National Center for the Biotechnology Workforce

www.biotechworkforce.org

Forsyth Technical Community College, NC
NH Community Technical College, NH
Indian Hills Community College, IA
Bellevue Community College, WA
Miracosta Community College, CA

Combining strengths of five premier community colleges from around the nation for new learning models to build our biotech workforce

A report from the

National Center for the Biotechnology Workforce: Capturing Best Practices and Program Processes

developed under the President's High Growth Job Training Initiative through US Department of Labor - Employment and Training Administration

The National Center for the Biotechnology Workforce is successful in realizing its goals to develop the nation's biotech workforce because dedicated people support its mission, many in roles other than biotech. It's easy to overlook the behind-the-scenes but difficult and time consuming work being done by teams of people around the nation in areas such as grant writing, accounting, administration and dissemination. This report captures crucial process elements of the nationwide initiative that is preparing more and more workers to meet biotech industry demands.

A national effort to address workforce challenges facing the biotech industry involves many undertakings. The National Center for the Biotechnology Workforce (NCBW) combines five regional partner community colleges, each a Center of Expertise (CoE), into a comprehensive approach that solves multiple biotech worker training challenges. Each CoE specializes in a niche aspect of Biotech Workforce Training, dovetailing its training to local employers' needs. This is called "demand-driven" workforce training.

Each CoE focuses on its own specific area of biotech training expertise. These include research & development (Forsyth Tech), manufacturing (New Hampshire Community Technical College), informatics (Bellevue Community College); agriculture/biofuels (Indian Hills Community College) and bioprocessing (Mira Costa Community College). The models developed through the NCBW are being replicated at other colleges and institutions ready to upgrade training programs to produce a ready and competent U.S. biotechnology workforce.

Assistant Secretary of Labor for Employment and Training Emily Stover DeRocco presents a Recognition of Excellence honor to Russ Read and leaders of the National Center for the Biotechnology Workforce at the 2006 Workforce Innovations event in Anaheim recognizing their innovative approaches for preparing workers in biotechnology. Pictured (from left) Janet Paulson, Patricia Dombrowski, Chuck Crabtree, Rebecca Keith, Sonia Wallman, Read, DeRocco, Ric Matthews, Ron Shelton.

In its first 24 months, the NCBW's collaborating CoEs awarded college degrees to approximately 400 students - and the vast majority of them immediately gained new employment in biotech jobs. Incumbent worker training and other short innovative programs have reached thousands of individuals. Training infrastructures and curricula resources have been created and strengthened. Through the NCBW's work with educational resources, industry representatives, public officials, and community groups, many networks, partnerships, collaborative agreements, initiatives and events have been formed and are underway.

Perhaps most important, many thousands of individuals, students, teachers, industry leaders and prospective workers around the nation have been exposed - through NCBW outreach events and dissemination projects - to the career opportunities and overall economic potential of biotechnology.

So, how does the NCBW coordinate so many resources across the nation to deliver this important, demand-driven training?

'Our success is due to our teams of talented, dedicated people at our sites around the nation all working together through our centralized collection of evolving processes," says Russ Read, NCBW executive director.

"Yes we have dedicated educators and visible leaders who work with the public. But there are many more dedicated professionals working behind the scenes - writing grants, paying bills, doing accounting, managing labs, and accomplishing day-to-day, ancillary tasks that must be done or there would be no program. We are far enough along now to recognize our best practices and support more productive processes," says Read.

The director identifies four main processes driving the enterprise: administration, grant writing, accounting, and dissemination. Each CoE has dedicated staff professionals carrying out daily tasks within these common processes to drive their own expert workforce training center. These CoEs are profiled extensively; and may be reviewed at www.biotechworkforce.org

***To harness the power** of biotechnology industry potential – with a skilled, ready workforce – the U.S. Department of Labor Employment and Training Administration created the National Center for the Biotechnology Workforce in 2004. Because community colleges are actively involved in meeting the needs of workers and industries in their communities, the National Center focuses energy and investments on five community colleges with different but congruent strengths in the biotechnology industry to create new curricula and infrastructure models that can easily be shared and replicated.*


Russ Read

ADMINISTRATION

The National Center Office (NCO) is located at Forsyth Technical Community College in Forsyth County, Winston-Salem N.C.

The office is administered by Russ Read.

"Administering these programs takes many hands – working together in coordinated teamwork," says Read. "Of all the processes studied to date the greatest learning is the art of collaboration. Our five colleges are experts in what we do. We trust each other to strive to be the best at what we do. We believe in working together and through this grant we are able to achieve much more than we could alone. The National Center Office keeps us on track. Our US DOL- ETA Business Relations Group representative helps us keep in line with the Employment and Training Administration's objectives for this type of grant."

The NCBW has developed strong links among the CoEs and other national organizations plus solid partnerships with the biotech industry. It has coordinated several introductions of potential workforce partners both nationally and regionally.

In addition it has developed a powerful web site through our web master Tim Dubuque.

Two web sites are used to connect people seeking NCBW tools and resources. They are www.biotechworkforce.org and www.workforce3one.org. The NCBW developed a unique "human capital" newsletter called the *Biotech Resource Line* plus five CoE profiles. These may be viewed at www.biotechworkforce.org

GRANT WRITING

Ron Shelton, Grants Director, states "work to accomplish the mission of the National Center for the Biotechnology Workforce (NCBW) started long before its initial $5 million grant was awarded on June 28, 2004."

First, each of the five community colleges was developing and achieving its own area of biotech training expertise independently; each one produced collaborative results with industry that would become further recognized with its "National Center of Expertise" designation.

The strategy to increase the skilled biotechnology workforce through a new National Center started with people in the administrations of the concerned community colleges thinking ahead. Actually forging the plan and getting the money to launch the program was achieved by a dedicated team of professional administrators, accountants and grant writers – a year in advance of the Center's actual emergence.

It was people, such as Ron Shelton, Forsyth Tech Grants Director, who set up the multi-site NCBW program to unite different, but complementary, subject areas across far-flung national regions - and then made it work. Shelton and his counterparts regularly capture, document and report on these evolving processes and progresses for the Department of Labor.

Grant writers seek new funding sources

"I basically write and manage grants throughout the college - not just biotech," says Shelton. "This is an amazing project and I have learned an awful lot."

Shelton and his counterparts at other sites in the NCBW continue to identify new funding sources and write new grant proposals for sustainability. All of the CoEs, including the NCO, have won multiple grants in one form or another.

Inherently collaborative – a grant writer must work in relationships and seek input or contributions from existing or potential stakeholders to create any proposal – the process can be lively, dynamic and foster better working relationships for all the people and organizations involved. For example, the NCO coordinated and hosted a visit by representatives of eight local and articulated community colleges to Forsyth Tech. Each is a recipient of $20K for biotech equipment and training purposes. This session gave an opportunity for eight community colleges, articulated through the NCBW grant, to cooperatively give an update on their grant activities.


National Center grant wrting team (from left) Tanya Evans, Ron Shelton, Susan McCulloh

Long Term Strategies Required

Before the National Center's work could begin, each site's grant writing person, working with accountants, administrators and other potential stakeholders or beneficiaries of the application, had to submit a realistic program plan and budget for the duration of the grant. Questions and discussions about activities, and what could be added or deleted, had to be evaluated for implementation. Then each draft was subject to review by experts in finance, planning, administration, grant writing, accounting and DOL-ETA requirements. Because of pressing demand for training in the high-growth biotech industry, the people involved had to keep pursuing these difficult objectives within constrained deadlines.

The process of grant writing is the same for nearly all subject areas and must be meticulously followed to produce positive results. Most important to great grant writing is having a practical idea that can be well illustrated through writing, be implemented upon award and be accountable. In the case of this grant, successful outcomes can be seen in training and employment gains.

ACCOUNTING

National Center accounting team (from left) Pam Bohannon, Rebecca Keith, Melanie Nucklols

The taxpayer money awarded to the National Center for the Biotechnology Workforce is making a difference in the country's response to this high-growth opportunity. However it couldn't happen without the ability of professional people within the organization to stringently apply adherence to all federal laws and regulations applicable.

Rebecca Keith, Director Grants Accounting, is one of the people who enable the training infrastructure enterprise to accept and disperse federal funds. She administers policies and procedures to ensure fiscal compliance when receiving Federal assistance as outlined in OMB Circular A-21 and other required federal and state regulations.

"Once we get the grant money, we are responsible for following the federal guidelines," says Keith, "I have fiscal responsibility which means we must monitor all budgets and spending so that we fully comply with all terms and conditions, grant regulations and certifications outlined in our award."

Complex, Long Term Requirements

Working with her accounting counterparts in all five centers, Keith delivers reports to the Department of Labor every quarter. Rebecca Keith and Russ Read regularly make site visits to meet with colleagues at the CoEs and keep up with all the work being done across the nation.

The same detailed procedures and principles of accounting must be applied across the board, to all five operating sites. Among the laws and regulations Keith and others in the team deal with and consider are policies concerning allowable costs and cost principles; cash management; activities allowed or not; equipment purchases; matching; earmarking; procurement; and program income.

In addition to these rigid standards, which require day-to-day compliance, Keith's work also reaches back to before the original NCBW grant was awarded. The estimates of finances required to apply for the grant meant she became involved in the original writing process.

"And, we had to develop an indirect cost plan after we received the grant which was a tremendous undertaking," adds Keith.

People in the Process Make the Difference

Another important component of the finance director's work is in creating and maintaining the contracts signed between the national office and the five centers. These form the basis for the working partnerships today. She credits her accounting colleagues in the different sites for enabling the program's success, including Kathy Pink at Indian Hills Community College; Christine Hagewood at New Hampshire Technical Community College; Asha Prasad at Mira Costa Community Collete; and Kelly Paustin at Bellevue Community College.

"It's great to work with these people and get to know them," says Keith. "It helps when I go on site visits and see the results of our work."

Key experiences in Keith's professional life and career give her the perspective and capabilities to achieve the program's mission. "I'm not a scientist, I'm not an educator, I'm a numbers person. My role is the fiscal liaison with the Department of Labor and to ensure compliance," says Keith. And she is excited about her work. "It's a great opportunity to get people the equipment and training they need to meet demand in a fast-growing field."

DISSEMINATION

Constant communication with many different groups, including biotech industry leaders and managers; teachers and other educational resources; existing and potential students; community organizations and others is an important part of the administration of the NCBW plan to strengthen the Biotech Workforce. Without all these partners involved the numbers of trained workers would not be increasing.

In addition, there is another element to program communication that is even more important. Because the biotech industry is creating jobs so quickly in all parts of the country, many of the 4,000 or so United States community colleges today are facing – or will soon face – the same challenges the Centers of Expertise have faced and are solving.

It's vital that the best practices – and results - of the Center's experience be captured and distributed to all those who can benefit. This dissemination is being conducted by professionals at each of the sites, coordinated by the National Center Office in a concerted and broad campaign, budgeted through the accounting process as originally outlined in the grant application.

National Resource Brand Identity

"A demand-driven workforce improvement initiative can only be achieved when shared strategies and ideas permeate the entire system, end to end, top to bottom," says Russ Read, NCBW Director. "To accomplish this we must establish the Center as an expert source of information about biotechnology education and training, a national brand identity for the NCBW."

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DISSEMINATION *(continued)*

With easy access to all products, processes and practices established on regularly maintained websites www.biotechworkforce.org and www.workforce3one.org, further National Center for the Biotechnology Workforce dissemination projects include conducting presentations, exhibitions, plus DOL/ETA webinars and other discussions and events at many venues. Also, the National Center Office regularly publishes updated newsletters, profiles, video reports, brochures and other program data across all media.

It's hard to measure the intangible effects of all these communication efforts. But as thousands and thousands of people across the country experience a biotech demonstration at a country fair, meet a new biotech apprentice at a community meeting, pick up a biotech training brochure, or see something on TV about biotech employment - these experiences cumulatively translate into awareness and then into actions. As more and more people become aware of the opportunities that training in the biotech industry can bring, they will be better prepared to participate in some way and have a positive effect on the overall economy.

Using All Media Outlets

One example of multi-media dissemination is our *Career Pathways* video, which features apprentices, interns and the program directors from Forsyth Tech and New Hampshire Community Technical College. This 29 minute audio visual includes a summation from an industry partner in the biopharmaceutical company Targacept who has successfully hired graduates and provided multiple internships. It was reviewed and refined by input from the Centers.

Each Center of Expertise was featured in five comprehensive profiles written by a professional writer, John Grady, who worked with colleagues at each site to capture and make available the resources, experiences, processes and best practices of each CoE for use on the websites.

The Executive Director annually makes multiple presentations on the NCBW. The leaders of the regional Centers have taken to the airways and traveled across the nation to share their expertise with national leaders in college training or at national conferences.

Best Practices In Dissemination

Forsyth Tech: Dr. Lucas Shallua and his team are in demand as keynote speakers and symposia panel guests to speak about their program for R&D training. It is the largest in the state. Dr. Shallua has appeared on BioNetwork commercials used for developing interest in the statewide Bionetwork programs.

New Hampshire Community Technical College: Increasing the numbers of biomanufacturing apprenticeships from one the first year, to five the second year, to seven the third year also produced innovative practices to disseminate the information and recruit new students. Working with director Sonia Wallman, Ph.D., program assistant Susie Harvey, faculty member Bob O'Neil and consultant John Grady joined together with graphic designer Tim Dubuque and others to produce a striking series of laminated posters that featured the first apprentices telling their own stories in words and a striking photo. These posters were well received and prominently displayed in biology labs in high schools around the state.

Dr. Sonia Wallman and Biomanufacturing Apprentice Katrice Jalbert made a presentation with Russ Read and James Crawford, an intern from the Forsyth program, entitled "Biotech as an Economic Driver," at the Workforce Innovations conference in Anaheim, California, chaired by Laura Ginsburg of the US DOL Apprenticeship Office.

Dr. Wallman was also one of three presenters in a US DOL Webinar on Apprenticeships on December 7, 2006.

Reaching Out To People Everywhere

Indian Hills Community College: "Educating parents, teachers and the public in general is crucial to developing the future workforce," says program coordinator Janet Paulson. The Iowa Center has reached thousands of students through public school visits and trained hundreds of 7-12th grade teachers to do biotech activities in their classrooms. Innovative presentations intrigue audiences at workshops, conferences, and career fairs.

The IHCC Ethanol Plant Technician 21 month program and the Iowa Bioprocess Training Facility in Eddyville was featured in the publication *Iowa Farmer Today*, including instructor Eric Olson and a picture of bioprocess technology students grinding corn with a hammer mill.

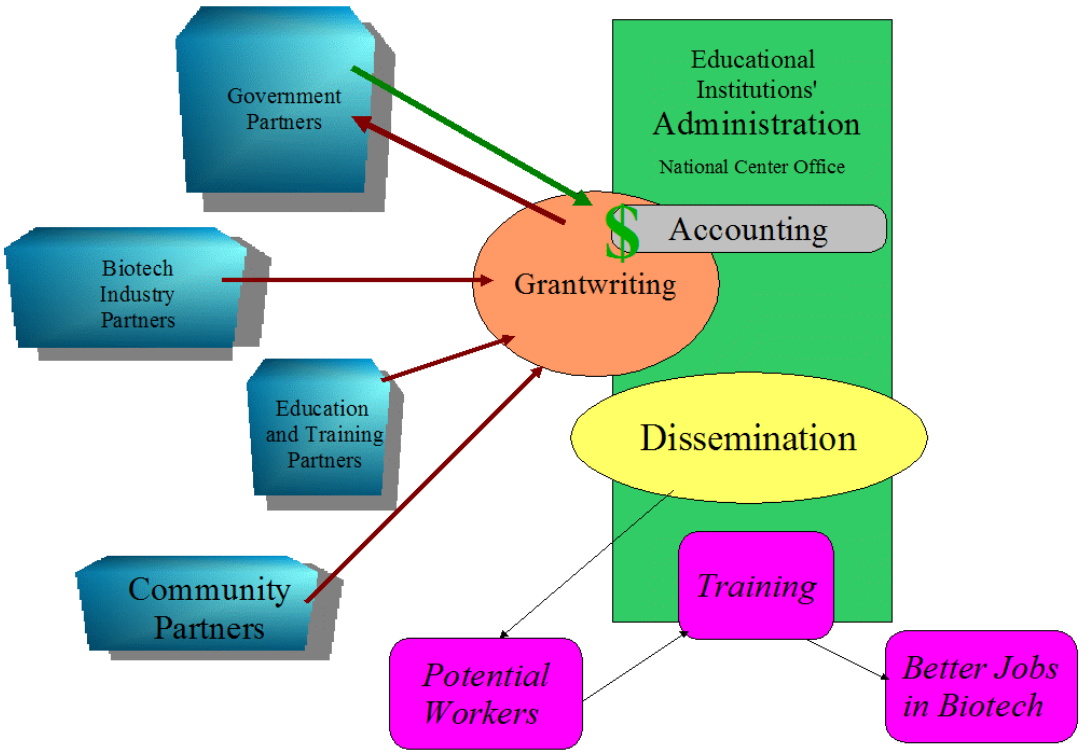
The Iowa State Fair was the first event to see the new, more portable 3-D Virtual Reality Fermentation program. More than a thousand people viewed the display, which helped to disseminate bioprocessing education and instruct people about the variety of bioprocess industries in Iowa.

The Science Education Mobile Instruction Lab (SEMI) continues to inspire both teachers and students delivering basic skills in biotechnology using a forensics theme.

Bellevue Community College: The Rapid Development Skill Standards Model's defining feature is replicability. It provides colleges with a gold standard for examination of information technology infused industry sectors. The clarity and guidance found in this model help streamline the standards development process and assist community colleges and other users in framing informatics program-building decisions.

MiraCosta College: A model relationship exists with Genentech, working collaboratively to address employment needs. Ric Matthews and his team are continuously asked to speak about this unique relationship and other collaborations, including one with the International Society of Pharmaceutical Engineers who partnered in building the facility.

NCBW Process Map



Partners combine input through the grant application and administration. Government resources are applied through the grant and accounting to administrate and disseminate. Entering and existing workers obtain training benefits.

Centers Of Expertise Teams

Forsyth Technical Community College
Center of Expertise in Research & Development Training
Dr. Lucas Shallua, Alan Beard, Aju Lekwauwa, Stephen Johnson, Toni Beery and Lucien Houenou; Accounting: Rebecca Keith

Indian Hills Community College
Center of Expertise for Agricultural Bioprocessing Training
Janet Paulson, Jane Lewachowicz, Suzanne Keller, Chuck Crabtree and Eric Olson; Accounting: Kathy Pink

New Hampshire Technical Community College
Center of Expertise in Biomanufacturing
Dr. Sonia Wallman, Deb Audino, Bob O'Brien, Tim Dubuque, Susie Harvey and Kari Britt; Accounting: Christine Hagewood; Dissemination: John Grady

Mira Costa Community College
Center of Expertise in Bioprocessing
Ric Matthews, Mike Fino, Gail Baughman and Mike Urbach; Accounting: Asha Prasad

Bellevue Community College
Center of Expertise in Life Science Informatics
Patricia Dombrowski, Christina Semeling, Jennifer Jones, Michele Royer and Tatem Murphy; Accounting: Kelly Paustin

www.workforce3one.org www.biotechworkforce.org

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The National Center for the Biotechnology Workforce prepares workers for in-demand jobs in high-growth biotechnologies. This publication captures primary processes to help others facing similar challenges achieve these goals.