

Subject: Community colleges and the bioeconomy  
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This email is in response to the question in the RFI on the role of community colleges in training the bioscience workforce.

Community colleges play a critical role in this endeavor for a number of reasons.

1. Community colleges are a major provider for the kind of training and skills that students need in the bioscience industry. This need is not met adequately by four year schools and universities.

How do we know this?

We hear this from our industry advisory board members. They request that we include specific skills in our curriculum and knowledge about industry practices, such as the need to follow FDA guidelines such as GMPs, GLPs, and GCPs. They also want us to make sure students know how to keep industry quality laboratory notebooks and make sure student have lots of hands on practice with skills in metrology. All students need to know how to make buffers, media, and other solutions; adjust and measure pH, and calibrate equipment.

Evidence: Every year I get several students in my bioinformatics class who already have a four year degree. During the past two years, 54 out of the 84 students in the bioinformatics course that I teach at Austin (TX) and Shoreline Community Colleges (WA) have stated that they have bachelors degrees in either biology, chemistry, or a related field. They take my class because they wish to learn how to use bioinformatics applications in biotechnology.

2. Professionals who work in the bioscience industry have ongoing needs for retraining and new training. The bioscience industry needs these activities in order to survive. Community colleges, with their ability to hire part-time instructors from industry, are uniquely positioned for quickly starting new classes to train students in new technologies.

In Washington state, biotech companies have short (5-10 years) life cycles. They start, they hire new technicians, they develop a promising technology, they get purchased by a larger company, then several people get laid off.

This means that every five years, people are back in the job market and looking for ways to learn new skills and upgrade existing skills. Community colleges meet an important need in this area by giving people the chance to learn new skills without investing years in getting a new degree.

It's important from the standpoint of companies that they be able to hire people with the specific skills for the job. At the same time, small companies can't promise to give people jobs for life. Companies are only able to work on new technologies if workers have the ability to exit and reenter the labor pool,

Many of my students have been in situations where they've been working at biotech companies, but the companies have been subsumed and they need to move on.

Some students also change careers. One of the PhD scientists who took my course went on to become a patent lawyer.

How can community colleges continue this work?

It is important for organizations like the National Science Foundation to continue funding innovative programs at community colleges. I have been part of an organization, Bio-Link, that has received funding from the NSF. Through Bio-Link, we have built a national network that allows innovative practices to be shared and spread from one college to another. If it weren't for the Advanced Technology Education program at the NSF, the innovative ideas would never have gotten the opportunity to be tried, let alone spread to other colleges.

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