

Vol. 14 No.2 • May 2013

# Connection

Newsletter of Bio-Link • The National Advanced Technological Education Center for Biotechnology

## 2012 ATE Principal Investigators Conference Teaching Tomorrow's Technicians Today: PREPARING AMERICA'S FUTURE WORKFORCE



It was an amazing night for the Bio-Link Staff as many Bio-Linkers and attendees visited the popular Bio-Link National Center of Excellence Exhibit during the Showcase Session in October 2012 at the annual ATE/PI Conference held in Washington, DC. Other Exhibit photos include Bio-Link's ATE Partners: CCSF and Synergy.



[www.bio-link.org](http://www.bio-link.org)

## Common Core Competencies for the Bioscience Laboratory:

Bio-Link Needs Your Help



What does a bioscience laboratory technician need to know? The Bio-Link Clearinghouse contains several regional and national skill standards documents that were developed in the past to answer this question and describe what technicians must know in order to be successful in their jobs. Current efforts are focused on identifying a "common core" of skills and knowledge that are required in all sectors of the biotechnology industry. These efforts are funded by a grant from the U.S. Department of Labor TAACCCT grant that was awarded to the Community College Consortium for Bioscience Credentials (CCBC), a consortium of 12 community colleges led by Forsyth Tech Community College in North Carolina. Identifying and validating these "Common Core" skills is an important first step toward developing bioscience credentials that can be used as part of a career pathway.

Bio-Link and the CCBC would like all members of the biotechnology community to participate in this project by reviewing the proposed common core and providing feedback. You can read the document and provide your feedback here: [www.bio-link.org/home/draft-common-core-competencies-bioscience-laboratory](http://www.bio-link.org/home/draft-common-core-competencies-bioscience-laboratory).

From the Director | **Dr. Elaine Johnson** .....

## Bio-Link at 15! ATE at 20!



This year Bio-Link is celebrating 15 years and ATE is celebrating 20 years! As we prepare for the 15th Annual Summer Fellows Forum, it is clear that we have come a long way and we still have a long way to go as we continue to build Biotechnology Programs at Community and Technical Colleges across the country and to continue to share with each other through our robust Bio-Link network including the very active website. One of our recent activities was to participate in the 11th annual Community College Program at the BIO International Convention in Chicago on April 22,

2013. At that full-day event, we were able to hear from industry experts, listen to the stories of “Faces of Success”, and review both the the NSF ATE program as well as the ATCCCT Community College biotechnology Department of Labor Grant at Forsyth Technical College in North Carolina, in which Bio-Link is the hub lead for the core lab skills.

Bio-Link continues to make progress in the Synergy Project for scalability using the Bridge to Biotech as a model for scalability. Bio-Link is also participating in Mentor-Connect, a new ATE project that mentors colleges that have not received prior NSF funding. Bio-Link will again be one of the Executive Producers of the HI-TEC Conference in Austin, Texas from July 21-24. This conference will be the prelude to the “ATE@20: Sustaining Success and Advancing Innovation” PI meeting in October.

We hope that you will continue to engage in Bio-Link activities and utilize us as you prepare your own ATE proposals. We are a unique community with a bright future as a leader of STEM and workforce education.

## Landmark Articulation Agreement Signed at Madison Area Technical College

On April 2, 2013, officials from the University of Wisconsin-Platteville (UW-Platteville) and Madison Area Technical College (Madison College) signed a landmark articulation agreement. Under the terms of the “3.5 plus .5” agreement, qualified UW-Platteville students can finish their undergraduate degree by completing Madison College’s one-semester, intensive biotechnology post-baccalaureate certificate program. Madison College credits will then be transferred to UW-Platteville as upper division courses so students can complete the UW-Platteville undergraduate degree requirements while earning a post-baccalaureate certificate in biotechnology.

This articulation agreement is particularly significant because the state of Wisconsin has many barriers to transferring credits from two-year technical college programs to the University system. This agreement recognizes the special value of technical college programs in preparing students for a career pathway. Madison College faculty are optimistic that this agreement will serve as a model for other articulation pathways in the future.

- Jeanette Mowery and Lisa Seidman, Co-PI  
Madison Area Technical College



DeJ Mar College (DMC) Biotechnology and Biology Programs have been revising their approach to educating students based on the Vision and Change initiatives outlined at the Vision and Change Meeting 2010 (<http://visionandchange.org>). For example, the reform effort has modified the curriculum to focus on student mastery of core concepts than memorizing extensive course context and actively involved in the undergraduate research and case study analysis. DMC is a member of the Science Education Alliance program that includes the Howard Hughes Medical Institute (HHMI) National Genomics Research Initiative, a program that integrates both research and education in genomics for undergraduate students.

The program allows undergraduate students to participate in actual research by isolating and characterizing bacterial viruses from local soil. Students learn how to prepare viral DNA for sequencing and how to annotate and compare the sequenced genome of bacterial viruses. DMC also incorporated innovative pedagogy in that students are using mobile devices in the phage laboratories, which are preloaded with over 20 podcasts demonstrating critical phage laboratory techniques. Assessment and evaluation data demonstrated the vast majority of students (over 95%) strongly agree that the podcasted lab techniques are a valuable resource for learning techniques compared to the traditionally review of written lab manuals. DMC students have won many awards in competitions that are normally won by 4-year students.





## Bridging the Gap Between Workforce and Education

As industrialist Henry Ford once said, "To be successful one must integrate industry with education." Finding this education and industry balance has been a monumental task. However, BioOhio, a non-profit organization with a mission to help biotech innovation and commercialization in Ohio, has been a good accelerator in creating a partnership among academic institutions and industry in the state of Ohio.

BioOhio and Dr. Bill Tacon (Senior Director, Workforce and Education, BioOhio), with the help of a grant from Department of Labor, have helped to create workforce programs at academic institutions, such as Cuyahoga Community College (TriC), Lakeland Community College (LCC), and four other Ohio community colleges. Linking with employers such as Cleveland Clinic, Ben Venue and Roxane Labs (both Divisions of Bohreinger Ingelheim), and DG Medical, has been an essential element to making these programs a success. Also setting up scholarships with funds from DOL and State of Ohio to serve workforce needs of the industry.

A visit to the TriC campus with Professor Phyllis Kolodny, showed how the program at TriC, has made a big difference for Ben Venue in Pharmaceutical manufacturing. Phil Mills, Manager at Ben Venue and also an adjunct professor at TriC worked

with Professor Kolodny in developing a curriculum and training the workforce for the requirements of Ben Venue and such companies.

In terms of pharmaceutical manufacturing, TriC has worked with the local industries, such as Amresco, Gojo and Loreal to name a few, to figure out the needs of the workforce and has developed training skids from Amatrol. Since TriC has a lot of interest from the industry for training their workforce, they have developed 160 hours of training for \$3000 per training session. They also have equipment and clean room training. The training includes soft and hard skills. The training program starts with basics such as measuring pH, temperature, making buffers and solutions etc. Then they move on to hands on skills with skids. Skids are a platform on which is mounted a module that is a part of the big process setup. Each of these skids consists of for example, a pH monitoring part, a leveling sensing part, temperature control part.

Skids are a great tool for teaching different parts of the process and equipment. Students can work with the skids and change a variety of the parameters before they actually work with the real equipment. Mistakes made along the way help them learn as they move along to the real thing.

BioOhio is also working closely with Lakeland Community College and Dr. Joseph Deak, Director of Biotechnology Science at LCC has developed a 4-week mini course for a bioscience technology certificate. This certificate prepares students for laboratory technician support roles in the bioscience industry. They have 100% placement of their students in the local industry.

Ohio was the big manufacturing hub during the 1920's, with investments from giants like Rockefeller and Mark Hanna. It has rebuilt itself into a biomanufacturing hub in this century.

Dr. Linnea Fletcher, Biotechnology Program Dept. Chair, at Austin Community College is working closely with Emerging Technology fund in Texas to get a training facility setup in order to prepare the 21st Century workforce for the biomanufacturing skill sets. A program such as BioOhio is a necessity in every state in order to bring local workforce requirements of the industry to colleges and universities.

- Sulatha Dwarakanath Ph.D.  
and Mallika Rao

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Professor Kolodny working on Viritis Lyophilizer used in training of students for Ben Venue.



Teaching skids for pH monitoring and whole system put together by students after working on the individual module for chemical manufacturing.

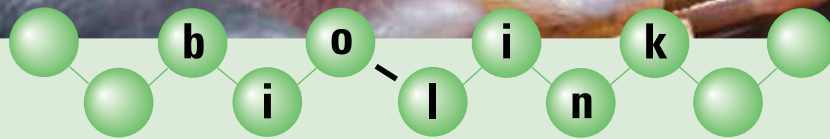


## High Impact Technology Exchange Conference

HI-TEC is a national conference on advanced technological education where secondary and postsecondary educators, counselors, industry professionals, trade organizations, and technicians can update their knowledge and skills. Charged with Educating America's Technical Workforce, the event focuses on the preparation needed by the existing and future workforce for companies in the high-tech sectors that drive our nation's economy.



# www.highimpact-tec.org



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NSF AWARD # 0903317

*This project was supported in part by the National Science Foundation. Opinions expressed are those of the authors and not necessarily those of the foundation.*



*BIO-LINK CONNECTION* is the official newsletter of Bio-Link, the Advanced Technological Education Center for Biotechnology, and is produced and published by the National Center Staff. Please submit questions, comments or articles by e-mail to Lisa Huffman, Editor, at [Lhuffman@biolink.ucsf.edu](mailto:Lhuffman@biolink.ucsf.edu) at the National Center.

**Bio-Link** is committed to program improvement, instructor enhancement, communication, program assistance, and supporting school-to-career activities in the biotechnology area.

### For information on

- Calendar of Events
- Curriculum Clearinghouse
- Internships
- Jobs
- Online Courses
- Virtual Laboratory
- Web Links, and more . . .

[www.bio-link.org](http://www.bio-link.org)

