NCBW TIMELINE

October 2008 Agreement with the North Carolina Community College System established NCBW as one of seven BioNetwork centers. *Mar.* 2018 Click dashed-line entries for more info

Bellevue CC Co-hosted 78 state educators at Washington Community College Summit 2006 **Informatics**

Program featured in the industry . Microsoft designates BCC as its second IT Showcase School ournal: BIO-IT World

At the IT Convergence Zone: A Rapid Development Model for Skill Standards

and Curriculum published 2005 International Society of Pharmaceutical Engineers supports design, !MiraCosta Bioprocessing

Biogen Idec, Genentech recognize MCC's dedicated, immersive environment for training and support new faculty and remodel of facility

Indian Hills CC | Bio-fuel laboratory techniques and fundamental

Great Bay CC

Biomanufacturing

Jan. 31, 2005 Northeast

Manufacturing Industry

consensus with industry

Skill Standards finalized in

Biopharmaceutical

 Bioreactors purchased through grant, begin to be used for training, pilot projects needed by industry

Selected as national model for community college - industry partnerships in biotechnology by the US Dept of Education

in the nation 2006

construction of 3500-sq.ft. facility - opens to classes in November

2005 with more than \$1 million in state-of-the-art equipment

Colleges published 2006

scientific processes developed for teachers

Materials Resource Program

established for biotech companies

to donate unused equipment for

Informatics Overview: A Program Building

Resource for Community and Technical

use in high schools

Pilot facility arows with Cargill donation of two new 80L fermen-

opharmaceutical

Manufacturing Industry

Skill Standards at NBC2

working group meeting of

Indianapolis

industry and educators in

classroom, or in a biotech

company lab facility

Ten short courses developed

delivered on campus, in the

_____ BioNetwork supports the mission of the North Carolina Community College System aligning world class workforce training and education to biotechnology and life science industries.

ional Center for th

Workforce

Sug/Detwork

Innovations conference in Atlanta

2007

Biotechnology

NCBW hosts President Obama's

Visit to Forsyth Tech December 2010 At Forsyth Tech, President Barack Obama praised North Carolina's leadership in renewing American scientific education, training and skilled workforce superiority.

April 2010 MetLife recognizes NCBW - Forsyth Tech partnership as finalist in National Community College Excellence competition, with \$20,000 award.

March 2006 NCBW team presents at League for

■ July 11-13, 2006 NCBW team presents at DOL Workforce Innovations Conference, Anaheim. Honorable Mention award to NCBW.

April 9, 2006 Community College

Program at BIO 2006 in Chicago

October 2012 NCBW at Forsyth Tech awarded a Department of Labor grant of nearly \$15 million to unite twelve high-performing ! colleges into a Community College Consortium for Bioscience Credentials (c3bc) to work with 45 companies, employers and shareholders to develop core, industry-recognized skill sets in bioscience. High-growth industries required clearly defined skills to keep up with increasing global competition. Working together, bioscience "industry-recognized" credentials were created.

> October 2013 Report from the Community College Program at global BIO convention in Chicago.

November 2013 TAA c3bc presentation to BIO Ohio on increasing need for workers in new, overlapping spheres of emerging technologies.

December 2013 Biosciences Talent Required - a lecture to the Triad Biotech Alliance on community college, workforce board and company partnerships working to meet industry employment needs

June 2014 Biosciences Industry Fellowship funded by NSF-ATE, selected teachers gathered for a program with visits to NC Biosciences enterprises, producing modules for use in classrooms. You Tube Link

March 2012 National Meeting with Manufacturing Institute, Bio-Link, NBC2, Medical Devices Educational Consortium, industry, college reps

2009

January 2013 The Trade Adjustment Assistance Community College Career Training (TAACCCT) program c3bc launched at Biotech Place in Winston-Salem. Goals - funded by the DOL grant - are to: improve workplace training through recruitment testing, aptitude assessment, course redesigns, better outreach and more retention; introduce portable, industry-recognized credentials into training; build community college capacity for education that meets employer needs; add infrastructure and build internships. Twelve partners are concentrated into four hubs:

Rowan Cabarrus

Alamance

Bucks County

Learning Technologies Hub

Accelerate completion time through improved prior learning assessment, removal of institutional barriers and new, technology enhanced instructional materials

Forsyth Technical Hub lead institution, pilots a modular learning lab, with assessments conducted and duplicated nationally.

Biomanufacturing Hub

Develop new biomanufacturing courses, credentials and teaching materials in partnership with industry.

2011

Montgomery County Hub lead institution, also home

of NSF biomanufacturing cen-Los Angeles ter NBC2, leading campaign to stack credentials and access local career paths.

Ivy Tech Salt Lake City Hub lead institution coordinates Medical Device companies, trade organizations, community colleges and St. Petersburg

Medical Devices Hub

help trade-impacted workers get high-wage, high-skill jobs

New skill standards: stackable, latticed credentials will

Lab Skills Hub

Develop new courses and credentials in the Bioscienc-

es with revised laboratory skills standards

City College of San Francisco

the NSF national Bio-Link center,

standards

2012

Hub lead institution, also home of

addresses lack of industry-recognized

credentials, works to harmonize skill

more stakeholders to develop skill set matrices in five functional areas.

2013

Community College Consortium

Madison Area

Austin

for Bioscience Credentials

97C-21761-13-60-A-17

March 26-28, 2014 DOL TAACCCT c3bc National Meeting

Standards session to identify, select and draft key activities of core critical work functions common to all bioscience industries into a single document. Bio-Link has a page on skills standard work done to date - "Finding alignment"

 Gardner Carrick of NAM referred to work in skills and manufacturing in other industries at the Manufacturing Skills Standards Council web site.

 Other topics included: innovative ways to assess prior learning; strategies for Workforce Investment Boards; plus a look at the library of modular teaching "granules" being built to share through the new online NTER system.

Sept 2014 Tech Council Meeting a PowerPoint presentation by Russ Read & Michael Avers addresses talents required for biotech jobs, including a video about alumni: You Tube Link

2014

tion in Research.

March 2015 presentation to NC Acade-

my of Science at Wake Forest Biotech

Place in Winston-Salem, NC on "Innova-

Dec 2014 presentation to the NCBC Piedmont Triad Biotechnology Advisory Committee, including a Learning Skills Lab video: You Tube Link.

Feb 2015 new IMPACT magazine focuses on c3bc program Deliverables: upgrades in equipment, training capacity, and standards in core skills working with partners in all hubs across the nation.

displaced workers and others.

April 2015 c3bc Medical Device Hub national meeting to develop core skills for nationally- recognized, standard education pathways.

June 2015 Community College Program at BIO in Philadelphia including "Faces of Suc-"CCP@BIO 15 (PDF report)

October 12-15 2015 c3bc (TAACCCT) Annual Meeting, dedicated to common standards and increased training, held at Forsyth Tech.

Consensus by hubs reached in Skills

February 2015 c3bc national meeting in Winston-Salem NC to grow bioscience training for Trade Adjustment Assistance

2015

June 2016 Core Skills Standards for Bioscience echnicians published by c3bc, click box for full report

2016

sciences enterprises.

technicians

2005 2006

Apprenticeship program begins First BIOMAN 06 national

irst in the nation Biomanufacturing

conference organized by Dr. Sonia Wallman July 24-28, 2006

Forsyth Tech Wake Forest Institute of Regenerative Medicine recruits three students for internships and "hands on experience"

March, 2006 North Carolina Governor Michael Easley opens new technology building at Forsyth Tech, new biotechnology lab space, state-of-the-art equipment

National Center for the **Biotechnology Workforce**

June 28, 2004 President's High-Growth Job Training Initiative grant for Forsyth Technical CC in partnership with four I other community colleges around the Ination develop the National Center for the Biotechnology Workforce (NCBW)

New Recombinant DNA Technology course reloped for R&D labs experimenting in nucleic acids, cloning, stem cell research June 19, 2005 NCBW presents at BIO 05

in Philadelphia, Dr. Sonia Wallman co-chair with Elaine Johnson, NSF Bio-Link director.

February, 2006 NCBW presents at symposium on Bio-processing & Biomanufacturing Training in partnership with BioNetwork NC community college biotech training system. Focus for first Resource Line -Tracking Trends in Biotechnology Workforce newsletter

www.biotechworkforce.org

2008 final report on first three years of NCBW (pdf)

March 1, 2007 Piedmont Triad BioNight recognizes December 2013 A special edition of Forsyth Tech's biotech IMPACT magazine NCBW - Russ Read: excellence in community service.

2008

May 6-9, 2007 NCBW presents Faces of Success" at Community College Program at BIO 07 industry convention in Boston

> October 17-19, 2007 Piedmont Triad Fly-In hosts 24 high school biotech teachers from around the country, tours of Biogen Idec, Targacept, Tengion, Wake Forest Institute in partnership with Alamance Community College and Bio-Link.

February 5- 6, 2008 NCBW hosts nationwide DOL bioscience WIRED - Workforce Innovation in Regional Economic Development - conference in Winston Salem.

October 2008 Biotech Student Tracking program begins to keep graduates connected.

features an illustrated look at the nationwide programs of the TAA c3bc. NCBW SciTech Ideas In Action

2010

September 2012 Doug Drabble, Director of BioNetwork. "Career Success in Life Sciences"

Lecture Series:

October 2012 Charles W. Calkins, Attorney and Partner Kilpatrick, Townsend & Stockton, LLP, "The Changing Landscape of Intellectual Property Protection for Biotechnology Inventions"

November 2012 Adesanmi Ojo, M.D. "From Forsyth Tech to Medical School and Beyond"

March 2013 Dr. Christy Shaffer of Hatteras Discovery spoke about "My Journey as an Entrepreneurial Scientist, CEO and Investor."

September 2013 Dr. Eric Tomlinson, Chief Innovation Officer at Wake Forest Baptist Medical Center and President of Wake Forest University's Innovation Quarter, shared innovations and collaborations in medical devices, protein drugs and mobile apps.

October 2013 Dr. Roger Cubicciotti, CEO of Nano-Medica, shared expertise on "Chemistry of Teams."

January 2014 Gwyn F. Riddick, Executive Advisor for Strategic Development and Agricultural Biotechnology Consultant for the North Carolina Biotechnology Center, spoke on "A Race Against Time: How Biotechnology is Transforming Our Largest Critical Industry." You Tube Link

February 2014 Dr. Stephen A. Hill, President and CEO of Targacept, spoke on "Biotech: Risk and Reward" YouTube Link

March 2014 Paul Kortenaar, PhD Executive Director of SciWorks science museum spoke about "Education for Innovation: Preparing Students and Their Teachers to Work in a World of Technology Change." You Tube Link

June 2014 Celeste Carter, National Science Foundation Program Director, spoke on funding opportunities for biotech training.

March 2014 Forsyth Tech leads \$15M effort to build new biotech learning model. (Triad Business Journal report)

September 2014 Forsyth Tech hosted a Fulbright Scholar from Australia - Ray

Cadmore. YouTube Link

October 2014 Dr. David McNelis from UNC Chapel Hill spoke on the issues and future of renewable energy. YouTube Link

November 2014 Biosciences Industry Fellowship Ten participants from six states, funded by an NSF-ATE award, visited NC Bioscience colleges, labs and companies, reporting that it was "life changing," bringing new ways to teach

January 2015 Ana S. Iltis, Ph.D. Director, Center for Bioethics, Health and Society spoke on "Identifying, Managing and Communicating Research"

February 2015 Anthony Atala M.D., Director, Wake Forest Institute for Regenerative Medicine presented, in conjunction with the 2015 National c3bc Meeting, a lecture on "Regenerative Medicine: Current Concepts and Changing Trends." YouTube Link

June 2014 Community College Program at BIO PowerPoint presentation by Russ Read: Bench to Bedside shows many jobs involved in biopharmaceutical development. Plus PDF report available here: CCP@BIO 14

> March 2015 Jennifer Bryant presented "CSI In The Real World" contrasting television's investigative shows with real life hours searching, documenting, collecting and packaging any and all evidence found at a crime scene, she discussed skills

required. You Tube Link September 2015 Barbara A. Pisani. D.O.: Professor of Cardiology. Wake Forest Baptist Medical Center discussed advanced heart health technologies: You Tube Link

October 2015 Dr. Norma V. Quiñones, Learning Consultant for Global Quality Training and Development at Biogen, shared her experiences in "My Journey from Higher Education into the Biopharmaceutical Industry," You Tube Link

November 2015 Doug Edgeton, President & CEO, NC Biotechnology Center presented "Healing, Fueling, and Feeding the World: The Triad's You Tube Link

January 2016 NCBW Executive Director Russ Read, invited to the 103rd Indian Science Congress at Mysore University, spoke on "A Passage To Biotech in India." His visit included an address by the Prime Minister of India and a welcome reception for his Bioscience Workforce presentation. You Tube Link

February 2016 Roland Johnson, Founder and CEO of Piedmont Pharmaceuticals & Animal Health, presented "An Innovator in Animal and Human Health." You Tube Link

March 2016 Dr. Travis Russell. Professor. ForsythTech. "A Visit To Chernobyl - Past, Present & Future." You Tube Link

January 2017 Kim Westmoreland, KeraNetics, "Confessions of a Serial Entrepreneur"

■ February 2017 Dr. Gregory L. Kucera, and Dr. Timothy S. Pardee, "KPC-34, a Co-Drug that combines a DNA damaging Agent with a Targeted Therapy"

March 2017 Dr. Amy Greeson, "Exploring the world for novel medicinal compounds and for education"

September 2017 Aaron Larazus CEO, explained how EncepHeal Therapeutics' partnerships help in "Breaking the cycle of addiction with Next Generation Neurotherapeutics." They clinically add value, making treatments more potent while screening so sufferers can get them sooner. You Tube link

October 21-23, 2015 Biosciences Industry Fellows Program presented at NSF ATE Principal Investigator's Meeting in Washington, DC.

You Tube Link

Lab at Innovation Quarter is used

by more than students. The facility

offers high-tech equipment rental to

clients advancing their own product

Malaysia Christian spoke about the

different, innovative ways the lab is

being used today. You Tube link

February 2018 Laura Deming,

Director Longevity Fund, "Using

Biological Research to Reduce

or Reverse the Effects of Aging

and Increase Longevity." At

her age of 23, Deming's fund

tions in the biology of aging.

Properties of Smoke"

acquired multi-million dollars to

seek breakthroughs and innova-

March 2018 Norman Fralev

"The Physical and Chemical

development. Jason Gagliano &

October 2017 Home to next-generation testing and DNA sequencing, the Analytical and Molecular Training

June 2017 Impact magazine, focuses on the Bioscience Industrial Fellowship Project. "Participants get a real flavor for what's going on in biomanufacturing they can take back to the classroom," says Russ Read NCBW executive director

New partnership with NIIMBL - the National Institute for Innovation in Manufacturing Biopharmaceuticals. www.NIIMBL.us

the ATE Principal Investigators event.

pect of NCBW, special tools sharpen skills with classes for Forsyth Tech students and biotech companies' employees. Lab time for start-ups and businesses can be rented.

January 2018 NCBW named one of ten finalists for prestigious Bellweather Award at Community College Futures Assembly.

June 2016 c3bc Medical Device Skills Standards published, click box for full report

2017

Nov 2015 new SciTech Ideas in Action pub-

January 2016 Russ Read, NCBW Executive Director,

gave this presentation at the 103 Indian Science Con-

Valley Community College to advance standard credentials.

March 2016. c3bc National Advisory Council Meet-

ing in Research Triangle Park in North Carolina -

June 2016 c3bc national meeting in San

Francisco for skills standards for bioscience

Building the Manufacturing Talent Pipeline"

June 2016 Biosciences Industry Fellowship

NSF-ATE teachers program with visits to NC Bio

gress at the University of Mysore, India

February 2016 c3bc Medical Device meeting in at Irvine

lication documents the first seven years of the

Forsyth Tech professional lecture series with

links to YouTube videos and other resources.

■ June 2017 Bioscience Industrial Fellowship Project brings instructors from across the U.S for hands-on training to connect curricula to industry. Presentations You Tube Link

October 2017 NCBW presentation at

Skills Development Lab - the newest as-