

NCBW TIMELINE

April 2017

Click dashed-line boxes and underlined links for more info

Bellevue CC Informatics

- Co-hosted 78 state educators at Washington Community College Summit 2006
- Program featured in the industry journal: [BIO-IT World](#)
- At the IT Convergence Zone: A Rapid Development Model for Skill Standards and Curriculum published 2005
- Microsoft designates BCC as IT Showcase School in 2006
- Informatics Overview: A Program Building Resource for Community and Technical Colleges

MiraCosta Bioprocessing

- Biogen Idec, Genentech support new facility and remodel of facility
- International Society of Pharmaceutical Engineers supports design, construction of 3500-sq-ft. facility opens to classes in November 2005 with more than \$1 million in state-of-the-art equipment
- Resource Program established for companies to donate unused equipment for use in high schools

Indian Hills CC Biofuels, Agbio

- Bioreactors purchased through grant used for training needed by industry
- Bio-fuel laboratory techniques developed for teachers
- Pilot facility grows with Cargill donation of two new 80L fermenters.
- Selected as national model for community college - industry partnerships in biotechnology by the US Dept of Education

Great Bay CC Biomanufacturing

- Jan. 31, 2005 Northeast Biopharmaceutical Manufacturing Industry Skill Standards finalized in consensus with industry
- First in the nation Biomanufacturing Apprenticeship program begins 2005
- First BIOMAN 06 national conference organized by Dr. Sonia Wallman July 24-28, 2006
- September 2007 Harmonized Biopharmaceutical Manufacturing Industry Skill Standards at NBC2 working group meeting of industry and educators in Indianapolis

Forsyth Tech R&D

- Wake Forest Institute of Regenerative Medicine recruits three students for internships and "hands on experience"
- Ten short courses developed - delivered in the classroom or in a biotech company facility
- March, 2006 North Carolina Governor Michael Easley opens new technology building at Forsyth Tech, new biotechnology lab space, state-of-the-art equipment
- New Recombinant DNA course in cloning and stem cell research developed

NCBW

National Center for the Biotechnology Workforce

- June 28, 2004 President's High-Growth Job Training Initiative grant for Forsyth Technical CC to partner with four other community colleges around the nation and develop the National Center for the Biotechnology Workforce (NCBW)
- February, 2006 NCBW presents at symposium on Bio-processing & Biomanufacturing Training in partnership with BioNetwork NC community college biotech training system - the focus for the first *Resource Line* -Tracking Trends in Biotechnology Workforce

www.biotechworkforce.org

October 2008 Agreement with the North Carolina Community College System established NCBW as one of seven BioNetwork centers.

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



March 1, 2007 Piedmont Triad BioNicht recognizes NCBW and Russ Read for excellence in community service.

May 6-9, 2007 NCBW presents "Faces of Success" at Community College Program at BIO 07 Boston; subject for *Biotech Resource Line* publication.

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

NCBW hosts President Obama's Visit to Forsyth Tech

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

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

October 2013 Report from the Community College Program at global BIO convention in Chicago. c3bc Hub Directors and Russ Read, Executive Director.

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

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 companies, employers and stakeholders to develop core, industry-recognized skill sets and create "industry-recognized" credentials in biosciences.

January 2013 The Trade Adjustment Assistance Community College Career Training (TAACCT) 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:



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.

Rowan Cabarrus

Alamance

Lab Skills Hub

Develop new courses and credentials in the Biosciences with revised laboratory skills standards

City College of San Francisco

Hub lead institution, also home of the NSF national Bio-Link center, addresses lack of industry-recognized credentials, works to harmonize skill standards

Madison Area

Austin

Biomufacturing Hub

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

Montgomery County

Hub lead institution, also home of NSF biomufacturing center NBC2, leading campaign to stack credentials and access local career paths.

Bucks County

Los Angeles Valley

Medical Devices Hub

New skill standards; stackable, latticed credentials will help trade-impacted workers get high-wage, high-skill jobs

Ivy Tech

Hub lead institution coordinates Medical Device companies, trade organizations, community colleges and more stakeholders to develop skill set matrices in five functional areas.

Salt Lake City

St. Petersburg

March 26-28, 2014 DOL TAACCT c3bc National Meeting:

- Consensus by hubs reached in Skills 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 standards work](#)
- 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.

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](#)

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](#)

September 2014 Tech Council Meeting a PowerPoint presentation by Russ Read & Michael Ayers addresses talents required for biotech jobs, including a video about alumni: [You Tube Link](#)

October 2014 c3bc Medical Device Hub held a National Meeting with industry to review core skills.

October 2014 Draft Laboratory Bioscience Core Skill Standards posted.

December 2014 presentation to the NCBC Piedmont Triad Biotechnology Advisory Committee, including a Learning Skills Lab video: [You Tube Link](#)

February 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.

March 2015 presentation to NC Academy of Science at Wake Forest Biotech Place in Winston-Salem, NC on "Innovation in Research."

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 Success." [CCP@BIO 15 \(PDF report\)](#)

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

October 21-23, 2015 Biosciences Industry Fellows Program presented at NSF ATE Principal Investigator's Meeting in Washington, DC. [You Tube Link](#)

November 2015 new [SciTech Ideas in Action](#) publication documents the first seven years of the Forsyth Tech professional lecture series with links to YouTube videos and other resources.

January 2016 Russ Read, NCBW Executive Director, gave this presentation at the 103 Indian Science Congress at the University of Mysore, India

February 2016 c3bc Medical Device meeting in at Irvine Valley Community College to advance standard credentials.

June 2016 Core Skills Standards for Bioscience Technicians published by c3bc, [click box for full report](#)

2005

2006

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2016

2017

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

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

December 2013 A special edition of Forsyth Tech's biotech IMPACT magazine features an illustrated look at the nationwide programs of the TAA c3bc.

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

February 2015 the c3bc National Advisory Council Meeting held its first meeting to review accomplishments and progress in upgrading and increasing delivery of career bioscience training in the grant's third year.

February 2015 c3bc national meeting in Winston-Salem NC to grow bioscience training for Trade Adjustment Assistance displaced workers and others.

June 2016 c3bc Medical Device Skills Standards published by c3bc, [click box for full report](#)

March 2016 c3bc National Advisory Council Meeting in Research Triangle Park in North Carolina - "Building the Manufacturing Talent Pipeline"

June 2016 Biosciences Industry Fellowship NSF-ATE gathers teachers for classroom and lab program with visits to NC Bioscience enterprises.

July 2016 NCBW attended Hi-Tec conference in Pittsburgh with presentation on the BIFFP and a poster on c3bc. [Hi Tec Conference Photos](#)

September 2016 the TAACCT US DOL grant program c3bc closed. Biotechnology educators from around the U.S. engaged in a collaborative process to establish - for the first time - bioscience industry skill standards, credential programs, and break-through delivery methods to expand access to bioscience education and training opportunities. More than 350 grant products are uploaded to www.skillscommons.org and the new skills standards are posted on www.biotechworkforce.org

October 2016 the NSF ATE PI leadership meeting featured two NCBW BIFFP Fellows and a former NCBW student - click here for [Meeting Photos](#)

March 2017 c3bc Evaluation Report evaluator Abt Associates released its report, including an implementation study, an impact study, and outcome studies. It shows how the c3bc colleges expanded courses, programs, and credentials in biomanufacturing, medical devices, and lab skills; developed new technology-based approaches to teaching; and engaged in cross-hub work in establishing a set of Core Bioscience and Medical Device Skill Standards [\(Please click box for full PDF report.\)](#)

NCBW SciTech Ideas In Action Lecture Series:

- September 2012 Doug Drabble, Director of BioNetwork, "Career Success in Life Sciences"
- 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, Venture Partner and Managing Director of Hatteras Discovery with Hatteras Venture Partners, spoke about "My Journey as an Entrepreneurial Scientist, CEO and Investor."
- September 2013 Dr. Eric Tomlinson, President of Wake Forest University's Innovation, shared innovations 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 on "Biotech: Risk and Reward" - novel treatments of diseases and disorders of the nervous system. [You Tube Link](#)

March 2014 Paul Kortenaar, Ph.D. a science museum director, spoke about "Education for Innovation: Preparing Students and Teachers for Technology Change." [You Tube Link](#)

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

September 2014 Forsyth Tech hosted a Fulbright Scholar from Australia - Ray Cadmore. He compared issues and ideas on integrating technologies in community college courses. [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, funded by an NSF-ATE award, ten fellows visited NC Bioscience enterprises, including colleges, labs and research activities, reported on their learning experiences. [You Tube Link](#)

January 2015 Ana S. Iltis, Ph.D. Director, Center for Bioethics, Health and Society; Associate Professor of Philosophy at Wake Forest University 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](#)

March 2015 Jennifer Bryant, criminal justice instructor at FT on "CSI In The Real World." [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, in Global Quality Training and Development at Biogen, shared "My Journey from Higher Education into the Biopharmaceutical Industry." [You Tube Link](#)

November 2015 Doug Edgeton, MPH, MBA, President & CEO, North Carolina Biotechnology Center presented initiatives for "Healing, Fueling, and Feeding the World: The Triad's Role." [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, showed how his company is "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](#)

September 2016 Dr. Ski Chilton spoke about "The Rewired Brain" - matrix, dual processing, epigenetics and more [You Tube Link](#)

October 2016 a team of leaders, including former FT students, discussed Carolina Liquid Chemistries' technology and work [You Tube Link](#)

November 2016 representatives from Cook Medical explained the endoscopic medical devices division in Winston-Salem. [You Tube Link](#)

December 2016 Alan Beard, the outgoing Chair of the Forsyth Tech Biotechnology Department, spoke about his career in research and academia. [You Tube Link](#)

January 2017 Kim Westmoreland CEO of KeraNetics, which develops biomaterials for therapeutic and regenerative medical applications, offered his "Confessions of a Serial Entrepreneur" [You Tube Link](#)

February 2017 Dr. Gregory L.Kucera of Wake Forest Baptist Health, presented "KPC-34, a Co-Drug that combines a DNA damaging Agent with a Targeted Therapy" [You Tube Link](#)

March 2017 Amy Greeson, founder and director of Healing Seekers, spoke about her work with shamans and village healers in her talk: "Exploring the World for Novel Medicinal Compounds." Traditional healing practices can hold the keys to modern-day cures. [You Tube Link](#)