

Growing the Nation's Bioscience Sector: State Bioscience Initiatives 2006

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Specialized postsecondary programs

Educational institutions in every state and at every level—K-12, college and postgraduate, and workforce training—are developing new curricula and undertaking initiatives designed to encourage students to pursue careers in the biosciences and to meet the needs of bioscience companies for skilled workers. The trends identified in the 2004 report—the creation of 2-year associate's degree programs, changes in curricula at colleges and universities to better reflect workforce needs, outreach to bioscience companies to understand their workforce needs, and outreach to inform students and teachers at the middle-school and high-school levels about career opportunities in the biosciences—are continuing and have become more widespread.

New programs that were developed since 2004 include the following:

- A master's degree in Genomics law at Arizona State University
- An Institute for BioEnergetics at the University of Colorado
- Establishment of a Graduate School of Biomedical Science at the University of Maine
- Vagelos Program in Life Sciences and Management through which undergraduates receive special exposure to life science research and may receive either a bachelor of arts degree from the School of Arts and Sciences or a bachelor of science degree from the Wharton School at the University of Pennsylvania
- Biomedical Engineering Program at the University of Memphis
- Master's degree in Biotechnology Management at the Pontifical Catholic University of Puerto Rico
- A Center for Biotechnology Education and Training opened by Rochester Institute of Technology
- A certificate program in biotechnology fundamentals added by the Biotechnology Center of Excellence at the University of Stony Brook in New York
- A new Pharmacy School approved at East Tennessee State University
- A new School of Pharmacy opened at the University of Charleston in West Virginia.

A number of states, including New Hampshire and North Carolina, reported establishing and expanding programs to train workers for careers in biomanufacturing.

The Golden LEAF Foundation, which is financed by a portion of North Carolina's tobacco settlement funds, has financed the nation's largest biotech/biomanufacturing training programs, a **Biomanufacturing and Pharmaceutical Training Consortium** comprising the following two major facilities and curricula delivered through a \$7.1 million **BioNetwork** funded at the North Carolina Community College System:

- **Biomanufacturing Training and Education Center (BTEC)**, a 91,000-square-foot, \$35 million commercial-scale biomanufacturing and packaging facility being built at North Carolina State University's Centennial Campus. The BTEC will provide hands-on experience in a commercial environment and will train as many as 3,000 students a year through both on-site programs and distance learning.
- **Biomanufacturing Research Institute and Training Enterprise**, a \$19 million facility at North Carolina Central University in Durham, which will offer laboratory experiences in underlying science and analytical instrumentation to students from multiple universities.

Operational funding for the consortium totaled \$12 million in 2005 and will increase this year to \$15 million.

The New Hampshire Community Technical College's (NHCTC's) Industrial Biotechnology Education and Training program, located at NHCTC at Stratham/Pease, offers an entry-level biotechnology education and training program to support the biomanufacturing industry. With financial support from an NSF Advanced Technology Program grant, matching funds from the state, and a federal earmark through a Veterans Affairs/U.S. Department of Housing and Urban Development 2002 appropriation, a fully equipped, bench-top biotechnology research, development, and manufacturing laboratory was built at the NHCTC-Stratham/Pease Center. This laboratory provides students, college and high school faculty, and business professionals experiential instruction in a state-of-the-art biotechnology laboratory. At NHCTC's Biotechnology Program, students can receive a 2-year biotechnology associate in science degree, a biotechnology diploma, or a biotechnology certificate.

The **New Hampshire Biotechnology Education and Training (NH BET) Center** at NHCTC was recently awarded three federal grants to build the education and training infrastructure for biotechnology and biomanufacturing education and training locally, statewide, and throughout the Northeast region.

The first grant was a High Growth Job Initiative Department of Labor grant of \$775,000 to create the **Center of Expertise in Biomanufacturing**, one of five Centers of Expertise forming the National Center for the Biotechnology Workforce. This grant is helping "build capacity" by facilitating hiring of staff and purchase of biomanufacturing equipment. The grant also supports an apprenticeship program for high school students entering the associate of science in biotechnology program and the development of short courses for incumbent workers.

Another Department of Labor grant, a Community Based grant entitled, "**bioCONNECTnh**," was awarded to NHCTC's Biotechnology enterprise in November 2005. This 3-year grant supports the development of the state's biotechnology infrastructure, adding a focus on discovery research with outreach to New Hampshire's high schools and including \$750,000 for companies to access for incumbent worker training.

Finally, an NSF Advanced Technological Education regional center grant was awarded in August 2005. This \$3 million, 4-year renewable grant entitled, **“The Northeast Biomanufacturing Center and Collaborative: Building a Sustainable Infrastructure for Biomanufacturing Jobs and Education,”** provides funding to six Hubs in Northeast region states to work with industry to develop curricula, instructional materials, and other resources to support education and training for biomanufacturing jobs and provides funding for faculty and teacher development workshops at the Hubs and an annual Biomanufacturing Conference at the NH BET Center in the summer.

In late 2005, the U.S. Department of Labor launched a new program—Workforce Innovation in Regional Economic Development (WIRED)—which is providing \$195 million to 123 regions over a 5-year period to undertake initiatives designed to develop talent that is needed in today's knowledge economy. The program seeks to support innovative approaches to education and workforce development that go beyond traditional strategies. Two of the regions that have received WIRED grants, Denver and Kansas City, will be using them to support initiatives aimed at creating a pipeline of bioscience workers.

The Denver Metro region received a 5-year, \$15 million WIRED grant from the U.S. Department of Labor for workforce development. The biosciences are one of the four targeted industry clusters. A bioscience coordinator will be hired to match up industry, university, K-12, and career/technical institutions in order to provide the best bioscience workforce needed to grow the industry in Colorado.

The Kansas City region also was awarded a \$15 million WIRED grant. The grant, **OneKC WIRED**, will focus on meeting the needs of the health care, biotechnology, and advanced manufacturing industries. WIRED funds will be used to support

- A systemic science reform initiative aimed at elementary schools;
- Biotechnology workforce development initiatives across the educational continuum, including elementary, secondary, and continuing adult education;
- Student internships and teacher externships in biotechnology, health care, and manufacturing; and
- Partnerships between biotechnology, health care, and manufacturing.

The full text of this report can be found at:
<http://www.bio.org/local/battelle2006/>

