymphoma (NHL), which is rapidly increasing in incidence and mortality in many industrialized countries. Through this clinical research program, LSBC hopes not only to develop an effective treatment for NHL, but also to demonstrate the broader economic and scientific implications of using technology to tailor therapy to the molecular profile of the patient.

Last year, the company made national news when it was awarded two large grants. The first grant was awarded by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) for research leading to the discovery of biomarkers for alcohol-related diseases. Discovery of significant protein factors are expected to impact early diagnosis, monitoring and treatment of alcoholic diseases. The second grant was a two-year research grant by the National Institute of Allergy and Infectious Diseases (NIAID) to conduct research on the development of preventive and therapeutic HIV-1 peptide vaccines.

The company's attraction to Owensboro was the city's central location, affordability and ready access to DSL and Internet technology, allowing the division to communicate and do business with the company's other sites in Maryland and California. Technology used by LSBC enables the production of complex therapeutics for personalized medicine, an approach that should improve greatly the effectiveness of treatment.

The market for agricultural biotech products is expected to grow from approximately \$3 billion in sales in 2000 to approximately \$5-8 billion in 2005 and to approximately \$20-25 billion by 2010.

About KY 120:

In the fast-paced world of technology-driven business, it should be recognized that best practices can be studied and emulated. As a part of the [connectkentucky](#) initiative, CITE is profiling business initiatives in each of Kentucky's 120 counties to identify lessons learned on the path toward successful and sustainable innovation.

Name: Large Scale Biology

Internet: www.lsb.com

Products/Services: Biotech

Location:
Owensboro/Daviess County

Leadership:
Robert Erwin, Chairman
Kevin Ryan, President and CEO

Employees: 114

Founded: 1999

Reach: International

Innovative Insight:
"To create such a platform, it is necessary to have individuals with excellent systems analysis and programming skills."

Advice for Growing Companies: *"Scientists work in multidisciplinary teams and those teams have to collaborate with other groups to ensure that products move rapidly through the corporate pipeline."*

Way Internet Has Made You More Competitive:
"Ready access to DSL and Internet technology, has allowed the division to communicate and do business with the company's other sites in Maryland and California."

Ways to Continue to Attract Best Workers:
"We are not significantly affected by economic downturns; however qualified people are still hard to find. We try to listen to what employees say and to make them feel valued."