



**ATECENTERS**

# Career Exploration

October 19, 2017

Webinar will begin at 3pm ET



# Webinar Details

- For this webinar you will be in listen only mode using your computer or phone
- Please ask questions via the question window
- This webinar is being recorded – you will be sent a recording link

## Brought To You By:

**CCTA** | CENTERS COLLABORATIVE FOR TECHNICAL ASSISTANCE

With Additional Support by the ATE Collaborative Impact Project

**ATECENTERS**

Disclaimer: This material is based upon work supported by the National Science Foundation under Grants # 1205077 and # 1261893. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

# The CCTA IS Led By



- **National Center for Convergence Technology (CTC)** at Collin College in Frisco, TX (lead)
- **South Carolina ATE National Resource Center (SCATE)** at Florence Darlington Technical College in Florence, SC
- **Florida ATE Center (FLATE)** at Hillsborough Community College in Tampa, FL
- **Bio-Link Next Generation National ATE Center for Biotechnology and Life Sciences (Bio-Link)** at City College of San Francisco in San Francisco, CA
- **Networks Resource Center** at the Maricopa Community College District in Phoenix, AZ

# CCTA Purpose

- Respond to a request from the Department of Labor (DOL) to the NSF to have ATE Centers provide technical assistance services to DOL TAACCCT grantees
- Activities relevant for DOL grants, NSF grants and workforce-oriented programs of all kinds
- Deliverables
  - Topical webinars on existing and new solutions
    - Live/recorded with attendee Q&A
  - Identify and document best practices
  - Host convenings

# Poll #1: Your Affiliation

- A. I am involved with an NSF grant
- B. I am involved with a TAACCCT grant
- C. Both
- D. Neither

# Poll: How many people are listening with you?

- A. None
- B. 1
- C. 2
- D. 3 or more

# TODAY'S PRESENTERS



**Elaine Johnson, PhD**  
Executive Director & PI,  
Bio-Link



**Sandra Porter, PhD**  
Biotech-Careers.org  
President  
Digital World Biology LLC  
Co-PI  
Bio-Link & [AC2.Bio-Link.org](http://AC2.Bio-Link.org)



**Michael Lesiecki**  
Principal Luka Partners LLC  
Moderator

# Making a conscious effort to include career exploration

How?

- Using resources such as ATE Central
- Links to O\*Net and others
- Self Discovery
- Guest speakers from industry
- Industry tours
- Internships
- Exploring Career Opportunities-Dr. Porter

# Poll: What is your background?

- A. Student
- B. High School Teacher
- C. Counselor
- D. Instructor / Professor 2 yr. college
- E. Instructor / Professor 4 yr. college / University
- F. Industry
- G. Administrator

# Poll #4

For those of you who teach, do you or other instructors at your institution, incorporate career exploration in classes?

- A. Yes
- B. Sometimes
- C. Not yet, but maybe in the future
- D. Never

# Favorite web sites for job info

US Bureau  
Of Labor  
Statistics

**BUREAU OF LABOR STATISTICS**

Home | Subjects | Data Tools | Publications | Economic Releases | Students | Beta

Home

Home

The OOH can help you find career information on duties, education and training, pay, and outlook for hundreds of occupations.

**OCCUPATION GROUPS**

- Architecture and Engineering
- Arts and Design
- Building and Grounds, Cleaning
- Business and Financial
- Community and Social Service
- Computer and Information Technology
- Construction and Extraction
- Education, Training, and Library
- Entertainment and Sports
- Farming, Fishing, and Forestry
- Food Preparation and Serving
- Healthcare
- Installation, Maintenance, and Repair
- Legal
- Life, Physical, and Social Science
- Management
- Math
- Media and Communication
- Military
- Office and Administrative Support
- Personal Care and Service
- Production
- Protective Service
- Sales
- Transportation and Material Moving

**SELECT OCCUPATIONS BY**

2014 Median Pay | Entry-Level Education | On-the-job Training | Number of New Jobs (Projected) | Growth Rate (Projected)

**FEATURED OCCUPATION**

**Chemical Technicians**

Chemical technicians use special instruments and techniques to help chemists and chemical engineers research, develop, produce, and test chemical products and processes.

**A-Z INDEX**

ABCDEFGHIJKLMNOPQRSTUVWXYZ

**BROWSE OCCUPATIONS**

Highest Paying | Fastest Growing (Projected) | Most New Jobs (Projected)

**BROWSE RESOURCES**

Frequently Asked Questions | Glossary | Teacher's Guide | Career Outlook

Biotech-  
Careers.org

Home | Blog | Classes | Members | Job Alerts | Photo | Video | Help

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Sort By: Most Popular

Pages: 1 | 2

Begin Your Video Search:

Filter Your Search By:

- Complete Episodes
- 101 Series
- From High School to College
- Tech Tips
- Inside Industry
- Classroom Visits
- Segment Clips
- Frequently Asked Questions
- ATETV Presents

Displaying 228 of 228 Videos

- Complete Episode: Ep. 26 Future Directions for Farming, Education (21615) 3690 Views (8:23)
- Segment Clip: Creating Video Games from Scratch (31910) 1300 Views (3:18)
- Complete Episode: Ep. 8 Women in Engineering: Hands-On Classes Jumpstart a Career: Learn and Phronesis (12716) 1217 Views (8:53)
- Segment Clip: Hayden Mark Studies to be an HVAC Technician (11809) 3125 Views (2:13)
- Segment Clip: BP's Dennis Link on jobs in process technology (92109) 3080 Views (3:26)
- Complete Episode: Ep.15 Environmental Engineering: Process Technology, Information Security (12909) 2758 Views (9:22)

**Search the site**

Locations of US Biotech Employers

**What's New**

- Employer: **AT** Biocatalysis **Areas:** Immunotherapy
- Employer: **Autonomous Technologies** **Areas:** Food, Aquaculture, Fisheries, Synthetic Biology
- Employer: **NEMUS** Biocore Inc. **Areas:** Cannabis
- Blog: **What is Biotechnology?**
- Employer: **Pharigra** **Areas:** Monoclonal, Biopharmaceutical, DNA Sequencing
- Employer: **sanofi** **Areas:** Diagnostic, Infectious Disease
- Employer: **Genentech** **Areas:** Biotechnology, Bioremediation
- Employer: **Hydrex** **Areas:** Liquid Biopsy
- Employer: **NovoCis** **Areas:** Single Cell Analysis, Liquid Biopsy
- Employer: **Empocon** **Areas:** Biopharmaceuticals
- Employer: **Chivalis** **Areas:** Molecular Diagnostics, ICGT

**Learn the Lingo**

CDC ? IND ? FDA ? FDA ? SOPS ? FDA ? Learn the lingo! EPA ? CDC ? WPI ? WPI ? WPI ? USP ? GMPs ? non ? GMPs ? Learn Biotech Terms

**Photo Journals**

**Biotech Career Videos**

Sponsors and Partners

Biotech- ACC NB2

**O\*NET OnLine**

Help | Find Occupations | Advanced Search | Crosswalks | Share | O\*NET Sites

**Build your future with O\*NET OnLine.**

Welcome to your tool for career exploration and job analysis!

O\*NET OnLine has detailed descriptions of the world of work for use by job seekers, workforce development and HR professionals, students, researchers, and more!

**What's New?**

O\*NET Database and keyword search updated.

**I want to be a...**

Start the career you've dreamed about, or find one you never imagined.

**ATTN: VETERANS**

Put your military skills and experience to work in civilian life. Learn how at: MY NEXT MOVE

**Hot Technologies**

are frequently included in employer job postings.

**¿Hable español?**

Mi Próximo Paso Incluye tareas, aptitudes, información sobre salarios y más de 600 carreras diferentes.

O\*NET

**ATE TV** Advanced Technological Education Television

Home | Watch Videos | Why ATE TV | Find ATE Centers | Blog

Watch Videos

Home | Watch Videos

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- Complete Episode: Ep.15 Environmental Engineering: Process Technology, Information Security (12909) 2758 Views (9:22)

ATE TV

# What's important to know when researching careers?

- **What do you like to do?**
- What do you find interesting?
- What do you value?
- Where do you want to live?
- **Where are the jobs? What do they pay?**

# Occupational Outlook Handbook

The screenshot shows the Occupational Outlook Handbook website. At the top, there is a red navigation bar with the Bureau of Labor Statistics logo and various menu items like Home, Subjects, Data Tools, Publications, Economic Releases, Students, and Beta. A search bar is also present. Below the navigation bar, the main content area has a dark blue header with the title 'OCCUPATIONAL OUTLOOK HANDBOOK' and a search box. A red arrow points to the 'OCCUPATION GROUPS' list on the left side of the page. The list includes categories such as Architecture and Engineering, Arts and Design, Building and Grounds Cleaning, Business and Financial, Community and Social Service, Computer and Information Technology, Construction and Extraction, Education, Training, and Library, Entertainment and Sports, Farming, Fishing, and Forestry, Food Preparation and Serving, Healthcare, Installation, Maintenance, and Repair, Legal, Life, Physical, and Social Science, Management, Math, Media and Communication, Military, Office and Administrative Support, Personal Care and Service, Production, Protective Service, Sales, and Transportation and Material Moving. To the right of the list, there are sections for 'SELECT OCCUPATIONS BY' with filters for Median Pay, Education, Training, New Jobs, and Growth Rate. Below that is a 'FEATURED OCCUPATION' section for 'Chemical Technicians' with a photo of a technician in a lab and a description of their role. Further down are sections for 'A-Z INDEX', 'BROWSE OCCUPATIONS' (with buttons for Highest Paying, Fastest Growing, and Most New Jobs), and 'BROWSE RESOURCES' (with buttons for Frequently Asked Questions, Glossary, Teacher's Guide, and Career Outlook).

# Occupational Outlook Handbook

OOH HOME | OCCUPATION FINDER | OOH FAQ | OOH GLOSSARY | A-Z INDEX | OOH SITE MAP | EN ESPAÑOL

## OCCUPATIONAL OUTLOOK HANDBOOK

Search Handbook

Computer and Information Technology >

### Computer and Information Technology Occupations

EN ESPAÑOL

Employment of computer and information technology occupations is projected to **grow 12 percent** from 2014 to 2024, faster than the average for all occupations. These occupations are expected to add about 488,500 new jobs, from about 3.9 million jobs to about 4.4 million jobs from 2014 to 2024, in part due to a greater emphasis on cloud computing, the collection and storage of big data, more everyday items becoming connected to the Internet in what is commonly referred to as the "Internet of things," and the continued demand for mobile computing.

The median annual wage for computer and information technology occupations was **\$82,860 in May 2016**, which was higher than the median annual wage for all occupations of **\$37,040**.

	OCCUPATION	JOB SUMMARY	ENTRY-LEVEL EDUCATION	2016 MEDIAN PAY
	<a href="#">Computer and Information Research Scientists</a>	Computer and information research scientists invent and design new approaches to computing technology and find innovative uses for existing technology. They study and solve complex problems in computing for business, medicine, science, and other fields.	Doctoral or professional degree	\$111,840
	<a href="#">Computer Network Architects</a>	Computer network architects design and build data communication networks, including local area networks (LANs), wide area networks (WANs), and intranets. These networks range from small connections between two offices to next-generation networking capabilities such as a cloud infrastructure that serves multiple customers.	Bachelor's degree	\$101,210
	<a href="#">Computer Programmers</a>	Computer programmers write and test code that allows computer applications and software programs to function properly. They turn the program designs created by software developers and engineers into instructions that a computer can follow.	Bachelor's degree	\$79,840
	<a href="#">Computer Support Specialists</a>	Computer support specialists provide help and advice to people and organizations using computer software or equipment. Some, called computer network support specialists, support information technology (IT) employees within their organization. Others, called computer user support specialists, assist non-IT users who are having computer problems.	<a href="#">See How to Become One</a>	\$52,160
	<a href="#">Computer Systems Analysts</a>	Computer systems analysts study an organization's current computer systems and procedures and design information systems solutions to help the organization operate more efficiently and effectively. They bring business and information technology (IT) together by understanding the needs and limitations of both.	Bachelor's degree	\$87,220



# Occupational Outlook Handbook

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## OCCUPATIONAL OUTLOOK HANDBOOK

Computer and Information Technology > [EN ESPAÑOL](#) [PRINTER-FRIENDLY](#)

[Summary](#) | [What They Do](#) | [Work Environment](#) | [How to Become One](#) | [Pay](#) | [Job Outlook](#) | [State & Area Data](#) | [Similar Occupations](#) | [More Info](#)

### Summary

Quick Facts: Computer Systems Analysts	
2016 Median Pay ?	\$87,220 per year \$41.93 per hour
Typical Entry-Level Education ?	Bachelor's degree
Work Experience in a Related Occupation ?	None
On-the-job Training ?	None
Number of Jobs, 2014 ?	567,800
Job Outlook, 2014-24 ?	21% (Much faster than average)
Employment Change, 2014-24 ?	118,600

[What Computer Systems Analysts Do](#)

Computer systems analysts study an organization's current computer systems and procedures and design information systems solutions to help the organization operate more efficiently and effectively. They bring business and information technology (IT) together by understanding the needs and limitations of both.

[Work Environment](#)

Most computer systems analysts work full time. About 1 in 5 worked more than 40 hours per week in 2014.

[How to Become a Computer Systems Analyst](#)

A bachelor's degree in a computer or information science field is common, although not always a requirement. Some firms hire analysts with business or liberal arts degrees who have skills in information technology or computer programming.

[Pay](#)

The median annual wage for computer systems analysts was \$87,220 in May 2016.

[Job Outlook](#)

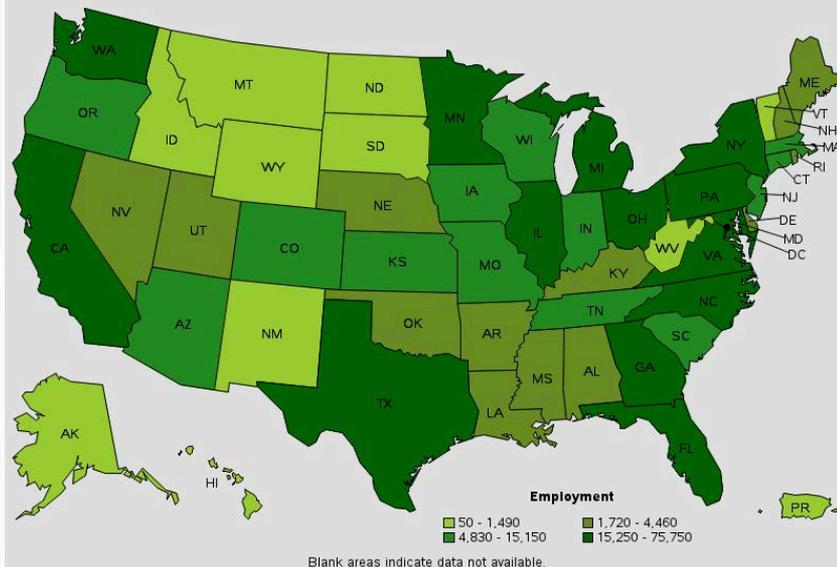
Employment of computer systems analysts is projected to grow 21 percent from 2014 to 2024, much faster than the average for all occupations. Growth in cloud computing, cybersecurity, and mobile networks will increase demand for these workers.



Computer systems analysts help organizations evaluate their computer system needs.

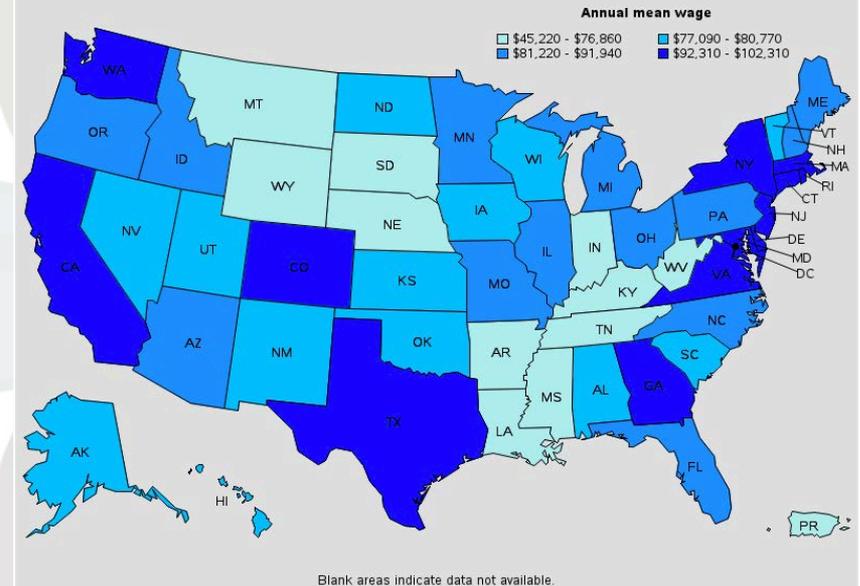
# Occupational Outlook Handbook

Employment of computer systems analysts, by state, May 2016



#people employed in this field

Annual mean wage of computer systems analysts, by state, May 2016



#mean salary

# Occupational Outlook Handbook

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## OCCUPATIONAL OUTLOOK HANDBOOK



Production >

### Production Occupations



Production occupations are one of two major occupational groups that is projected to decline. Employment is projected to **decline 3 percent**, with a loss of about 282,100 jobs from 2014 to 2024. Technological advancements are replacing many of the manufacturing workers that make up a large share of the production occupations. Fewer workers are needed in the manufacturing sector as many processes have become computer-controlled.

The median annual wage for production occupations was **\$33,130 in May 2016**, which was lower than the median annual wage for all occupations of \$37,040.

	OCCUPATION	JOB SUMMARY	ENTRY-LEVEL EDUCATION	2016 MEDIAN PAY
	<a href="#">Assemblers and Fabricators</a>	Assemblers and fabricators assemble finished products and the parts that go into them. They use tools, machines, and their hands to make engines, computers, aircraft, ships, boats, toys, electronic devices, control panels, and more.	High school diploma or equivalent	\$30,930
	<a href="#">Bakers</a>	Bakers mix ingredients according to recipes to make breads, pastries, and other baked goods.	No formal educational credential	\$25,090
	<a href="#">Butchers</a>	Butchers cut, trim, and package meat for retail sale.	No formal educational credential	\$29,870
	<a href="#">Dental and Ophthalmic Laboratory Technicians and Medical Appliance Technicians</a>	Dental and ophthalmic laboratory technicians and medical appliance technicians construct, fit, or repair appliances and devices, including dentures, eyeglasses, and prosthetics.	High school diploma or equivalent	\$34,630
	<a href="#">Food and Tobacco Processing Workers</a>	Food and tobacco processing workers operate equipment that mixes, cooks, or processes ingredients used in the manufacture of food and tobacco products.	<a href="#">See How to Become One</a>	\$27,110



# Occupational Outlook Handbook

Production >

## Assemblers and Fabricators

EN ESPAÑOL

PRINTER-FRIENDLY 

Summary

What They Do

Work Environment

How to Become One

Pay

Job Outlook

State & Area Data

Similar Occupations

More Info

### Summary

#### Quick Facts: Assemblers and Fabricators

2016 Median Pay 	\$30,930 per year \$14.87 per hour
Typical Entry-Level Education 	High school diploma or equivalent
Work Experience in a Related Occupation 	None
On-the-job Training 	Moderate-term on-the-job training
Number of Jobs, 2014 	1,834,000
Job Outlook, 2014-24 	-1% (Little or no change)
Employment Change, 2014-24 	-9,700



Assemblers and fabricators assemble both finished products and the parts that go into them.

#### What Assemblers and Fabricators Do

Assemblers and fabricators assemble finished products and the parts that go into them. They use tools, machines, and their hands to make engines, computers, aircraft, ships, boats, toys, electronic devices, control panels, and more.

#### Work Environment

Most assemblers and fabricators work in manufacturing plants. Some of the work may involve long periods of standing or sitting. Most work full time, and they sometimes work evenings and weekends.

#### How to Become an Assembler or Fabricator

The education level and qualifications needed to enter these jobs vary depending on the industry and employer. Although a high school diploma is enough for most jobs, experience and additional training is needed for more advanced assembly work.

#### Pay

The median annual wage for assemblers and fabricators was \$30,930 in May 2016.

#### Job Outlook

Employment of assemblers and fabricators is projected to show little or no change from 2014 to 2024. Qualified applicants, including those with technical vocational training and certification, should have the best job opportunities in the manufacturing sector, particularly in growing, high-technology industries, such as aerospace and electro-medical devices.



# Questions?

# Biotech-Careers.org

The screenshot shows the homepage of Biotech-Careers.org. At the top is a navigation bar with links for Home, Blogs, Careers, Internships, Job Areas, Photos, Videos, and Maps. Below the navigation is a large banner image of laboratory equipment with a text overlay: "We help students and others who are considering biotech careers by providing information about careers in the biotech industry that do not require advanced degrees." Below the banner is a search bar labeled "Search the site". To the left is a map titled "Locations of US Biotech Employers" showing various states with colored dots and numbers. To the right is a "What's New" section listing recent updates with employer and area names. Below the map and "What's New" are several utility boxes: "Explore Careers by Salary" with a dropdown menu, "Explore Careers by Education" with a dropdown menu, "Explore Careers by Skills" with a dropdown menu, "Sponsors and Partners" with logos for Biotech-, ACC, and NBIC, "Learn the Lingo" with a list of biotech terms and a "Learn Biotech Terms" link, "Photo Journals" with a "View biotech job photos" link, and "Biotech Career Videos" with a "Listen to the interviews" link.

- Blog articles
- Careers by title
- Careers by job
- Database > 8000 companies
- Internship info
- Maps
- Photo diaries – student interviews
- Videos
- Terminology games
- Search by company, salary, education, term

# Bio-Link.org

- National Advanced Technology Center of Excellence in biotechnology
- Funding from the National Science Foundation ATE program, DUE 1400721

## AC2 Bio-Link Regional Center



**AC2.Bio-Link.org**

## NBC2 – Northeast Biomanufacturing Consortium



**biomanufacturing.org**

# What's important to know when researching careers?

- **What do you like to do?**
- **What do you find interesting?**
- **What do you value?**
- **Where do you want to live?**
- **Where are the jobs? What do they pay?**

# Bio-Link Alumni

## What is it like to work in a biotechnology lab?

We interviewed community college grads to learn more about their work and hear about a typical day on the job.

If you graduated from a community college biotech program, we'd love to hear from you, too! [Contact us](#) to share your story!

		Job area
Analyst I	 <p>Ashrita Simhadri has been working as an intern at Genotox Laboratories. We asked Ashrita some questions about her work and her training....</p>	Biotechnology, Molecular biology
Biotechnology Intern	 <p>Austin Storck has been working as an intern at Mirius Bio LLC. We asked Austin some questions about his work and his training. ...</p>	Cell culture, Genomics, Molecular biology
Biotechnology Outreach Coordinator	 <p>Kasey Shuster is the Biotechnology Outreach Coordinator at Salt Lake Community College, Salt Lake City, Utah. We asked Kasey a few questions about...</p>	Education, Genomics, Molecular biology
DNA Sequencing Technician	 <p>Cagney Coomer has been working as a sequencing technician at the University of Kentucky Advanced Genetic Technologies Center (AGTC). We asked...</p>	Genomics, Molecular biology
Instructional Bioscience Outreach Representative	 <p>Mona Easterling is a professor and outreach planner. She completed the biotechnology program at Tulsa Community College. In addition, she holds an...</p>	Biotechnology, Education

# Bio-Link Alumni

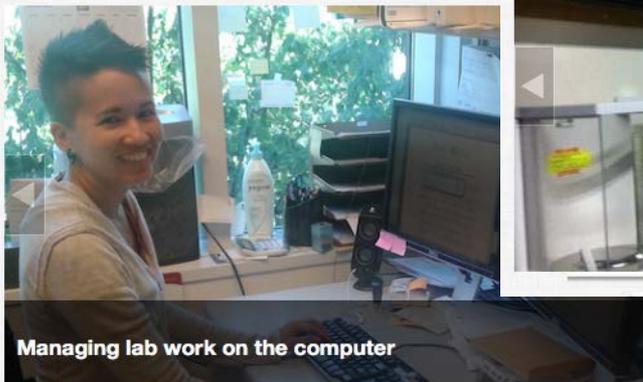
**DNA Sequencing Technician**



**Lab Technician**



**Lab Supervisor - Cell Culture**



**Instructional Bioscience Outreach Representative**



**Wastewater analyst**



**Research Associate - Protein Purification**



**Senior Research Associate in Molecular Biology**



# Bio-Link Alumni



Cagney Coomer has been working as a sequencing technician at the University of Kentucky Advanced Genetic Technologies Center (AGTC). We asked Cagney about her work and her training.

## What biotechnology program did you attend?

Biotechnology at [Bluegrass Community and Technical College](#), Bluegrass, KY  
Before attending BCTC, I completed a dual major B.S. in biology and chemistry at Virginia State University.

## What degree/certificate are you working towards?

The [A.A.S. in Biotechnology](#) and the Advanced Biotech Certificate.

## What do you do for your job?

I prepare samples for sanger sequencing and load the samples onto the sequencer. Sometimes preparing the samples means running a PCR, doing a plasmid extraction, or just resuspending the Sample in HID1. I also troubleshoot and try to figure out why certain samples do not get good sequences, whether it be equipment failure, PCR failure or template problems.

## What are some techniques that you commonly use?

PCR

PCR purification

Plasmid DNA purification

Autoclaving

Agarose gel electrophoresis

A variety of Quality Control methods

## Please describe what you do in an average day

An average day for me means coming to work, maintaining the sequencing instruments (the ABI 3730 and 3730xl). I find out what samples have been submitted for sequencing that day and determine what needs to happen to the samples before they are ready for the sequencer. Then I perform all PCR's on all samples that need it. I do an ethanol clean up on all samples that have completed the PCR. Finally, I allow the samples to dry before resuspending them in HID1 and placing them on the 3730 or 3730xl.

## What advice would you give someone who is interested in a biotech career?

Pay close attention to detail, keep a very accurate and detailed lab notebook and most importantly know and fully understand all techniques and methods you use, being a able to troubleshoot is a key part in having a biotech career.

## Is there anything you'd like to add?

Network... Networking is very important. Become familiar with all the biotech companies in your surrounding area, study what they do at their companies and how your skill sets could or would fit in there.

## Degree or certificate:

[Associates degree](#)

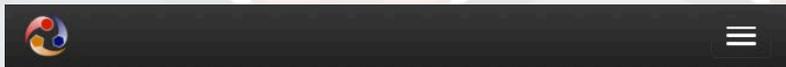
[Bachelors degree](#)

# ATE TV: 228 videos – students

The screenshot shows the ATE TV website interface. At the top, there is a navigation bar with the ATE TV logo and the text "Advanced Technological Education Television". To the right of the logo are social media icons for YouTube, Facebook, and Twitter, and a search bar labeled "SEARCH SITE". Below the navigation bar is a secondary menu with options: HOME, WATCH VIDEOS, WHY ATE TV, FIND ATE CENTERS, BLOG, About, Contact, Get Updates, RSS, and Share. The main content area is titled "Watch Videos" and includes a sub-menu with "Home" and "Watch Videos". Below this is a "Browse Videos By:" section with tabs for VIDEO SEARCH, LOCATIONS, CATEGORY, and FAQ VIDEOS. A "Sort By:" dropdown menu is set to "Most Popular", and there are "Pages: 1 2" indicators. The main content area displays "Begin Your Video Search:" with a search input field and "Displaying 228 of 228 Videos". On the left, there is a "Filter Your Search By:" section with a list of checkboxes: Complete Episodes, 101 Series, From High School to College, Tech Tips, Inside Industry, Classroom Visits, Segment Clips, Frequently Asked Questions, and ATE TV Presents. The main content area features a grid of six video thumbnails, each with a title, a brief description, and view statistics.

Thumbnail	Title	Description	Views	Duration
	Complete Episode	Ep. 26: Future Directions for Farming, Education	3590 Views	8:23
	Segment Clip	Creating Video Games from Scratch	3300 Views	3:18
	Complete Episode	Ep.9: Women in Engineering; Hands-On Classes Jumpstart a Career; Lasers and Photonics	3217 Views	8:53
	Segment Clip	Hayden Mark Studies to be an HVAC Technician	3125 Views	2:13
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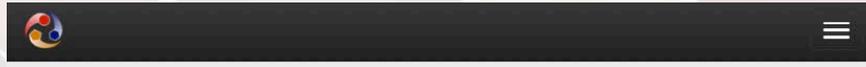
# Job Areas & Careers



## Job Areas

Biotechnology careers generally fit into one of the broad areas listed on this page. Click an area to learn more about it and the types of jobs available.

Job Area	Description
<a href="#">Agricultural biotechnology</a> 	Biotechnology is used in many ways in agriculture. Agricultural biotechnology companies work to supply farmers with tools to increase the yield of plant and animal products, while lowering the... <a href="#">Read more</a>
<a href="#">Animal biotechnology</a> 	Animals are used in many ways in biotechnology. The animals in research labs help us better understand biology and serve as biological test systems. Other animals and animal products are used to... <a href="#">Read more</a>
<a href="#">Aquaculture</a> 	Aquaculture is a term that describes methods for growing fish, plants, and other creatures in freshwater and marine environments. Biotechnology intersects with aquaculture in many ways. ... <a href="#">Read more</a>
<a href="#">Biodefense</a> 	Biodefense technicians are concerned with protecting air, food, and water from pathogenic microorganisms that could be released by hostile countries or terrorists. Important areas of biodefense... <a href="#">Read more</a>



## Careers



### All careers

Sort by Order

Title  Asc

#### Agricultural and Food Science Technician



Agricultural and Food Science Technicians work with agricultural and food scientists to monitor food production and food safety.

Agricultural science technicians typically develop and follow protocols to store crop and animal samples, operate farm equipment and maintain agricultural ... [Read more](#)

#### Animal Technician



Animal technicians take care of the laboratory animals that are used in biotechnology research, veterinary research, and product testing. Laboratory animals play an important role in helping scientists understand how drugs behave in a biological system.

The most commonly used ... [Read more](#)

#### Biofuel Technicians



Biofuel technicians carry out the laboratory work involved in producing biofuels such as ethanol and biodiesel.

Biofuel technicians work with fermenters, distillation, grain preparation, algae culture, oil chemistry, and separations technology.

They can work ... [Read more](#)

# Exploring Careers

**Explore Careers**

**By Education**

High School

**By Job Area**

Animal biotechnolog:

**By Starting Salary**

\$20,000-\$30,000

\$30,000-\$40,000

\$40,000-\$50,000

\$50,000-\$60,000

\$60,000-\$70,000

\$70,000 +

## High School

A high school degree.

### Animal Technician

Animal technicians take care of the laboratory animals and play an important role in helping scientists.

### Glass washer

Glass Washers are responsible for washing and drying laboratory glassware. Researchers rely heavily on the sterile laboratory environment.

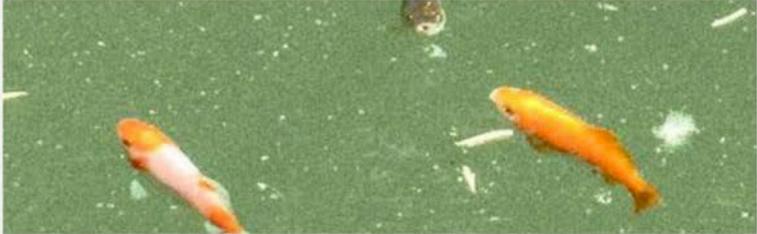
### Greenhouse or Field Technician

These positions are for people who like to work outdoors and have been created through genetic engineering.

### Laboratory Assistant

These positions are also known by other names such as laboratory helper, laboratory aide, and equipment

## Animal Technician



**Starting Wage (hourly):** \$9.50 - \$14 per hour

**Starting Wage (yearly):** \$30,000-\$40,000

[This Career](#) [Education & Training](#) [Job Search](#)

Animal technicians take care of the laboratory animals that are used in biotechnology research, veterinary research, and product testing. Laboratory animals play an important role in helping scientists understand how drugs behave in a biological system.

The most commonly used animals are mice and rats however; a wide variety of animals can be used. These include birds, fish, frogs, sheep, horses, rabbits, guinea pigs, cattle, cats, hamsters, dogs, and monkeys. Animal technicians often assist scientists with experiments and may have to perform simple medical procedures.

**Job Area:**

- [Animal biotechnology](#)
- [Aquaculture](#)
- [Cosmetics](#)

**Hear from the pro's:**

- [Animal Research Facility Manager](#)
- [Making vaccines](#)



# NATIONAL CONVERGENCE TECHNOLOGY CENTER

## Job Forecast

[Career Outlook](#)

[Salary Outlook](#)

[Job Titles \(Income Range\\*\)](#)

[Salary Range\\* Based on Certifications](#)

[Internships](#)

[Find Jobs](#)

[Future Trends](#)

# Exploring Careers – Hot? Or Not?

The screenshot shows the O\*NET OnLine website. At the top left is the O\*NET logo. To its right is the text "O\*NET OnLine". On the far right is an "Occupation Quick Search" bar with a magnifying glass icon and a search button. Below the logo is a navigation bar with links for "Help", "Find Occupations", "Advanced Search", "Crosswalks", "Share", and "O\*NET Sites".

The main content area features a large banner with a construction crane image. The text reads: "Build your future with O\*NET OnLine. Welcome to your tool for career exploration and job analysis! O\*NET OnLine has detailed descriptions of the world of work for use by job seekers, workforce development and HR professionals, students, researchers, and more!" Below this is a "What is O\*NET?" button.

On the right side, there are several promotional boxes: "What's New?" (O\*NET Database and keyword search updated), "I want to be a..." (Start the career you've dreamed about...), "ATTN: VETERANS" (Put your military skills and experience to work in civilian life...), and "Hot Technologies" (are frequently included in employer job postings).

At the bottom left, there is a section for "¿Habla español?" (Do you speak Spanish?) with a link to "Mi Próximo Paso" (My Next Step).

At the bottom center, there is a banner for "MI PRÓXIMO PASO" (My Next Step) with a "Visite" (Visit) button.

# Exploring Careers – Hot? Or Not?



O\*NET OnLine



## Occupation Search



### Find Occupations

**Browse** groups of similar occupations to explore careers. Choose from industry, field of work, science area, and more.

✓ Bright Outlook

Career Cluster

Green Economy Sector

Industry

Job Family

Job Zone

STEM

### Browse by O\*NET Data:

- Abilities
- Interests
- Knowledge
- Skills
- Work Activities
- Work Context
- Work Styles
- Work Values

Related DWA Search

Related Task Search

✓ Skills Search

Tools & Technology

OC Code:



### Crosswalks

**Connect** to a wealth of O\*NET data. Enter a code or title from another classification to find the related O\*NET-SOC occupation.

✓ Apprenticeship

DOT

Education

Military

Occupation Handbook

SOC

# Exploring Careers – Hot? Or Not?

The screenshot shows the O\*NET OnLine website interface. At the top left is the 'o.net' logo, and to its right is the text 'O\*NET OnLine'. Below this is a navigation bar with links for 'Help', 'Find Occupations', 'Advanced Search', and 'Create Account'. The main heading is 'Browse by Industry'. A sub-heading explains: 'Industries are broad groups of businesses or organizations with similar employment.' Below this is a search input field with a 'Go' button. A dropdown menu is open, listing various industry categories. A red arrow points to the 'Manufacturing' option, which is highlighted in grey. The list includes: Accommodation and Food Services, Administrative and Support Services, Agriculture, Forestry, Fishing, and Hunting, Arts, Entertainment, and Recreation, Construction, Educational Services, Finance and Insurance, Government, Health Care and Social Assistance, Information, Management of Companies and Enterprises, Manufacturing, Mining, Quarrying, and Oil and Gas Extraction, Other Services (Except Public Administration), Professional, Scientific, and Technical Services, Real Estate and Rental and Leasing, Retail Trade, Self-Employed, Transportation and Warehousing, Utilities, Wholesale Trade, and All Industries.

# Exploring Careers – Hot? Or Not?

## Manufacturing [Save Table \(XLS/CSV\)](#)



For an overview of the industry, including employment and salary, visit the [Bureau of Labor Statistics](#) site.



View related industry competency models at CareerOneStop's Competency Model Clearinghouse: [Advanced Manufacturing](#), [Aerospace](#), [Automation](#), and [Mechatronics](#).

Sort by: **Employed by this industry** ▲

**Code** **Occupation**

**Projected Growth (2014-2024)**

**Projected Job Openings (2014-2024)**

	Code	Occupation	Projected Growth (2014-2024)	Projected Job Openings (2014-2024)
99%	51-4052.00	<a href="#">Pourers and Casters, Metal</a>	Decline ■■■■	3,100
99%	51-6091.00	<a href="#">Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers</a>	Decline ■■■■	2,100
99%	51-4071.00	<a href="#">Foundry Mold and Coremakers</a>	Decline ■■■■	1,800
99%	51-6061.00	<a href="#">Textile Bleaching and Dyeing Machine Operators and Tenders</a>	Decline ■■■■	1,200
99%	51-6042.00	<a href="#">Shoe Machine Operators and Tenders</a>	Decline ■■■■	400
98%	51-4011.00	<a href="#">Computer-Controlled Machine Tool Operators, Metal and Plastic</a> <span style="color: orange;">● Bright Outlook</span> <span style="color: green;">● Green</span>	Much faster than average ■■■■	71,200
97%	51-8091.00	<a href="#">Chemical Plant and System Operators</a> <span style="color: green;">● Green</span>	Decline ■■■■	14,400
97%	51-4034.00	<a href="#">Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic</a>	Decline ■■■■	10,600
97%	51-4023.00	<a href="#">Rolling Machine Setters, Operators, and Tenders, Metal and Plastic</a>	Decline ■■■■	8,300



# Exploring Careers – Hot? Or Not?



O\*NET OnLine

Occupation Quick Search:

[Help](#)

[Find Occupations](#)

[Advanced Search](#)

[Crosswalks](#)

[Share](#)

[O\\*NET Sites](#)

## Summary Report for:

### 51-4011.00 - Computer-Controlled Machine Tool Operators, Metal and Plastic

Updated 2016



Operate computer-controlled machines or robots to perform one or more machine functions on metal or plastic work pieces.

**Sample of reported job titles:** Brake Press Operator; Computer Numerical Control Lathe Operator (CNC Lathe Operator); Computer Numerical Control Machine Operator (CNC Machine Operator); Computer Numerical Control Machinist (CNC Machinist); Computer Numerical Control Mill Operator (CNC Mill Operator); Computer Numerical Control Operator (CNC Operator); Computer Numerical Control Set-Up and Operator (CNC Set-Up and Operator); Machine Operator; Machine Set-Up, Operator; Machinist

View report:

**Summary**

[Details](#)

[Custom](#)

[Tasks](#) | [Technology Skills](#) | [Tools Used](#) | [Knowledge](#) | [Skills](#) | [Abilities](#) | [Work Activities](#) | [Detailed Work Activities](#) | [Work Context](#) | [Job Zone](#) | [Education](#) | [Credentials](#) | [Interests](#) | [Work Styles](#) | [Work Values](#) | [Related Occupations](#) | [Wages & Employment](#) | [Job Openings](#) | [Additional Information](#)

## Tasks

5 of 27 displayed

- ➊ Measure dimensions of finished workpieces to ensure conformance to specifications, using precision measuring instruments, templates, and fixtures.
- ➋ Mount, install, align, and secure tools, attachments, fixtures, and workpieces on machines, using hand tools and precision measuring instruments.
- ➌ Stop machines to remove finished workpieces or to change tooling, setup, or workpiece placement, according to required machining sequences.
- ➍ Transfer commands from servers to computer numerical control (CNC) modules, using computer network links.
- ➎ Check to ensure that workpieces are properly lubricated and cooled during machine operation.

[back to top](#)

## Technology Skills

5 of 13 displayed [Show 50 tools used](#)

- ➊ **Analytical or scientific software** — CNC Consulting Machinists' Calculator; Kentech Trig Calculator
- ➋ **Computer aided design CAD software** 🔥 — Autodesk AutoCAD 🔥; Dassault Systems SOLIDWORKS; KCD; Kentech Kipware Studio
- ➌ **Computer aided manufacturing CAM software** 🔥 — 1CadCam Unigraphics; CNC Mastercam; SmartCAM; Vero International VISI-Series
- ➍ **Project management software** — Microsoft Project 🔥
- ➎ **Spreadsheet software** — Microsoft Excel 🔥

🔥 Hot Technology — a technology requirement frequently included in employer job postings.



# Questions?

# What's important to know when researching careers?

- What do you like to do?
- **What do you find interesting?**
- What do you value?
- Where do you want to live?
- **Where are the jobs? What do they pay?**

# Navigation at Biotech-Careers.org

## Business Areas

3D cell culture 3D Printing Adjuvants ADME-tox  
Agbiotech Aging Agriculture Algae Allergy  
Alphabodies ALS Alzheimer's Analytical  
Chemistry Analytical Services Animal Care  
Animal Models Animal Nutrition  
Antibacterials Antibiotics  
Antibodies Antifungals Antigens  
Antimicrobials Antitoxins Antivenoms Antivirals  
Apps Aquaculture Artificial hair Artificial  
Intelligence Assays Attorneys Autism  
Autoimmunity  tion Biobanking  
Bioenergy Biofilm Biofuels  
Bioinformatics Biologics  
Biomanufacturing Biomarkers  
Biomaterials Biomedical Biopharma  
Biopharmaceuticals Biopsy Bioreactors  
Bioremediation Bioresorbable polymers  
Biosensors Biosimilars Biostatistics  
Biotechnology Products Biotechnology  
Services Blood Blood Center Bone Bovine  
Plasma Brain Breast Cancer Breath Analysis

## Job Areas

Agricultural biotechnology Animal  
biotechnology Aquaculture Biofuels  
Biomaterials  
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 Nutraceuticals Plant  
biotechnology Protein purification  
Quality control Specialty chemicals

## Career Paths

Agricultural and Food Science Technician  
Animal Technician  
Biofuel Technicians  
Cell Culture Technician  
Chemistry Quality Control Technician  
Clinical Research Associate  
Environmental Health & Safety Technician  
Environmental Science and Protection Technician  
Facilities Technician  
Food Sample Inspector  
Genomics technician  
Glass washer  
Greenhouse or Field Technician  
Instrumentation / Calibration Technician  
Laboratory Assistant  
Laboratory Safety Associate  
Laboratory Technician  
Manufacturing Assistant  
Manufacturing Technician - Downstream  
Manufacturing Technician - Upstream  
Microbiology Quality Control (QC) Technician  
Molecular Biology Technician  
Process Development Associate  
Product Development Technician  
Purification Technician  
QA Documentation Coordinator

# Maps

## 15 Organization(s)

### Alpine Immune Sciences

**Website:**

[Alpine Immune Sciences](#)

**Business Area(s):**

Immunotherapy  
Protein Engineering  
Cancer Therapeutics  
Autoimmunity

**Description:**

The company creates protein-based immunotherapies to treat cancer, autoimmune disorders, and other diseases.

### Amgen

**Website:** [Amgen](#)

**Business Area(s):** Biologics  
Cancer Therapeutics  
Immunotherapy

### Benaroya Research Institute

**Website:**

[Benaroya Research Institute](#)

**Business Area(s):**

Inflammation  
Research  
Autoimmunity  
Immunology

**Description:**

Benaroya Research Institute's mission is to find the causes and cures of autoimmune diseases, including diabetes, lupus, cancer, MS, heart disease and others.

### CisThera

**Website:** [CisThera](#)

### ImmunoVision (Erba Diagnostics)

**Website:**

[ImmunoVision \(Erba Diagnostics\)](#)

**Business Area(s):**

Autoimmunity

**Description:**

Autoimmune Reagents

### Janus Biotherapeutics

**Website:**

[Janus Biotherapeutics](#)

**Business Area(s):**

Autoimmunity

**Description:**

autoimmunity therapeutics

### Kezar Life Sciences

### Resolve Therapeutics

**Website:**

[Resolve Therapeutics](#)

**Business Area(s):** Biologics

Therapeutic Proteins  
Autoimmunity  
Antibodies

**Description:**

The company works on technologies to treat lupus and Sjögren's disease by removing inflammatory molecules. Develops Fc - nuclease fusion proteins.

### Sorrento Therapeutics

**Website:**

# What's important to know when researching careers?

- What do you like to do?
- What do you find interesting?
- What do you value?
- **Where do you want to live?**
- **Where are the jobs? What do they pay?**

# Maps



Home

Blogs

Careers

Internships

Job Areas

Photos

Videos

Maps

## Employer Location Maps



Biotechnology is a worldwide business. The Biotech-Careers database has 5,697 potential employers in a total of 8,129 locations throughout the world. Use the maps below to view biotech employer locations in specific states, the United States or the world.



Mouse over and click on a state to view the employers in that state.

You can also view the employers **organized as a table** listing each employer and its number of locations.



Click the image or view the **data as a table** organized by state.



Click the image or view the **data as a table** organized by country.



# Locations of US Biotech Employers

Filter by Business Area

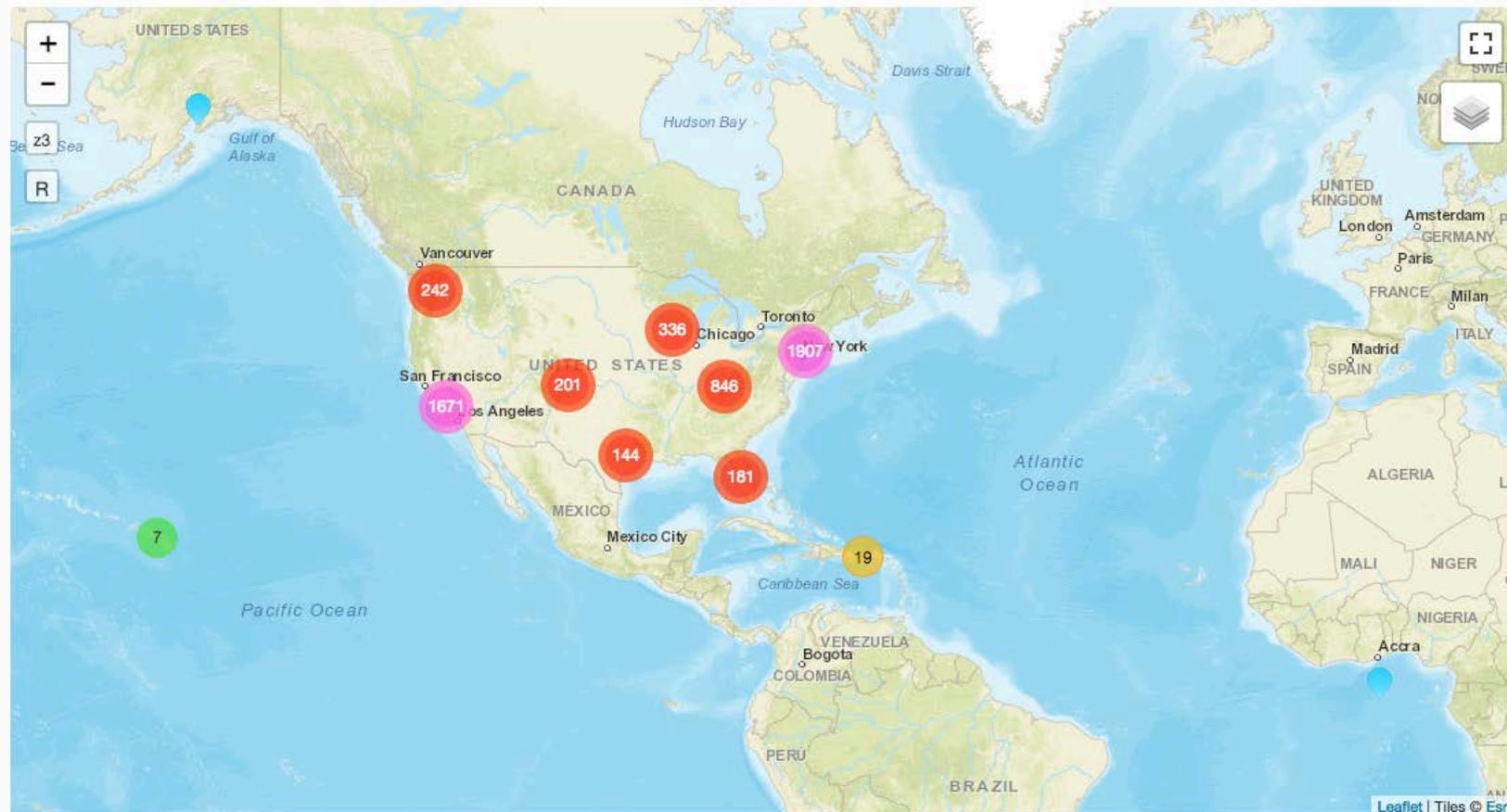
By Employer

Hired a Bio-Link student

Reset  
 yes

Apply

Reset



5556 Biotechnology Employer Locations

View the [employers](#) as a table organized by state

View the [list of employers](#) as a table organized by employer

[View Worldwide Employer Locations](#)

# Maps



Home

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Job Areas

Photos

Videos

Maps

## Employer Location Maps

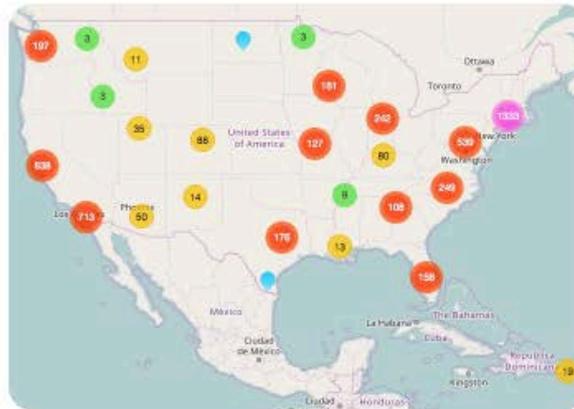


Biotechnology is a worldwide business. The Biotech-Careers database has 5,697 potential employers in a total of 8,129 locations throughout the world. Use the maps below to view biotech employer locations in specific states, the United States or the world.



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You can also view the employers **organized as a table** listing each employer and its number of locations.



Click the image or view the **data as a table** organized by state.



Click the image or view the **data as a table** organized by country.



# Employers in Puerto Rico

Filter by Business Area

By Employer

Hired a Bio-Link student

Reset  
 yes

Apply

Reset

Site Search


Drug shortages in US caused by Puerto Rico hurricanes

nbc16.com · 21 hours ago

- ### Top Business Areas
- Biologics
  - Contract Manufacturing
  - Drug Delivery
  - Small Molecules
  - Generics
  - Immunotherapy
  - Antibodies
  - Cancer Therapeutics
  - Seed treatment
  - Gene Therapy
  - Therapeutics
  - Agriculture
  - Immunology
  - Analytical Services
  - Lab Supplies
  - Autoimmunity
  - Pharmaceuticals
  - Plant breeding
  - Plants
  - Cardiovascular

**Hurricane Damage in Puerto Rico Leads to Fears of Drug Shortages ...**  
<https://www.nytimes.com/.../puerto-rico-hurricane-maria-pharmaceutical-manufacturers...>  
 Oct 4, 2017 - A factory owned by the pharmaceutical company Mylan, which makes the childhood leukemia drug methotrexate, in Caguas, P.R., is one of 80 ...

18 Biotechnology Employer Locations  
 View the [employers in Puerto Rico](#) as a table



# Employers in Washington

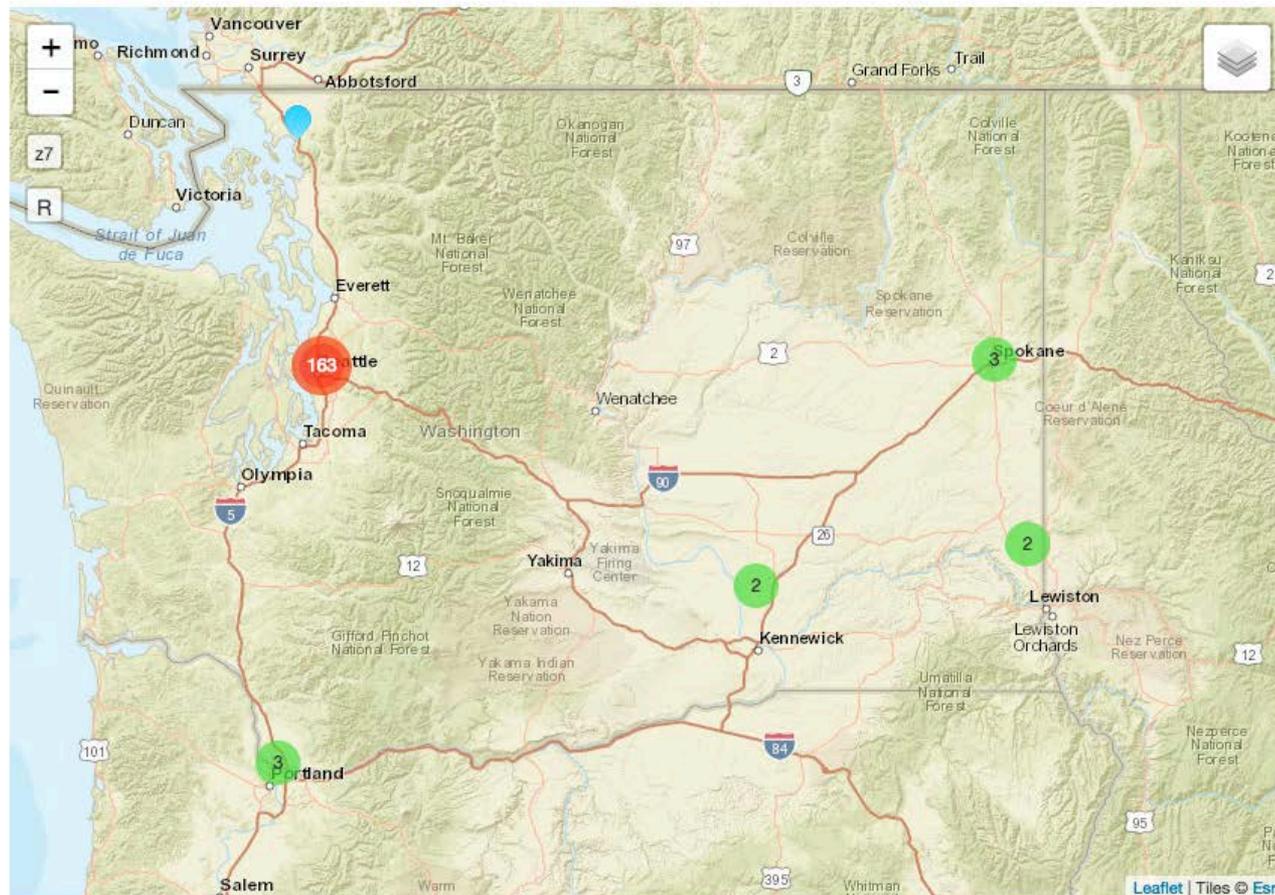
Filter by Business Area

By Employer

Hired a Bio-Link student

Reset  
 yes

Site Search



174 Biotechnology Employer Locations  
View the [employers in Washington](#) as a table

[Don't see an employer? Please fill out the form](#)

## Top Business Areas

### Cancer Therapeutics

Immunology

Antibodies

Therapeutics

Small Molecules

Medical Devices

Immunotherapy

Research

Biologics

Molecular Diagnostics

Diagnostics

Bioinformatics

Food

Contract Services

Genetic Testing

Cancer Diagnostics

Stem Cells

Microbiology

Drug Delivery

Infectious Disease

more



# What's important to know when researching careers?

- What do you like to do?
- What do you find interesting?
- What do you value?
- Where do you want to live?
- Where are the jobs? What do they pay?

What strategies / activities do you use to teach about careers?

Answer in the question area

# Who Benefits from Career Exploration in Emerging Technologies?

- Students
- Parents
- Instructors – K-12, community & technical college, university, post-grads
- Counselors
- Mentors
- Industry Workers
- Economic Development Professionals



# Questions?

# Contacts

- Elaine Johnson, PhD  
[ejohnson@biolink.ucsf.edu](mailto:ejohnson@biolink.ucsf.edu)
- Sandra Porter, PhD  
[sandra@digitalworldbiology.com](mailto:sandra@digitalworldbiology.com)

<http://www.atecenters.org/ccta>

# Join Us – All Webinars 3 pm Eastern

**Thursday, November 16, 2017**

## **The Role of Advisor, Counselor, Career Coach**

Advisors, counselors and career coaches play important roles for students as they plan for their careers. Lack of accurate information can be costly in dollars and time. Frequently, the academic education does not adequately prepare individuals for jobs that require 21st century skills. This webinar focuses on the roles of professionals who can assist students in making wise decisions as they prepare for technical careers.

### **Presenters:**

**Elaine Johnson**

PI and Executive Director, Bio-Link

**James Lewis**

Faculty, City College of San Francisco

**John Carrese**

Director, San Francisco Bay Center of Excellence of Labor Market Research

**For Other Upcoming Webinars See: <http://www.atecenters.org/ccta>**

# Join us in National Harbor!

Innovations Conference March 18-21, 2018 in National Harbor, MD.

CCTA workshop to be held Monday during the conference!



The screenshot shows the website for the League for Innovation in the Community College's 2018 Innovations Conference. The page features a navigation menu with links for ABOUT, EVENTS, AWARDS, PROJECTS, INNOVATION, and COMMUNITY. Below the navigation is a search bar and a secondary menu with links for CALL FOR PROPOSALS, REGISTRATION, HOTEL & TRAVEL, SCHEDULE, EXPO & SPONSORS, and PRESENTERS. The main content area displays a large image of the Gaylord National Resort & Conference Center in National Harbor, MD, with the text "INNOVATIONS CONFERENCE MARCH 18-21, 2018 NATIONAL HARBOR, MD". Below the image is a paragraph of text: "The League for Innovation in the Community College is pleased to announce that the 2018 Innovations Conference will be held March 18-21, in National Harbor, Maryland (just 8 miles south of Washington D.C.). All conference events will take place at the Gaylord National Resort & Conference Center. This event is hosted by Prince George's Community College and Baltimore City Community College." A small logo for the League for Innovation is visible in the bottom right corner of the screenshot.

<https://www.league.org/inn2018>

***Join us in Miami!***



**July 23-26, 2018**



**[www.highimpact-tec.org](http://www.highimpact-tec.org)**

# Register for HI-TEC and DOL and NSF Workforce Convening

HI-TEC Conference July 23-26 in Miami, FL

[www.highimpact-tec.org](http://www.highimpact-tec.org)

Free follow-up **DOL and NSF Workforce convening** for all TAACCCT grantees, NSF grantees and others who can benefit on **Friday, July 27.**

# Resources

- ATE TV: [ATEtv.org](http://ATEtv.org)
- ATE Central: [ATEcentral.net](http://ATEcentral.net)
- Biotech-Careers: [Biotech-Careers.org](http://Biotech-Careers.org)
- Career One Stop: [CareerOneStop.org](http://CareerOneStop.org)
- O\*NET OnLine: [ONETonline.org](http://ONETonline.org)
- US Bureau of Labor Statistics –Occupational Outlook Handbook: [BLS.gov/ooh/](http://BLS.gov/ooh/)

# WEBINAR SURVEY

Please take a moment to help us become better...