

# Bio-Link Webinar Series

## Co-Presented By The AC2-Regional Center

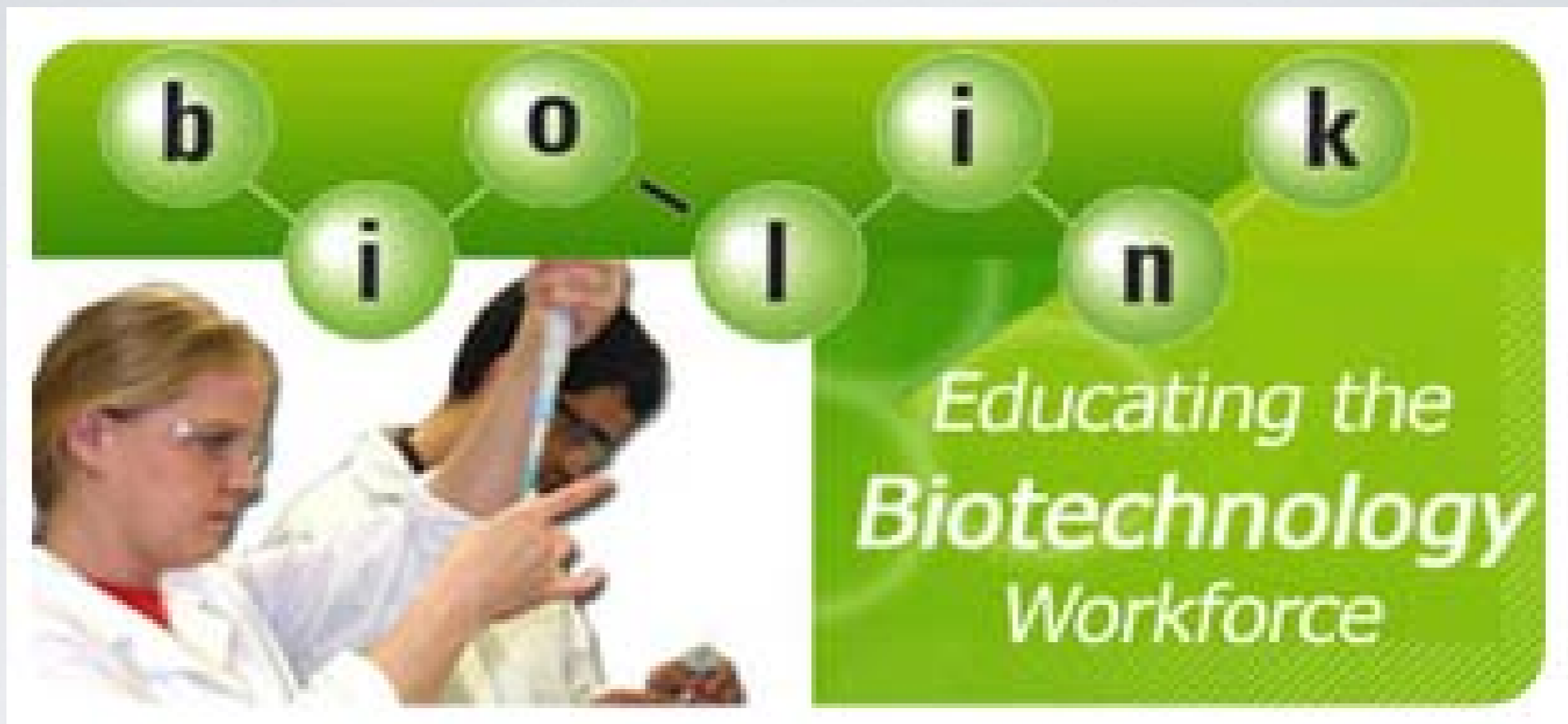
### Webinar #1

Explore Bio-Link and Advance Biotechnology  
Workforce Education

April 1, 2016

1pm (EST)

[CLICK HERE TO WATCH THE WEBINAR RECORDING](#)



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



DUE#1400721

# PRESENTERS



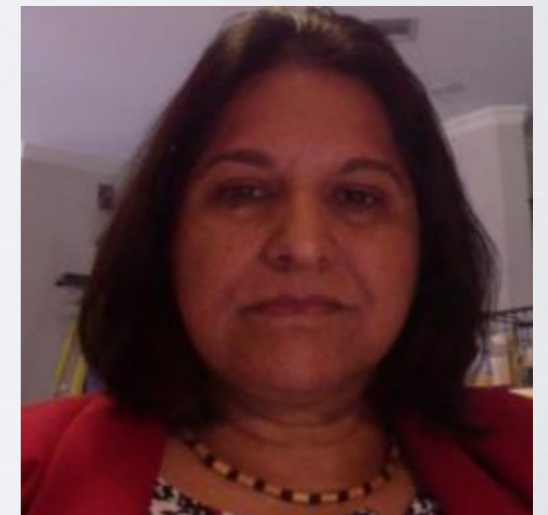
Elaine Johnson, PhD  
Bio-Link, CA



Jeanette Mowery, PhD  
Madison College, WI



Sandra Porter, PhD  
Digital World Biology LLC,  
WA



Sulatha Dwarakanath, PhD  
Austin Community College, TX

# POLL

Does your college or school have a biotech program?

- Yes
- No
- No, but I am thinking about starting one
- No, but I do incorporate biotech skills in my courses

# BIO-LINK GOALS



**Goal 1: Utilize Bio-Link's network of information sharing to foster communities of practice that enhance the preparation of skilled technicians.**

**Goal 2: Deepen and diversify industry outreach and engagement to ensure that training programs nationwide respond to industry needs.**

**Goal 3: Increase access to and use of educational and training resources to improve student skill attainment.**

# BIO-LINK RESOURCES

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

Clearinghouse  
Courses in a Box  
Videos

Publications

Summer Fellows Forum

Community College Program

Equipment Depot

Career Site

Skill Standards

Bridge to Biotech



# UPGRADED WEBSITE

## Bio-Link Depot

[Home](#)

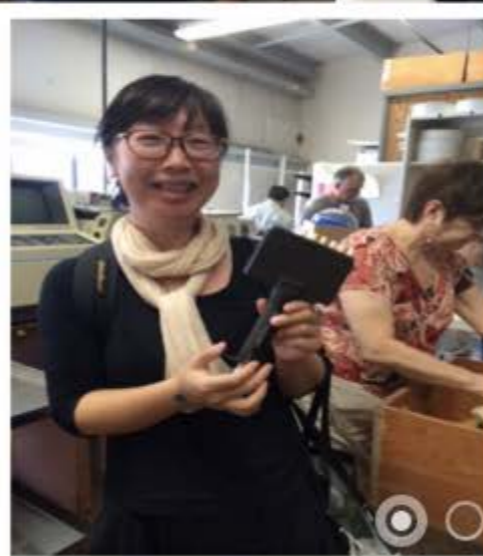
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[News](#)





# The Community College Program

at BIO 2016

Monday, June 6, 2016

San Francisco, California



\$175 registration includes breakfast, lunch, and pass to the exhibit hall.

Register at [www.bio-link.org](http://www.bio-link.org) or  
[www.biomanufacturing.org](http://www.biomanufacturing.org)





## Bio-Link Summer Fellows



# JUNE 7-10, 2016

- Clark Kerr Campus at UC Berkeley
- Register at [www.bio-link.org](http://www.bio-link.org)
- \$700 (Fellowships are available through April 4)

**2016 HI**  **TEC**  
High Impact Technology Exchange Conference

**PITTSBURGH**   
Wyndham Grand Pittsburgh  
July 25-28, 2016



Register at [www.highimpact-tec.org](http://www.highimpact-tec.org)  
Early bird \$500 until May 31  
Bio-Link has is a sponsor and has 25  
registrations.  
To obtain a code email:  
[ejohnson@biolink.ucsf.edu](mailto:ejohnson@biolink.ucsf.edu)

# BIO-LINK DEPOT



# January's Open House



Open House STATS  
January 19, 2016

- Total Attendees: 104
- Total Shoppers: 77
- \$ Given Away: \$126,000
- Institutions Participating: 57



# BIO-LINK SUSTAINABILITY

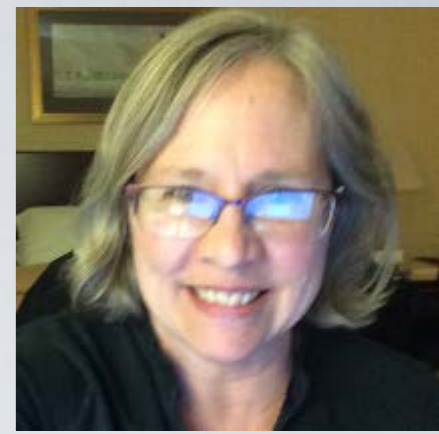
Obtaining 501c3 status  
Austin Community College Regional Center  
New Delivery Systems (Virtual & Online)  
ATE Projects  
Archiving at ATE Central  
Circles  
Communities of Practice

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

ejohnson@biolink.ucsf.edu

# QUESTIONS

# **BIO-LINK.ORG & BIOTECH-CAREERS.ORG**



Sandra Porter, PhD  
Digital World Biology LLC, WA





## Professional Development

Improving instructor knowledge and skills

### FOR STUDENTS

[Learn about biotech careers](#)  
[Find programs in your area](#)

### FOR INSTRUCTORS

[Learn how Bio-Link helps](#)  
[Learn about Courses in a Box](#)

### FOR EMPLOYERS

[Learn about skills taught](#)  
[Recruit interns and employees](#)

### STAY CONNECTED



### Current and Upcoming Events

- [Learn about Bio-Link via Webinar: Fri, Apr 1 2016](#) [View all](#)
- [2016 Bio-Link Summer Fellows Forum: Berkeley CA Tue, Jun 7 2016 to Fri, Jun 10 2016](#)
- [The 11th Annual DOE Joint Genome Institutes Genomics of Energy & Environment Meeting: Walnut Creek CA](#)

### What's New?

- [Bio-Link Newsletter | Bio-Link Online News March 2016](#) [View All](#)
- [Blog entry | Making the Call: Day 5 Filming the interactive movie](#)
- [Blog entry | Research and Teaching: A good match for community colleges](#)

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- [Resources](#)
- [Contact Bio-Link](#)

### COMMUNITIES

- [Bio-Link Affiliates](#)
- [Bio-Link Circles](#)
- [Bio-Link Depot](#)
- [Bio-Link Programs](#)
- [Bridge to Biosciences](#)
- [Join Bio-Link](#)

### RESOURCES

- [Biotech Careers](#)
- [Courses in a Box](#)
- [Curriculum Clearinghouse](#)
- [How-To Guides](#)
- [Publications](#)
- [Videos](#)

### KEY PAGES

- [Bioscience Skill Standards](#)
- [Blogs](#)
- [Courses](#)
- [Events](#)
- [Presentations](#)
- [State biotech resources](#)

## Biotech Careers

Educating the Biotechnology Workforce

### Explore Careers

By Education

High School

By Job Area

Animal biotechnolog

By Starting Salary

\$20,000-\$30,000

### Welcome to the Bio-Link Career Site!

What can you do with a biotech degree or certificate from a community or technical college?

This is the place to find out.

- Learn about different careers.
- Find out what people get paid.
- Find out what it's like to work in different kinds of jobs.
- Learn how to decode job descriptions.

### Job Areas

[Agricultural biotechnology](#)
[Animal biotechnology](#)
[Aquaculture](#)
[Biofuels](#)
[Biomanufacturing](#)
[Biomaterials](#)
[Biopharmaceuticals](#)
[Bioprocessing](#)
[Biotechnology](#)
[Cell culture](#)
[Conservation biology](#)
[Cosmetics](#)
[Documentation](#)
[Drug discovery](#)
[Education](#)
[Environmental monitoring](#)
[Food Safety](#)
[Forensics](#)
[Genomics](#)
[Immunochemistry](#)
[Lab Safety](#)
[Marine biotechnology](#)
[Media and Solution preparation](#)
[Medical devices](#)
[Medical diagnostics](#)
[Molecular biology](#)
[Nanotechnology](#)
[Plant biotechnology](#)
[Protein purification](#)
[Quality control](#)
[Specialty chemicals](#)
[Synthetic biology](#)
[Vaccines](#)
[Water quality](#)

Do you want to be notified about new careers, career videos, or internships? [Sign up now](#) for the Bio-Link Community On-Line newsletter.

### What's new?



**Decoding the Biotech Job Listing Part 1: "Good Communication", Collaboration, and Coevolution**

The requirements of "good communication skills" and "comfortable working in a multidisciplinary setting" on a biotech job listing are common, but what do these mean in practice? For work in biotech, there's often more than meets the eye in a job...



**Biotech Employers: Finding the Best Fit**

When it comes to finding the right job fit, in biotech or elsewhere, an initial step is to simply identify what factors are most important.

But one's idea of the right job fit can change over time as the economy shifts, new...



**Using the Informational Interview to Land a Job You'll Love**

You're finishing your program and want to find a rewarding job, but nothing seems to work. How can you improve your chances?

If only there was something to be done between filling out forms and waiting for replies, something that could...

1 2 3

next last

more

### Biotech Career Video



### Photo Journals



### Learn the Lingo



### Bio-Link



# BIO-LINK.ORG



[About Bio-Link](#)

[Degrees and Certificates](#)

[Biotech Instruction](#)

[Communities](#)

[Resources](#)



## Professional Development

Improving instructor knowledge and skills

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### STAY CONNECTED



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## STAY CONNECTED



### Current and Upcoming Events

- **Learn about Bio-Link via Webinar:** Fri, Apr 1 2016 [View all](#)
- **2016 Bio-Link Summer Fellows Forum:** Berkeley CA  
Tue, Jun 7 2016 to Fri, Jun 10 2016
- **11th Annual Worthington Bio Conference:** Worthington MN  
Thu Apr 7 2016 to Fri Apr 8 2016

### What's New?

- Bio-Link Newsletter | **Bio-Link Online News** [View All](#)  
**March 2016**
- Blog entry | **Making the Call: Day 5 Filming the interactive movie**
- Blog entry | **Research and Teaching: A good match for community colleges**

[Sign up for news](#)



[Become a member](#)

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## KEY PAGES

- Bioscience Skill Standards
- Blogs
- Courses
- Events
- Presentations
- State biotech resources

# BIO-LINK.ORG

## Biomedical Technology



A Biomedical Technology program prepares students for a career in the growing field of medical devices. Students gain a working knowledge of the design, manufacture, and ...

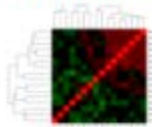
[Learn more](#)

## Bioprocess Laboratory Technology



Bioprocess Laboratory Technology program provides a foundation in, and practical application of, the technologies employed by biotechnology companies engaged in the production of ... [Learn more](#)

## Biostatistics



A program in Biostatistics trains students in methods and techniques used for the collection and analysis of biological data as generated in such fields as biotechnology, ...

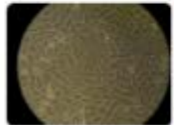
[Learn more](#)

## Biotechnical and Chemical Plant Operator



Chemical plant operators manage the duties, equipment, and personnel associated with processing input material and purifying and refining products for companies that manufacture ... [Learn more](#)

## Biotechnology



Biotechnology programs prepare students to work in areas such as biotechnology research and development, quality control, or biomanufacturing. These careers can be found in ... [Learn more](#)

## Biotechnology Business and Enterprise



Biotechnology companies require personnel who can understand aspects of running a business in addition to science. Students in this program learn about biotechnology organizations ... [Learn more](#)

## Biotechnology Education



A Biotechnology Education program enables K-12 teachers to deepen their content knowledge and learn more about approaches for teaching biosciences and integrating technology into ... [Learn more](#)

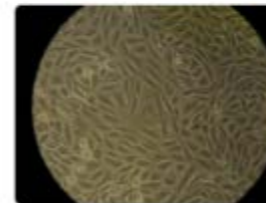
## Clinical Research Coordinator



A Clinical Research program trains students to work with doctors and research nurses in clinical research settings as study coordinators. Duties may include recruiting ... [Learn more](#)

## Biotechnology

### << Return to Degrees and Certificates



Biotechnology programs prepare students to work in areas such as biotechnology research and development, quality control, or biomanufacturing. These careers can be found in industry or research settings.

There is more than one type of Biotechnology Associates degree. A.A.S. and A.A.S. (Associate of Applied Science) degrees are professional technical degrees that prepare students to enter the workforce. A.A. (Associate of Arts) and A.S. (Associate of Science) degrees also prepare students for jobs, but may include more courses that will transfer to four year institutions.

Courses for both degrees may include:

- English
- Algebra

### Related Degrees and Certificates:

[Biological Science](#)

### Related careers:

[Genomics technician](#)

[Laboratory Technician](#)

[Molecular Biology Technician](#)

[Plant Biotechnology](#)

[Animal biotechnology](#)

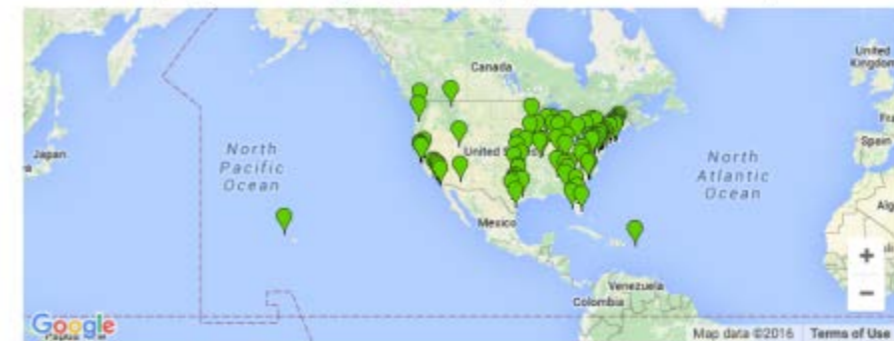
[Biomanufacturing](#)

[Marine Biotechnology](#)

[Media and Soil Preparation](#)

[Plant Biotechnology](#)

### Locations of programs offering degrees and(or) certificates for this topic



### Program names and credentials

[Alamance Community College](#)

[American River College](#)

[Athens Technical College](#)

[Atlanta Technical College](#)

[Austin Community College](#)

[Berkeley City College](#)

[Bethel College](#)



# BIO-LINK.ORG

## Texas

### Biotechnology Employers:

[Biotech companies](#)

[Research Institutions](#)

[Universities](#)

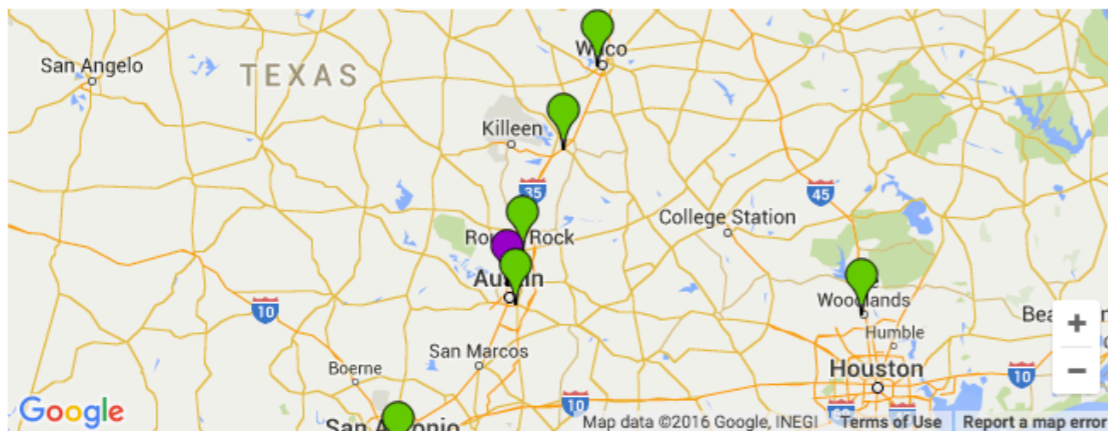
### Biotechnology Organizations:

[BioHouston](#)

[The Center for Life Sciences Technology](#)

[Texas Healthcare & Bioscience Institute](#)

### Locations of Program(s) and High School Affiliates in Texas



Legend: Bio-Link Programs [green], High School Affiliates [purple]

### Program(s) in Texas

<a href="#">Austin Community College</a>	<a href="#">Collin College</a>	<a href="#">Del Mar College</a>
<a href="#">El Centro Community College</a>	<a href="#">Lone Star College-Montgomery</a>	<a href="#">McLennan Community College</a>
<a href="#">St. Philip's College</a>	<a href="#">Temple College</a>	

### High School Affiliate(s) in Texas

[L.C. Anderson High School](#)

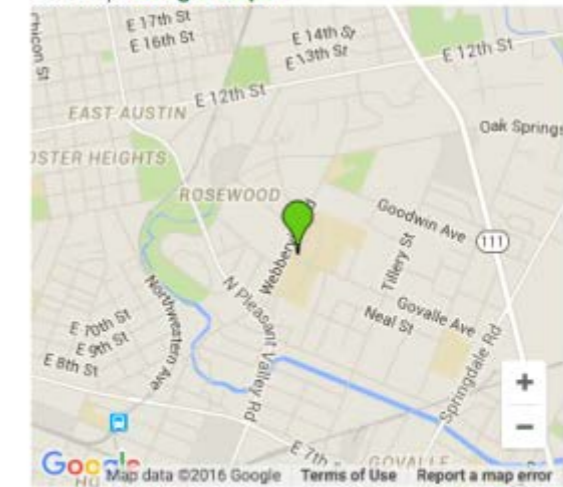
## Austin Community College



### Location:

Austin Community College  
3401 Webberville Rd  
Austin TX 78701

See map: [Google Maps](#)



### Degree / Certificate and Credential(s):

[Biotechnology](#)



### Bio-Link member(s):

[Linnea Fletcher](#)  
[Sulatha Dwarakanath](#)  
[Jack O'Grady](#)  
[Jennifer Lazare](#)  
[Joseph Oleniczak](#)

### Program Website(s):

[Austin Community College Biotechnology Program](#)

### Nearby Companies and Institutions:

[Biotechnology companies](#)

[Research institutes](#)

State Resources: [Texas](#)

### Graduates from this program have been employed by or interned at:

The [University of Texas at Austin](#), [Stratagene/BioCrest \(now Agilent\)](#), [Ambion \(was Applied Technologies, now Life Technologies\)](#), [Luminex](#), [Bioo Scientific](#), [Rules-Based Medicine \(now MyriadRBM\)](#), [Texas Department of State Health Services](#), [XBiotech](#), [Texas State](#), [Xeris](#), [Asuragen](#), [Austin Community College](#), [Alk Abellom Cenetron](#), [Microbac Laboratories](#), [MD Anderson Cancer Research Center](#), [IsoStem Inc](#), [Molecular Templates](#), [Spot On Sciences](#), and [Mystic Pharmaceuticals](#).

# BIO-LINK.ORG

## Biotech Employers

Copy CSV Excel PDF Print

Search:

Bio-Link Program ▲	Employers of program graduates	Program's State
<b>American River College</b>	American River College, Agraquest, Alza, Bayer CropScience, BloodSource, Genentech, Idexx Laboratories, Monsanto, Onyx Pharmaceuticals, Shriners Hospitals for Children, University of California, Davis	California
<b>Anoka-Ramsey Community College</b>	Medtronic, Inc; Boston Scientific Corporation; St Jude Medical, Inc; Medrad Interventional/Possis; Neometrics; Minnetronix; SterilMed; Minntech Corporation; American Medical Systems Holdings, Inc; CoAxia, Inc; Galil Medical; Vascular Solutions, Inc; BioTest Laboratories, Inc; Liberty Oxygen & Medical Equipment.	Minnesota
<b>Athens Technical College</b>	Dendreon, Noramco, Merial, Athens Research & Technology, Kemira, University of Georgia, USDA, Georgia Bureau of Investigation, Synageva BioPharma, rPeptide, Food Safety Net Services, Southeast Poultry Research Laboratories, Poultry Diagnostic and Research Center, J&J Chemical Co.	Georgia
<b>Austin Community College</b>	The University of Texas at Austin, Stratagene/BioCrest (now Agilent), Ambion (was Applied Technologies, now Life Technologies). Luminex, Bioo Scientific, Rules-Based Medicine (now MyriadRBM), Texas Department of State Health Services, XBiotech, Texas State, Xeris, Asuragen, Austin Community College, Alk Abellom Genetron, Microbac Laboratories, MD Anderson Cancer Research Center, IsoStem Inc, Molecular Templates, Spot On Sciences, and Mystic Pharmaceuticals.	Texas
<b>Bergen Community College</b>	Genzyme	New Jersey

## Degrees Certificates Credentials Stats

Copy CSV Excel PDF Print

Search:

Degree / Cert by term ▲	Number of Programs	Degrees	Certificates	Degrees and Certificates
<b>Agricultural Biotechnology</b>	1	1	1	1
<b>Animal Laboratory Technology</b>	2	2	0	0
<b>Applied or Industrial Biotechnology</b>	2	1	2	1
<b>Biofuels Process Technology</b>	2	2	2	2
<b>Biofuels Technician</b>	1	0	1	0
<b>Bioinformatics</b>	4	2	2	0
<b>Biological Science</b>	20	18	4	3
<b>Biomanufacturing</b>	11	4	9	2
<b>Biomedical Technology</b>	3	2	1	0
<b>Bioprocess Laboratory Technology</b>	2	2	2	2
<b>Biostatistics</b>	1	0	1	0
<b>Biotechnical and Chemical Plant Operator</b>	1	0	1	0
<b>Biotechnology</b>	83	75	46	39
<b>Biotechnology Business and Enterprise</b>	1	1	1	1
<b>Biotechnology Education</b>	1	0	1	0

# BIO-LINK.ORG & BIOTECH-CAREERS.ORG

**Professional Development**  
Improving Instructor knowledge and skills

**FOR STUDENTS**  
Learn about biotech careers  
Find programs in your area

**FOR INSTRUCTORS**  
Learn how Bio-Link helps  
Learn about Courses in a Box

**FOR EMPLOYERS**  
Learn about skills taught  
Recruit interns and employees

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- Blog entry | [Research and Teaching: A good match for community colleges](#)

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- Join Bio-Link

**RESOURCES**

- Biotech Careers
- Courses in a Box
- Curriculum Clearinghouse
- How-To Guides
- Publications
- Videos

**KEY PAGES**

- Bioscience Skill Standards
- Blogs
- Courses
- Events
- Presentations
- State biotech resources

**Biotech Careers**  
Educating the Biotechnology Workforce

Articles Careers Internships Job Areas Photos Resources Videos

**Explore Careers**

By Education  
High School

By Job Area  
Animal biotechnology

By Starting Salary  
\$20,000-\$30,000

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- Find out what it's like to work in different kinds of jobs.
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**Job Areas**

Agricultural biotechnology Animal biotechnology Aquaculture Biofuels Biomaterials Biopharmaceuticals Bioprocessing Biotechnology Cell culture Conservation biology Cosmetics Documentation Drug discovery Education Environmental monitoring Food Safety Forensics Genomics Immunochemistry Lab Safety Marine biotechnology Media and Solution preparation Medical devices Nutrochemicals Plant biotechnology Protein purification Quality control Specialty chemicals Synthetic biology Vaccines Water quality

**What's new?**

**Decoding the Biotech Job Listing Part 1: "Good Communication", Collaboration, and Coevolution**  
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If only there was something to be done between filling out forms and waiting for replies, something that could...

**Biotech Career Video**  
Bioprocessing: Join Us On...

**Photo Journals**

**Learn the Lingo**  
CDC ? IND ISO ? CLIA  
QA ? SOPs ? FDA ?  
? OSHA CHP  
[Learn the lingo!](#)

**Bio-Link**

# BIOTECH-CAREERS.ORG

## Environmental Health & Safety Technician



**Starting Wage (hourly):** \$19 - \$24 per hour

**Starting Wage (yearly):** \$40,000-\$50,000

This Career

Education & Training

Job Search

Workers in bioscience facilities and research environments can be exposed to a variety of chemical, biological or physical hazards as they perform daily tasks. Government agencies strictly enforce regulations related to workplace safety, health and the environment. Environmental Health and Safety Technicians are responsible for creating and maintaining a healthy work environment

Environmental Health and Safety Technicians develop, implement and direct comprehensive health, safety and environmental programs. This means compliance with all federal, state and local regulations as they apply to company operations. Each organization selects and implements a strategy that best matches its prevalent culture and the needs of its particular environment. Basic elements include the identification of hazards and training for all shifts on all necessary topics. These include work place injury prevention, control of hazardous materials, confined space issues, blood borne pathogen control, personal protective equipment, radiation safety, hazardous waste handling, and other topics as they relate to employee job duties.

SimplyHired

Environmental Health and Safety

City, State, or ZIP

Showing 1-10 of 65,462 Environmental Health And Safety jobs

Refine your search

Sort by

Date Added

More Filters

Show

Relevance

Anytime

None Selected

10 jobs

Ads

[EHS Online Training - 360Training.com](#)

[www.360training.com/](#)

Environmental Health And Safety Training Courses From 360Training. Safety certifications · Hazwoper training · OSHA outreach training

[HSE Management System - Track, Report & Manage Safety Data](#)

[www.intellex.com/hse\\_system](#)

Over 1 Million Users. Try It Free!

Easy to implement · Ensure compliance · Improve performance · Over 1000 clients

[EHS Management Software - Go paperless - verdantwebtech.com](#)

[www.verdantwebtech.com/](#)

Track EH&S compliance data, samples and activities.

[Safety Supervisor](#)

[Global Edge Consultants - LA](#)

**Safety** Supervisor Direct Hire + Excellent benefits 20 Minutes from Port Arthur Major projects The Global Edge Consultants leaders within Oil and Gas Recruitment currently ...

10 days ago, Sponsored by Global Edge Consulta...

[Health and Safety Clerk](#)

[Smithfield - Milan, MO](#)

This position will assist in accident reduction programs, regulatory compliance, and employee wellness programs. Responsible for providing and preparing for emergency ...

5 days ago, Sponsored by Smithfield

[Environmental Health & Safety Manager](#)

[Flex|n|gate - Danville, IL](#)

Flex-N-Gate is a leading manufacturer and supplier of components for the automotive industry, recently ranked 13 th of the 150 Top North American Suppliers in "Automotive ...

**NEW** 1 day ago, Sponsored by Flex|n|gate



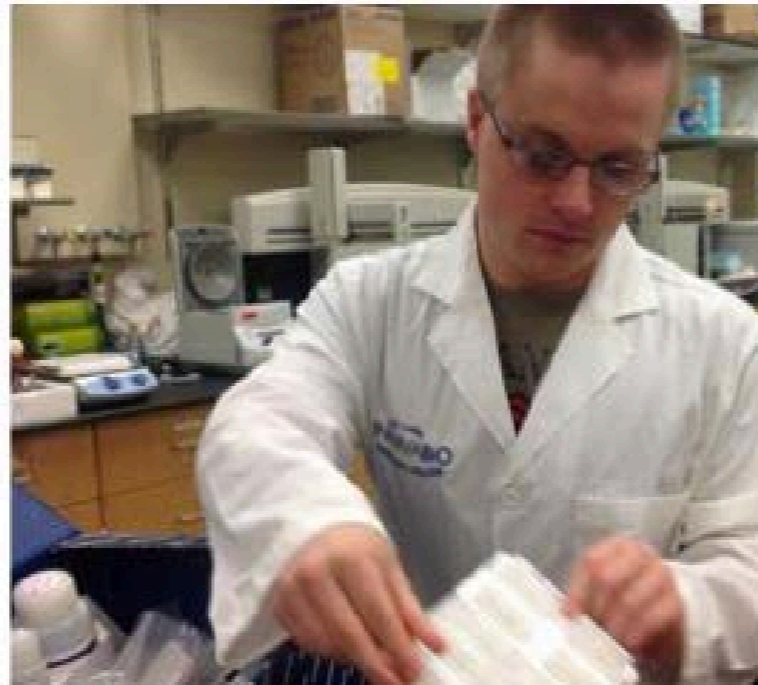
# BIOTECH-CAREERS.ORG

## Biotech Career Video



Listen to [interviews](#)

## Photo Journals



View biotech job [photos](#).

## Learn the Lingo

CDC ? IND ? ISO ? CLIA  
QA ? SOPs ? FDA ?  
? OSHA ? CHP ?  
Learn the lingo!  
EPA ? ? QC ? WFI  
USP ? MSDS ? SIP ?  
cGMPs ? PCR GLPs

Learn [biotech terms](#)

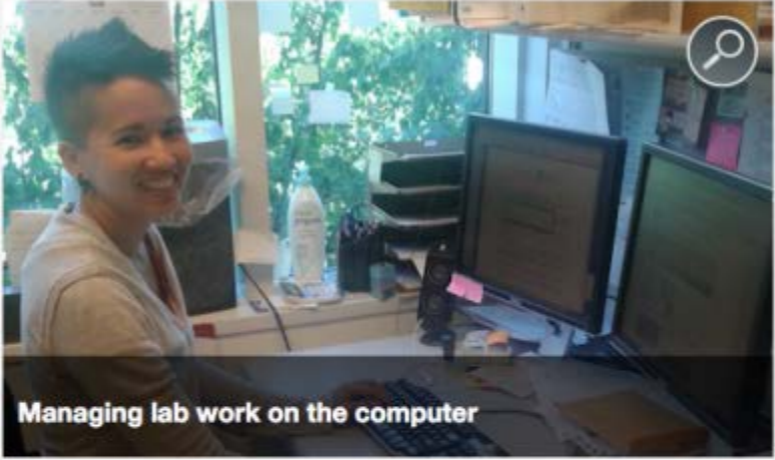
# BIOTECH-CAREERS.ORG

## Biotech Careers



Educating the Biotechnology Workforce

[Articles](#) [Careers](#) [Internships](#) [Job Areas](#) [Photos](#) [Resources](#) [Videos](#)

### Lab Supervisor - Cell Culture



Managing lab work on the computer



Seravin Behnken is the Lab Supervisor at the cell culture core lab at the Fred Hutchinson Cancer Research Center in Seattle. She graduated from the Shoreline Community College Biotechnology Lab Specialist program and holds an A.S. in Biotechnology. Below, she describes bringing a detail-oriented approach to supervise the lab and oversee projects and orders.

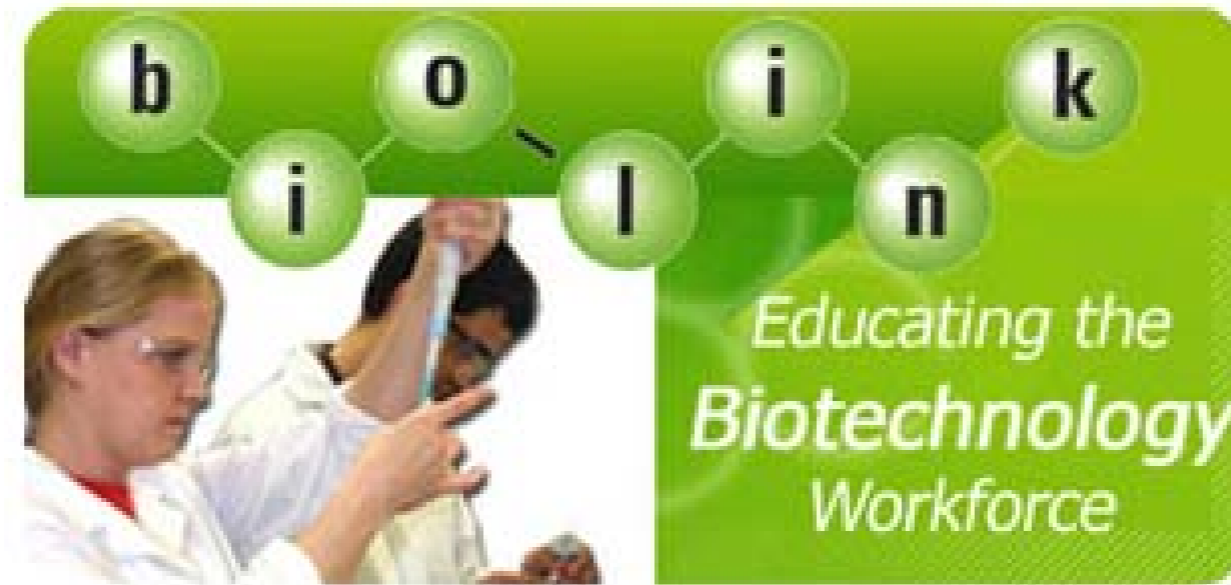
**What biotechnology program did you attend?**

[Shoreline Community College, Biotechnology Lab Specialist](#)

**What degree/certificate(s) do you hold?**

[Associates in Biotechnology](#)

# QUESTIONS



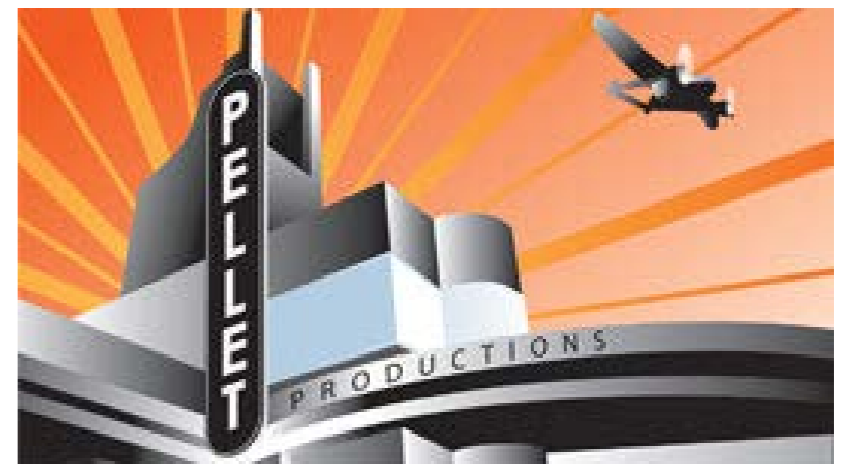
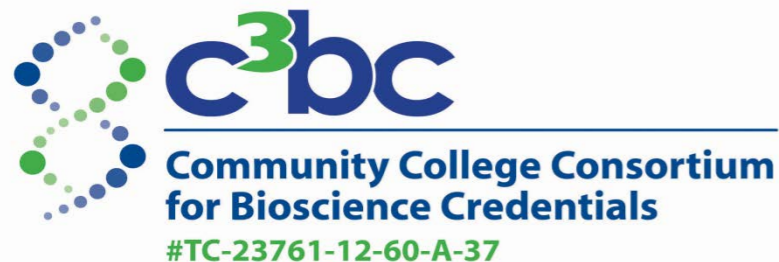
# CURRICULUM AND INSTRUCTIONAL MATERIALS

Jeanette Mowery, Ph.D.  
Madison College, WI



# CURRENT PROJECTS

- Core Skill Standards for Bioscience Technicians
  - Bio-Link is a major partner in DOL TAACCCT grant: c3bc Consortium
    - 12 College Consortium led by Russ Read of Forsyth Tech
- Interactive Movie to teach Quality and Regulatory Affairs
  - Collaboration with Pellet Productions

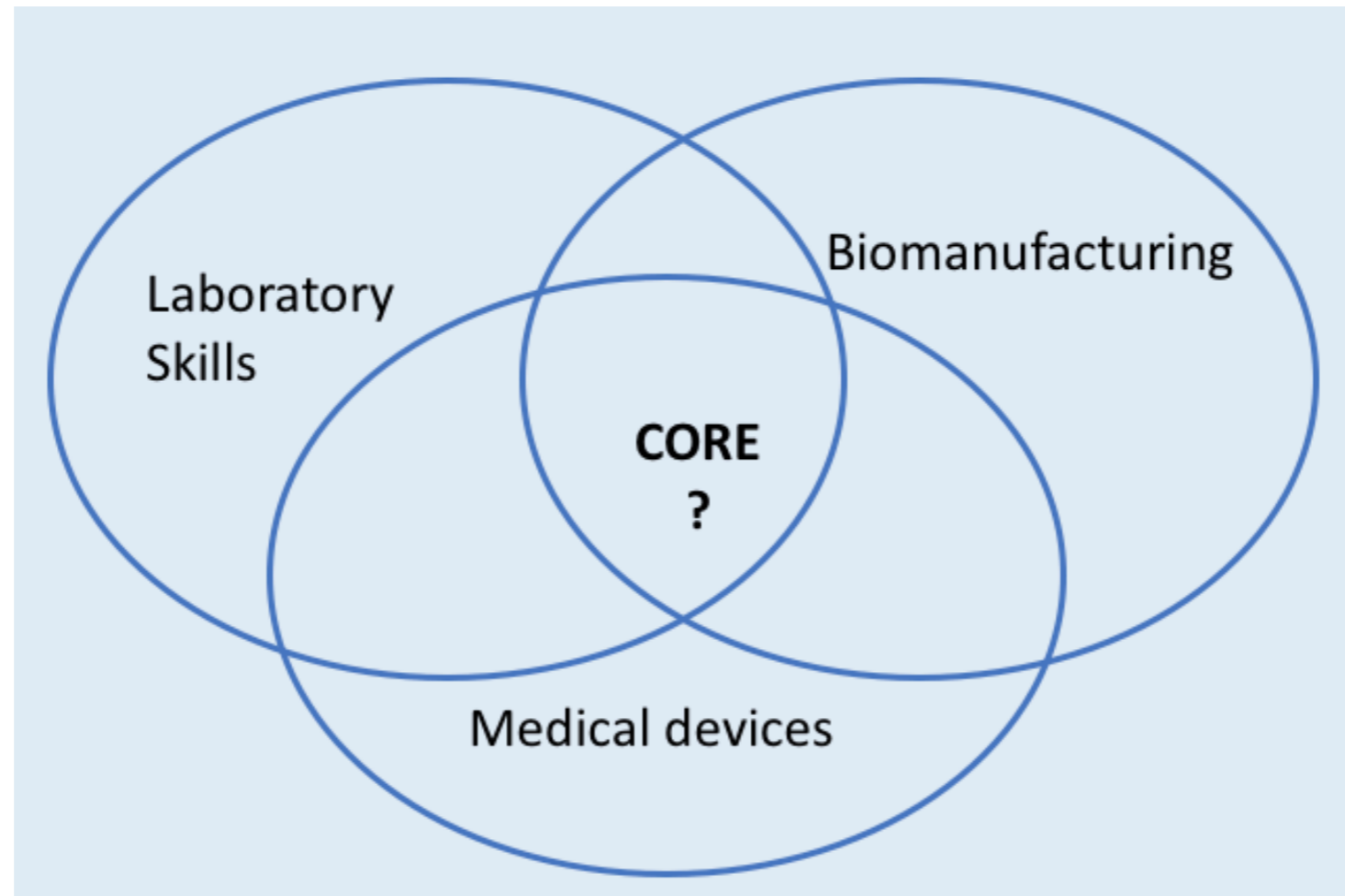


# Poll

Do you currently use skill standards in reviewing and/or designing curriculum?

- Yes
- No
- Maybe I should

# BIOSCIENCE TECHNICIAN CORE SKILL STANDARDS

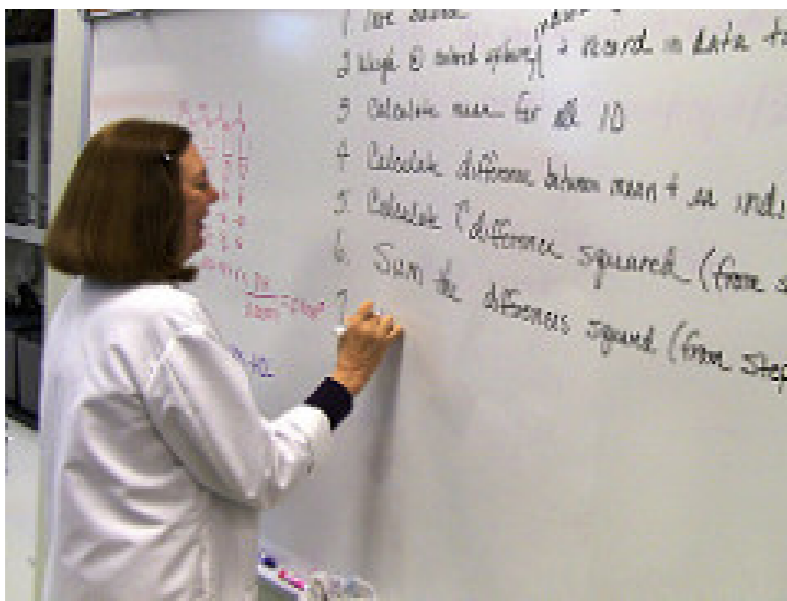


<https://sites.google.com/site/c3bcbioscienceskillstandards/>

# WHY MORE SKILL STANDARDS?



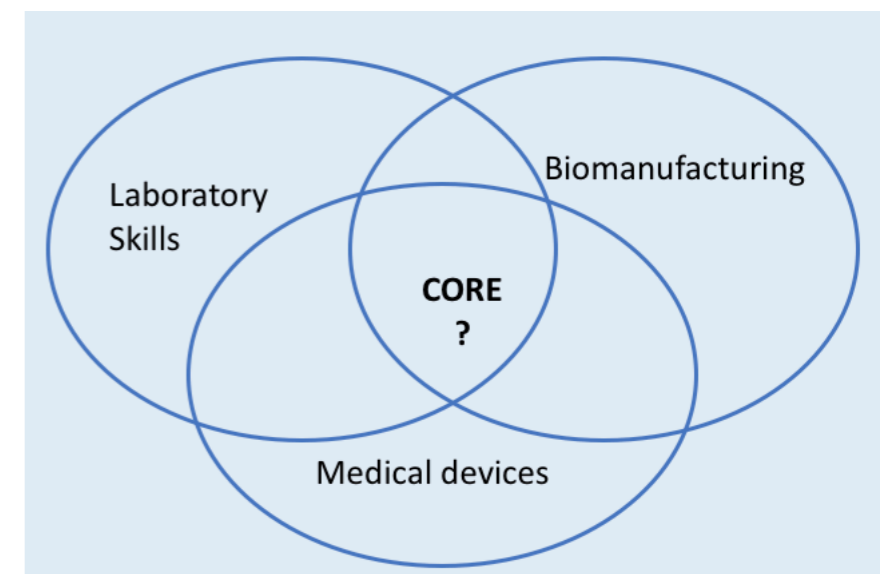
- Maturation of the Bioscience Industry: many subsectors
- Diversity of Bioscience Technician Job Descriptions
- Limited instructional time in workforce education programs
  - Illustrate importance of **Fundamentals**
  - Develop new credentials, career pathways
  - Review existing curriculum



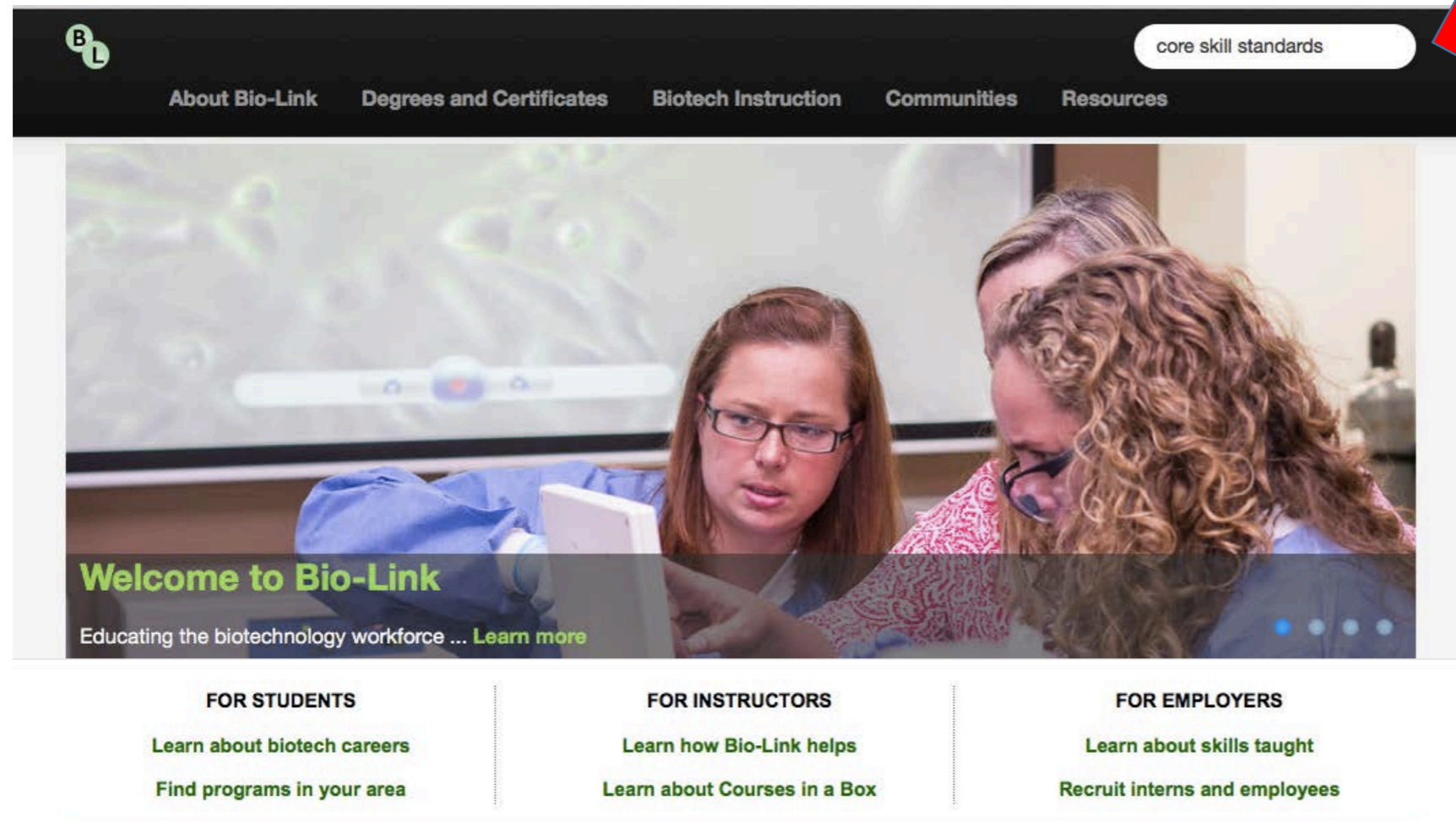


# CRITICAL WORK FUNCTIONS

- Maintain a Safe and Productive Work Environment
- Provide Routine Facility Support
- Perform Measurements, Tests, Assays
- Comply with Applicable Regulations and Standards
- Manage and Communicate Information
- Perform Mathematical Manipulations



# CORE BIOSCIENCE TECHNICIAN SKILL STANDARDS



The screenshot shows the Bio-Link website interface. At the top left is the Bio-Link logo (a circle with 'B' and 'L'). To the right is a search bar containing the text 'core skill standards', with a red arrow pointing to it from the right. Below the search bar is a navigation menu with the following items: 'About Bio-Link', 'Degrees and Certificates', 'Biotech Instruction', 'Communities', and 'Resources'. The main content area features a large image of three people (two women and one man) looking at a laptop in a classroom or lab setting. Overlaid on the bottom left of this image is the text 'Welcome to Bio-Link' in green, followed by 'Educating the biotechnology workforce ... Learn more' in smaller green text. Below the image are three columns of content:

FOR STUDENTS	FOR INSTRUCTORS	FOR EMPLOYERS
Learn about biotech careers	Learn how Bio-Link helps	Learn about skills taught
Find programs in your area	Learn about Courses in a Box	Recruit interns and employees

<http://www.bio-link.org/home2/resource/bioscience-skill-standards>

# INTERACTIVE MOVIE: CHOOSE YOUR OWN ADVENTURE

- Address the challenge of teaching Quality and Regulatory Affairs
- Collaboration with Pellet Productions
- Interactive movie
  - What does it feel like to work in regulated environment?
  - Making right decisions
- Filming completed; Editing in progress
- Opening night in June at Summer Fellows
- Will be linked from Bio-Link website



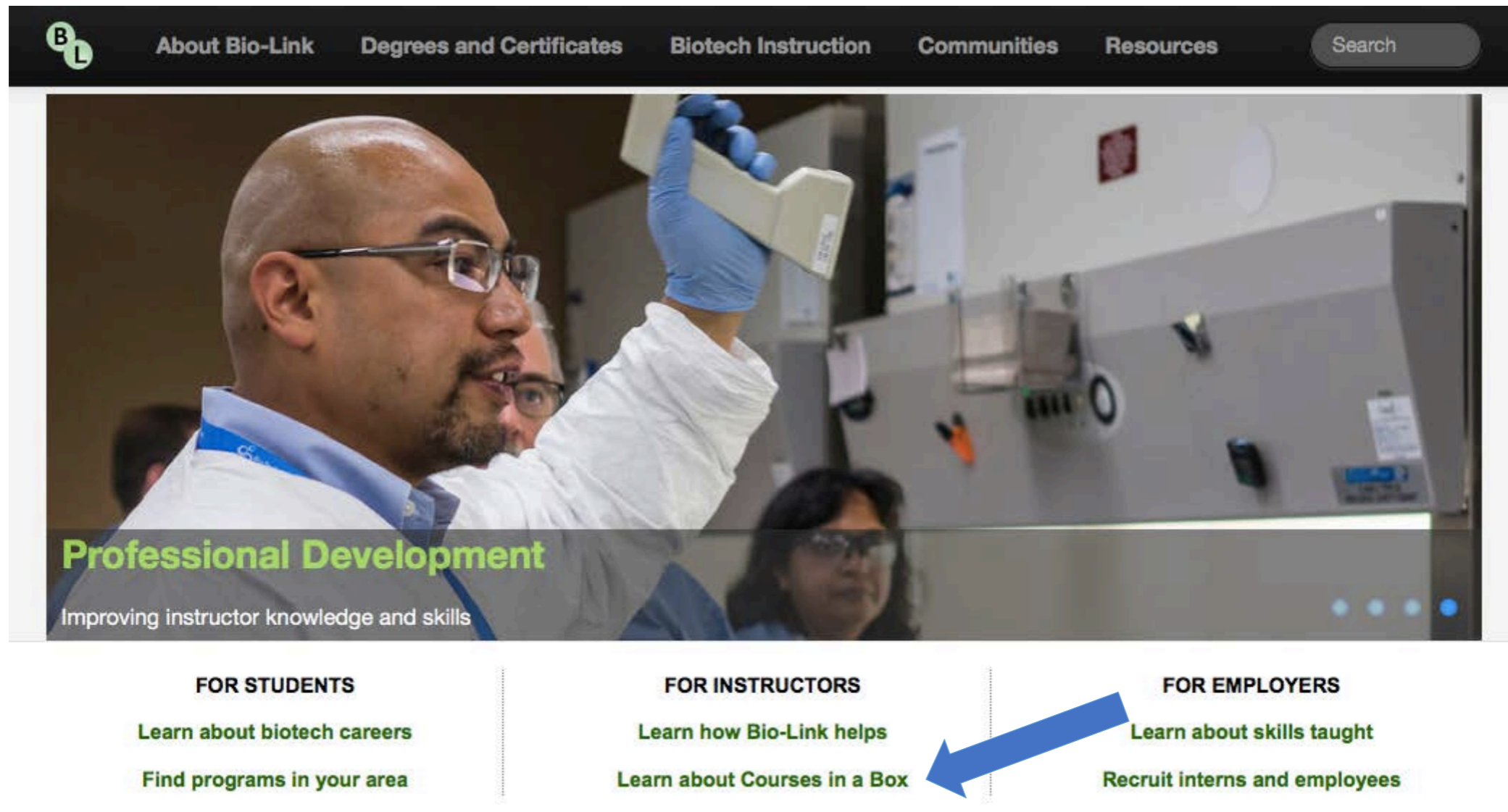
# Making the Call: Quality in Biomanufacturing



# BIO-LINKERS GET THEIR BIG BREAK!



# COURSES IN A BOX



The image shows a screenshot of the Bio-Link website. At the top, there is a dark navigation bar with the Bio-Link logo (a green circle with 'B' and 'L') on the left. To the right of the logo are five menu items: 'About Bio-Link', 'Degrees and Certificates', 'Biotech Instruction', 'Communities', and 'Resources'. On the far right of the navigation bar is a search bar with the word 'Search' inside. Below the navigation bar is a large banner image of a man in a white lab coat and blue gloves holding a pipette tip. Overlaid on the bottom left of the banner is the text 'Professional Development' in green, with the subtitle 'Improving instructor knowledge and skills' in white below it. Below the banner are three columns of text, each separated by a vertical dotted line. The first column is titled 'FOR STUDENTS' and contains two items: 'Learn about biotech careers' and 'Find programs in your area'. The second column is titled 'FOR INSTRUCTORS' and contains two items: 'Learn how Bio-Link helps' and 'Learn about Courses in a Box'. The third column is titled 'FOR EMPLOYERS' and contains two items: 'Learn about skills taught' and 'Recruit interns and employees'. A blue arrow points from the 'FOR EMPLOYERS' column towards the 'FOR INSTRUCTORS' column, specifically pointing to the 'Learn about Courses in a Box' link.

**B L** About Bio-Link Degrees and Certificates Biotech Instruction Communities Resources Search

**Professional Development**  
Improving instructor knowledge and skills

**FOR STUDENTS**  
Learn about biotech careers  
Find programs in your area

**FOR INSTRUCTORS**  
Learn how Bio-Link helps  
Learn about Courses in a Box

**FOR EMPLOYERS**  
Learn about skills taught  
Recruit interns and employees

# Poll

Have you used the Course in a Box section of the Bio-Link website?

- Yes
- No
- No, tell me more

# Course-in-a-Box

## The Courses

### Basic Laboratory Methods in a Regulated Environment

Submitted by Lisa Seidman on Sun, 2011-03-06 19:04

Biotechnology transforms knowledge that emerges from life science research into technology, the creation of products of value to people. Beginning biotechnology students therefore need to develop a strong foundation in laboratory science that is integrated with an ... [Read more](#)

### Cases in Industry Practice in Biotechnology

Submitted by Jeanette Mowery on Wed, 2012-01-04 14:26

Cases in Industry Practice in Biotechnology (CIPB)

Authors : V. Celeste Carter and Kristen Hershbell Charles

These instructional materials were developed in collaboration with industry partners and utilize a case-method approach with hands- ... [Read more](#)

### Embryonic Stem Cell Course (Stanford)

Submitted by Jeanette Mowery on Wed, 2011-07-20 11:46

These instructional materials were developed with support from the National Science Foundation and have been used in embryonic stem cell courses at Stanford and at San Francisco State University. Materials include Laboratory Protocols for both mouse and human embryonic stem cells, Lectures, ... [Read more](#)

### Hazardous Materials

Submitted by Mary Ellen Kraus on Fri, 2015-07-10 07:29

Welcome to the Hazardous Materials course-in-a-box. This course is not designed as a safety training course. The educational philosophy of this course, like that of most of the courses in the Biotechnology Laboratory Technician Program, is that properly educated technical students will have the ... [Read more](#)

### Laboratory Math for Biotechnology

Submitted by Mary Ellen Kraus on Fri, 2012-09-28 07:50

Bench work in the biotechnology laboratory requires that technicians possess certain fundamental math skills and the ability to apply these skills. Beginning biotechnology students often need a "refresher" of basic algebra, scientific notation, logarithms and graphing. They also need practice ... [Read more](#)

### Mammalian Cell Culture

Submitted by Jeanette Mowery on Sun, 2012-09-09 13:36

This course, from City College San Francisco, teaches the techniques necessary to maintain mammalian cells in culture. The course includes a laboratory exercise using mouse embryonic stem cells (takes 3 weeks to complete). Laboratory exercises provide instruction in basic techniques of routine ... [Read more](#)

### Quality Regulations and Standards

Submitted by Jeanette Mowery on Mon, 2012-11-19 09:02

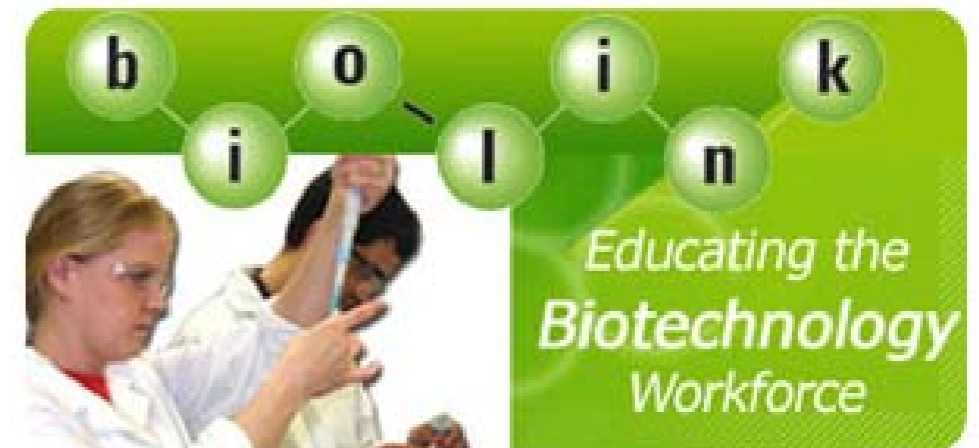
Survey of Quality, Regulations, and Standards for Biotechnology

This Course-in-a-Box is about teaching quality and regulatory affairs. "Quality" products in this context means products that are suitable for their intended use and are free of defects and variability. Many vital ... [Read more](#)



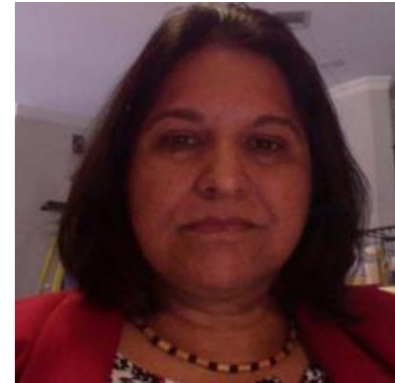
# COMING SOON!!

- Pellet Movie Opening Night at Bio-Link Summer Fellows
- Workshop at HI-TEC Conference
  - Using Story and an Interactive Movie to Immerse Students in a Regulated Workplace
- Bio-Link Core Skill Standards Publication: May, 2016



# Questions

# AC2 BIO-LINK REGIONAL CENTER



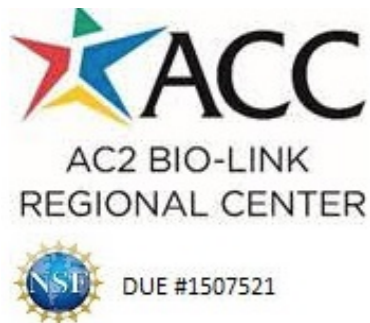
Sulatha Dwarakanath, PhD  
Austin Community College, TX

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PI: Linnea Fletcher Ph.D.

Co-Pi Team: Rob Hatherill Ph.D,  
Bridgette Kirkpatrick Ph.D,  
Deborah Davis-Sullivan Ph.D.

Grant Coordinator: Poornima Rao M.S



# AC2 Bio-Link Regional Center

- Started in September 2015
- 4 Years
- Gearing up on all activities

# AC2 Bio-Link Regional Center



## Current and Upcoming Events

- **AC2 Undergraduate Research Workshop and Student Research Day:** Corpus Christi TX, Fri, Apr 29 2016 to Sat, Apr 30 2016 [View all](#)
- **Community College Day Program at BIO 2016:** San Francisco CA, Jun 6 2016

AC2 is part of the **Bio-Link** community



## What's New?

- Blog entry | [test 4](#) [View All](#)
- Blog entry | [test blog3](#)
- Blog entry | [Austin Community College collaborative research project](#)

## Mentor Network

Established mentor networks develop leadership, provide resources to members, and anticipate changing needs in the community they serve.

## Undergraduate Research

To embed undergraduate research into classes within AC2 partner institutions and to foster a national mentoring network for broader implementation of undergraduate research.

## Entry Level Certificates

Develop and implement entry level certificates that will allow students entry into the biotechnology industry field following high school or community college.

## Contract Services (CSOs)

What is a community college Contract Service Organization (CSO)? Deborah Davis explains...

## Statewide Articulation

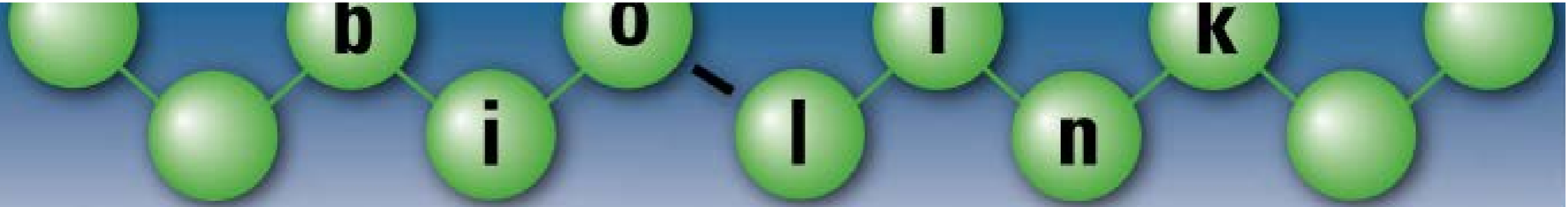
Strong articulation partnerships create pathways that lead to academic transferability and degree completion.

# Grant Goals

- ***Develop Bio-Link Mentor*** Network and Community of Practice to Sustain and Grow Biotechnology Programs in High Schools, 2 and 4 Year Schools
- Create and Implement Industry ***Validated Level One Certificate*** in High Schools, 2 and 4 Year Schools
- ***Promote Undergraduate Research*** in Biology and Biotechnology for the Purpose of ***Recruiting Students*** into Biotechnology-Related Careers
- Promote Development of ***Contract Service Organizations at Community Colleges***
- Develop and Implement ***Statewide Articulation Agreements***
- ***Identify emerging workforce trends*** such as Bioinformatics, Medical Devices

# What is a CRO/CSO?

- First –What is a CRO or Contract Research/Service Organization?
- Companies contract with CRO to perform services they do not have time or the expertise such as establishing current Good Manufacturing Practices (cGMP) for a new product, product testing, different aspects of R & D development.



# BIO-LINK SUMMIT

A Summit on Contract Organizations

Sponsored by the National Science Foundation

April 18- 20, 2012



# At the Summit, Different Models Were Identified:

- CRO, CSO, model
  - Community college establishes a CRO for the purpose of educating students
  - A contract is drawn up between the company and school for the purpose of working on a problem or accelerating commercialization for a product. The project is run by “school” personnel (intern, project manager). It is done either at the company or at the school. There is a specific “beginning” and “end” for the project.
- Industry Experience Model
  - The more “common” student internship
  - Usually a capstone course for a program.
  - Student may or may not work on a defined project.
  - Is supervised by company personnel.

# MEASURING ECONOMIC IMPACT OF CXOs

## **BiInnovations Gateway (BiG) metrics:**

- Savings in cost of operation
- Jobs created
- Number of FDA applications approved
- Revenue
- Sales
- Venture capital funds attracted

## **St. Louis County Economic Council metrics:**

- Total wages
- Jobs created/number employed
- Investment returns of startups
- Number of patents
- Capital attracted from non-VC resources
- Federal funding attracted

# CXO (now CSO) Model Adopted by ACC

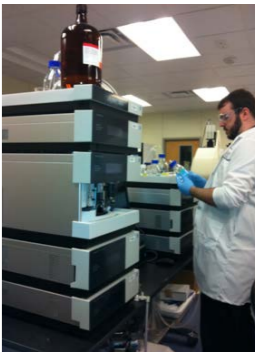
- Continuing Ed/Customized Training (Research) Draws Up the Contract
- Safety Must Approve the Contract
- Adjunct Faculty Run the Project
- ACC Interns Work on the Project
- Project is Conducted at the School or the Company

*Initial ACC CSO projects have saved ~\$240,000 & 2 years to commercialization*



# Student Success

- Adopted Metrics from Summit
  - Students Work on a Project from Start to Finish
    - Provides a Better Business Education
    - More aspects of the projects
    - Adds training to faculty to manage projects



**“Working in this project enabled me to understand the real world and paved the way for a job at Difusion Tech”**

***Jane Neil and Swarupa R,  
Current ACC Biotech students***

**“This was a project that I always wanted to do. Working with the company personal and Dr. Su gave me the confidence to get the job at Genotox and move up**

***Ashritha S, Graduate of ACC  
biotech program***

# Company Successes

- Adopted Metrics for Measuring Success

- Accelerating of Commercialization

How is this measured?

- **Time**
- **Money**
- **Infrastructure**
- **cGMP certified space and wet lab space**
- **Buisness acumen**

*The CEO of Isostem Dr. Hugo says "It was an unthinkable task for them until they found ACC option".*

*Dr. Liu from Molecular templates was very impressed with out setup and work, He says "The pilot runs we did with ACC was very helpful for us to change the methods and test it immediately. The turn around time was less than a week"*

*Dr. Crudden V.P R&D says "Dr. Su and her team saved us time and money that has helped us to be where we are today. We were able to get CE mark in less than 4 months".*

# POLL

- Is your organization interested in starting a CRO/CSO
- Yes
- No
- Possibly, could be interesting

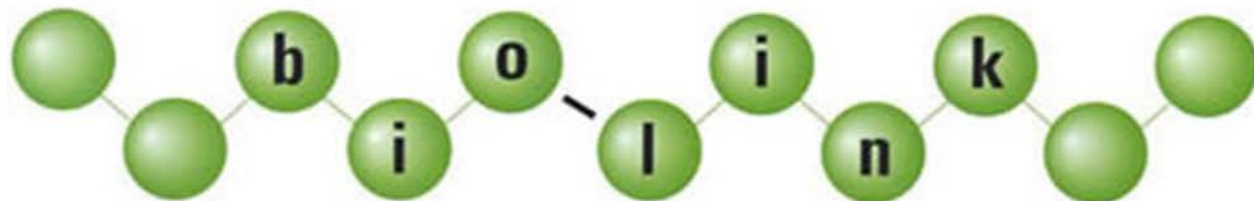
# Create and Implement Industry Validated Level One Certificate in High Schools, 2 and 4 Year Schools

Jennifer Lazare: Faculty Anderson High School

Angela Wheeler: Faculty at ACC

# Questions





# Future Webinars

**Biotech-Careers.org as a tool for exploring careers**

**May 13, 2016**

**Genomic Editing, CRISPR/Cas9**

**August/September 2016**

# Bio-Link Future

Active Community of Practice  
Involving Many People

AC2 Regional Center

Join on Bio-Link website at bottom of front page

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

[ejohnson@biolink.ucsf.edu](mailto:ejohnson@biolink.ucsf.edu)