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Biotech is booming

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Stephen Mulloney is smiling. He's discussing the Massachusetts economy and he's smiling.

He's talking about the jobs that have been created over the last several years, and about the jobs and companies that will be created over the next 10 years. And he's talking about adding tax revenues to the state coffers.

Stephen Mulloney is talking about biotech.

Mulloney is director of government relations and communications with the Massachusetts Biotechnology Council (MBC), an industry association that advocates for public policy and education.

As the economy continues to sputter, biotechnology a home-grown, still emerging industry is seen by many analysts, job seekers and state officials as a bright spot on an increasingly dark horizon, as the little engine that could.

"The biotechnology industry is doing very well in Massachusetts," Mulloney said. "In 1991, biotech employed about 7,000 in Massachusetts. That's grown to over 26,000 workers this year. Ten years ago there were 91 biotech companies in the state, now there are 281."

Biotechnology is the process of using biological techniques or living organisms to develop products or services. Products are used to diagnose and treat human diseases, improving farm yields and the quality of food, and treating animals and the environment.

The term "life sciences" is often used to describe a combination of biotechnology-derived pharmaceuticals, the technologies used to produce those drugs and advanced medical devices used for the delivery of drugs to patients.

In Massachusetts, biotech firms are developing new methods of diagnosing and treating cancer. New technologies are also emerging locally for predicting and reducing the side effects of new drugs, and to improve the nutritional content, healthfulness and taste of foods.

The MBC lists 281 Massachusetts-based biotechnology companies involved in the developing technology used for therapeutic drugs, diagnostics, as well as agricultural, environmental and marine products. Of these, approximately 30 firms are in Greater Lowell. According to Mulloney, despite the local presence of such larger firms as Wyeth BioPharma, Millipore and Charles River Laboratories, the typical Massachusetts biotech is a smaller enterprise.



"A typical Massachusetts biotech firm has 50 employees or less, has been in business for two years or less, and is privately held," Mulloney said. "Many are preparing their technology or product to enter clinical trials in order to prove efficacy and safety to the FDA. They're comprised of a lot of local talent."

One such firm is Triton BioSystems of Chelmsford, a spinoff of Triton Systems Inc. Founded two years ago, Triton BioSystems is funded by venture capital. The firm employs half a dozen scientists and engineers.

Triton BioSystems is developing an advanced treatment for breast cancer. According to company CEO Samuel Straface, this treatment uses a bioprobe consisting of advanced

materials and antibodies that are injected into the body of the patient. This bioprobe hunts down and destroys cancer cells without exposing healthy tissue to the treatment.

Straface says the technology is in the research and development stage, and that Triton BioSystems plans on bringing the product to market in Europe in 2005, and to the U.S. in 2006.

Straface also leads Chelmsford-based Sensera, Inc. which develops sensors to detect biological warfare agents like anthrax and nerve agents. The firm is also working on a diagnostic for cardiac patients in emergency rooms.

Typical of many area biotechnology firms, Triton BioSystems has close links to local universities.

"We've had a long term, ongoing and strong relationship with the University of Massachusetts Lowell," Straface explains. "We've relied on the school's expertise in many areas, including patent preparation, consulting services, and joint research projects."

At the other end of the scale is Wyeth BioPharma, which employs 1,850 researchers, scientists, engineers and technicians on its Andover campus.

Founded as the Genetics Institute by several Harvard scientists in 1980, the firm has grown rapidly, and is now a division of industry giant Wyeth Pharmaceutical. The Andover development and manufacturing operation is one of the largest biotechnology presences in the state.

Wyeth develops and manufactures rhBMP-2, a biotechnology-derived version of a human protein used to reduce pain and complications in the treatment of acute tibia fractures and spinal surgery. Treatments employing rhBMP-2 were approved in the U.S. and in Europe earlier this year. Wyeth is also producing BeneFIX, a drug used in the

treatment of hemophilia that was approved by the FDA in 1997.

Wyeth is spending \$2 billion this year on research and development, with a large portion of those funds earmarked for expansion of the Andover campus, including new commercial and clinical suites. It also plans to add up to 500 jobs.

"The biotechnology and, more broadly, the life sciences industries are having a real impact in the region," according to David Tibbetts, general counsel with the Lawrence-based Merrimack Valley Economic Development Corp. "While biotechnology is not a panacea for the problems in the rest of the economy, it has definitely helped to absorb displaced workers from the telecom and high-tech sectors."

How much has the biotech sector bucked the trend? Consider that during the last two years, as the state has shed tens of thousands of jobs in the manufacturing, technology and telecom sectors, biotechnology has added almost 3,000 jobs.

And unlike the telecom and other high-tech sectors, venture funding hasn't completely dried up for Massachusetts-based biotechs.

Neil DeAngelis of consulting firm Ernst & Young said investment totaled \$780 million during 2000 for Massachusetts pharmaceutical biotechs. Last year, it declined to \$700 million, and through June of this year it was \$340 million.

"And the pipeline of new biotechnology products looks good," DeAngelis said. He said there were 32 biotechnology products approved by the FDA in 2000, 30 last year and 26 products in front of the FDA for approval this year.

That said, given that a high percentage of biotechs are startups that haven't commercialized their products, the industry is not completely immune to the factors that have roiled other high-tech sectors.

"Biotech is not isolated from the macro economy," Mulloney said. "Without a commercial product, many of these firms rely on research funding, but particularly on public and private capital investment to keep operations going. The lack of investor confidence that is troubling the general economy is suppressing the growth of biotech as well."

Mulloney added that the biotechnology industry has its own special challenges.

"Many products are still in the development phase, or the clinical trial phase, or are awaiting FDA approval," he said. "And FDA approval is still a tough, long process."

But even while acknowledging these challenges, Mulloney is optimistic about the next few years.

"This industry will be a key driver of the Massachusetts economy in the 21st century," he said. "Biotech will create opportunity and growth, sustainable growth. We are going to create a lot of high paying jobs and generate significant revenues for the state."

Straface, the Sensera CEO, concurred.

"We think this economic squeeze is short term," he said. "It can take a relatively long time to bring a new product to market, up to 15 years. Many investors aren't that patient. But overall, biotech is doing better than other sectors of the economy. The next six to 12 months will be good."