



BIOTECH RESOURCE LINE

A NEWSLETTER TRACKING TRENDS IN BIOTECHNOLOGY

Community Colleges, Industry Representatives Reveal Best Workforce Practices for Attracting and Retaining Biotech Companies

A report from the
**Council for Entrepreneurial Development's
Biotech 2006 Fifteenth Annual Conference**
Winston-Salem, North Carolina / May 22-23, 2006

Winston-Salem - The enormous task of training enough qualified workers for the biotech industry will require community colleges and industry, working side by side as partners, to develop new programs and constantly adapt existing ones, experts confirmed during recent panel discussions organized by the National Center for the Biotechnology Workforce, the biopharmaceutical company Targacept, and the regional North Carolina Biotech Center office, all based here in Winston-Salem. Educational programs will range from basic technician skills for displaced manufacturing workers to short, specialized workshops for PhD holders—taught from a mobile laboratory at the company site, if necessary. Thanks to rapidly evolving research and technology, it is increasingly common for employees with master's degrees and even doctorates to return to community colleges for training and retraining—a kind of “reverse articulation,” observed Russ Read, Executive Director, National Center for the Biotechnology Workforce. The need for ongoing out-of-the-box solutions was evident during two panel discussions at the Council for Entrepreneurial Development North Carolina Bio 2006 Conference held here in Winston-Salem. Panelists from community colleges and industry shared best practices and innovative programs from around the nation. They also warned that community colleges alone cannot solve the biggest challenge facing North Carolina and all states in attracting biotech companies, that is, fierce competition from other nations. Panelists agreed that keeping elected officials informed about ongoing funding needs for training and reforms for community colleges and in K-12 education will be crucial.

Community Colleges and Industry Band Together in Unique Ways

According to Susan Seymour, BioNetwork Director, North Carolina Community College System, Raleigh—an organization that is increasingly viewed as a national model for how community colleges and industry can work together to solve workforce issues—**attracting and keeping biotech companies means getting involved in every step of the economic recruiting process. “We say to them [biotech companies], tell us who your workforce needs and your hiring schedule and we will have a pool of qualified candidates.” BioNetwork brings together community colleges providing specialized**

training for the biotech industry in North Carolina with six specialized BioNetwork Centers to enhance capacity at community colleges to meet industry's needs. BioNetwork is also concurrently developing programs to support homegrown entrepreneurs. Major goals of BioNetwork's member institutions include:

- Working with economic development recruiters on issues such as site selection.
 - Providing educational support for entrepreneurs who need help learning to run the business side of their ventures.
 - Ensuring that colleges are keeping pace with advancing technology.
 - Providing a pool of qualified workers.
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Continuous investment in cutting-edge equipment for students is crucial, maintained Bill Woodruff, Director, Southeast Regional Center of Bio-Link, Alamance Community College, Alamance, North Carolina, where purchases have included a 15-liter bioreactor. “We need technicians to walk into a laboratory and be able to work from day one,” he indicated. The college’s 21-year-old program, one of the oldest biotech programs in the nation, has a 90% employment rate for its students, and employers are constantly asking for more graduates, he added.

Likewise, Alan Beard, Lead Instructor in Biotechnology, Forsyth Technical Community College, Winston-Salem, said that a new 17,000-square-foot facility with four dedicated wet labs has been instrumental in training a large number of students who have enrolled in biotech programs there. “All of our students are required do an internship, and we get feedback about their performance from our partner industries and organizations,” Beard explained.

Ensuring that workers have the appropriate training is a special project taken on by Bellevue Community College in Bellevue, Washington. Patricia Dombrowski, Director, Life Science Informatics, informed listeners that Bellevue is leading a national effort to develop skill standards for biotech training programs. “We are trying to raise the bar and to infuse relevant training into community college programs nationwide,” Dombrowski asserted. “We have held regional and national focus groups, explored emerging biotech jobs, and asked the companies to review and validate these standards.”

Keeping the US Competitive

A panel titled “Raising Human Capital: Keeping North Carolina Number 1 in the Biotech Workforce,” and moderated by Gary Green, EdD, President, Forsyth Technical Community College, evolved into a discussion of what not only North Carolina, but also the United States as a whole must do to stay competitive in attracting and keeping biotech companies.

Michael Kamarck, PhD, Senior Vice President of Biotechnology, Wyeth Pharmaceuticals, Collegeville, Pennsylvania,

confirmed that large international companies consider nations such as Ireland, Singapore, China and India alongside the US when looking for manufacturing sites. A huge part of the equation is the level of training of the workforce—an area in which the US has a challenge to remain competitive.

“In Ireland, 80% of the population has a high school diploma or the equivalent, and 70% go on to college because of the encouragement of the Irish government. For the public universities, there are no tuition fees and grants are available for living expenses for qualified students,” Kamarck told listeners. “The fact that they take the education of the workforce very seriously has allowed Ireland to transform itself in the area of high-tech manufacturing.”

While schools in countries like India and China focus heavily on math and science, American students may not be heavily exposed to those subjects until high school or even college, Kamarck noted. “If we don’t bring math and science into a child’s education at the beginning, we won’t be able to compete. You almost can’t be too aggressive, and the next five to 10 years will be crucial.”

Finding qualified workers is the single biggest challenge that smaller biotech companies face, stated Jan Turek, President and Chief Executive Officer, Biolex Therapeutics, Pittsboro, North Carolina. Smaller companies such as his often recruit already-trained employees from larger companies such as Wyeth and GlaxoSmithKline, he said. In an industry where “an incorrect turn of a valve” by one employee can cost the company millions, it is imperative that employees have a firm grasp of reading and math.

One of the biggest challenges is educating the general public about the nature of biotechnology and what kind of training is needed, said Janet Paulson, Director, National Center for Agricultural Bioprocessing and Renewable Fuels, Indian Hills Community College, Eddyville, Iowa.

Despite the presence of companies such as Iowa’s Cargill Corn Milling Inc. and the fact that the state is a national leader in the production of ethanol and biodiesel products, “The majority of people in the state still do not understand biotech and bioprocessing,” Paulson indicated. “We

work diligently on public outreach. We have given presentations to about 5,000 students in the public school system. We also help support a mobile science lab that visits schools and offers programs for seventh through twelfth grades.”

Creative Partnerships

For their part, community colleges must partner with industry to keep the pipeline of qualified workers coming, panelists stressed.

Colleges should be creative and open-minded about such partnerships, concurred Ric Matthews, Director, National Center of Expertise in Bioprocessing Training, MiraCosta Community College, Oceanside, California. Although Idec/Genentech, a pharmaceutical giant in San Diego County, hires many MiraCosta graduates, it was unable to meet the college’s request to fund a new training center. However, the company did fund a faculty position and offered the time and expertise of its architects and engineers to help the college build the center.

A unique apprenticeship program started by New Hampshire Community Technical College has been highly successful in training qualified workers for biotech companies there, related Sonia Wallman, Director of the college’s National Center for Expertise in Biomanufacturing Training and Education. Students earning a two-year associate degree in biotechnology from the college serve 1,000 hours as paid apprentices for local companies while attending another 1,000 hours of classes. “The U.S. Department of Labor is now helping us regionalize this program to other community colleges in the Northeast,” Wallman said.

Terry McAdoo, Director, Research and Development in Human Resources, GlaxoSmithKline, Research Triangle Park, North Carolina, commented on his company’s experience in the state. “R&D employment in their research facility at the Research Triangle Park requires a minimum of bachelor’s, master’s or doctoral degree, but at our manufacturing site, we hire community college graduates. In fact, we work closely with Wake Technical Community College’s program called the Pharmaceutical Technology Program.” In-house,

GSK managers are encouraged to build challenge into jobs and to proactively have frequent discussions with employees to ensure that the work is providing developmental opportunities. “We encourage managers to provide career guidance and support by having productive PDP/Development discussions with employees. In order to have a continuous pipeline, we have to build relationships with the public schools through our Science Education Programs and the local colleges and universities,” McAdoo stated. GSK is trying to encourage minority students in particular to enter the profession by providing opportunities like the Residential Chemistry Program visit, in which students observe several days doing what a research scientist would do in the laboratory, a sort of “day in the life of a scientist.” The company also supports many programs like the American Chemical Society’s R&D Chemistry Mentoring Program.

The U.S. Department of Labor actively encourages business and industry, states, community and technical colleges and the public workforce system to partner in the development of education and training programs, such as this model, said an official from the Department’s Employment and Training Administration (ETA). The agency administers approximately \$4 billion that annually flow by statutory formula to states and local communities for employment and training programs. ETA is demonstrating how leveraging workforce development funds with education, economic development and entrepreneurship are spurring innovative training models to meet the needs of the 21st-century workforce and to keep America competitive.

The challenge of training workers for the biotech industry is not going away soon, and it is crucial that workforce development officials continue to understand the industry’s career opportunities and skill needs, the ETA official emphasized. “As long as the state and federal government is providing resources for education and training programs, it is up to you as industry leaders to understand how those resources are being used in your community, and to help public officials understand how those resources can support connections to career opportunities in this field.” □



From left to right: Russ Read, Erika Baum, Michael Kamarck, Terry McAdoo, Jan Turek.



Gary Green, EdD, President, Forsyth Technical Community College.



From left to right: Ric Matthews, Stephen Johnson, Patricia Dombrowski, Russ Read.

Excerpts from the Council for Entrepreneurial Development's Biotech 2006 Conference

Two panels of highly acclaimed biotechnology workforce experts, together with biotechnology industry officials, discussed the challenges and opportunities that the biotechnology industry faces, including the growing demand for training and manpower.

Date: May 22-23, 2006

Location: Benton Convention and Civic Center, 301 West 5th Street, Winston-Salem, NC 27101

Panelists

Bill Woodruff, Director, Southeast Regional Center of Bio-Link, Alamance Community College, Alamance, NC
Alan Beard, Lead Instructor in Biotechnology, Forsyth Technical Community College, Winston-Salem, NC*
Patricia Dombrowski, Director, National Center for Expertise in Life Sciences Informatics, Bellevue Community College, Seattle, WA
Michael Kamarck, PhD, Senior Vice President of Biotechnology, Wyeth Pharmaceuticals, Collegeville, PA
Jan Turek, President and Chief Executive Officer, Biolex Therapeutics, Pittsboro, NC
Janet Paulson, Director, National Center for Agricultural Bioprocessing and Renewable Fuels, Iowa Bioprocess Training Center, Eddyville, IA*
Ric Matthews, Director, National Center for Expertise in Bioprocessing Training; Dean, MiraCosta Community College, Oceanside, CA*

Sonia Wallman, PhD, Director, National Center for Expertise in Biomanufacturing Training; Director, New Hampshire Community Technical College Biotechnology Program, Portsmouth, NH*
Terry McAdoo, Director, Research and Development in Human Resources, GlaxoSmithKline, Research Triangle Park, NC

Moderators

Gary Green, EdD, President, Forsyth Technical Community College, Winston-Salem, NC*
Susan Seymour, BioNetwork Director, North Carolina Community College System, Raleigh, NC
Russ Read, Executive Director, The National Center for the Biotechnology Workforce, Forsyth Technical Community College, Winston-Salem, NC*

Sponsors

The Council for Entrepreneurial Development (www.cednc.org)
The North Carolina BioSciences Organization (www.ncbioscience.org)
The North Carolina Biotechnology Center (www.ncbiotech.org)

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