

New Fermentation Facility Brings New Opportunities

With a generous gift from its namesake benefactor, the CSL Behring Fermentation Facility puts Penn State students a step ahead

When most people hear about fermentation, it's in the context of foods. Pickles, cheese, beer and wine, yogurt — this is the extent of the average person's daily contact with a transformative natural process that's been known and used since the Neolithic. But for those working in a brand-new fermentation facility in Penn State's newly renovated Agricultural Engineering building, fermentation is at the forefront of 21st century scientific discovery, and it's creating unique opportunities for Penn State students looking to enter the biotechnology and biopharmaceutical fields.

The facility, made possible by a \$4.92 million gift from CSL Behring, not only builds on the wide-ranging practical work and groundbreaking research being done at Penn State, but establishes the University as a leader in developing talent uniquely positioned to impact the cutting edge of biotechnology research. "This is going to enable students to come into the facility and gain hands-on experience and training in areas that most people in this field will only get after they're hired for a company and after a few years," said Mark Signs, Co-Director of the CSL Behring Fermentation Facility.

It is a paradigm shift. This is going to be an environment where these students get firsthand experience working with companies, and with people who have different expertise, whether they're engineers, biologists, or business people. They're going to see how the industry works. One potential idea would be to have external companies come to the facility with projects. Students would run those projects, doing practical work and learning the steps in the development process while familiarizing themselves with the entire industry ecosystem. That hands-on experience is a key part of the fermentation facility's efforts to keep pace with the needs of its various biotech donors, who are growing faster than universities are supplying potential employees. The value of the NASDAQ biotech index has more than quadrupled in the last decade.

"When we had our ribbon cutting, there was some talk not only CSL Behring, not only Sartorius, not only GEA, who is donating a centrifuge to us and is part of the partnerships, the whole industry is looking at expanding by fifty to seventy five percent over the next two or three years. You can imagine how many thousands of employees they're going to need, with a limited pool from which to draw. If anything, we're moving too slowly. We need to fill that pipeline much more quickly to meet their needs. If we are responsive enough, we will be able to, within the next two or three years, begin to generate this cadre of well-skilled, knowledgeable individuals who will go into these companies and help them with their labor shortage issues," Signs said.

Signs said that if everything goes right, Penn State students will develop more than just the necessary technical skills to work in the field, and build deep, meaningful industry connections. These students, who will have had opportunities unavailable to their peers at other institutions, could create a legacy of industry leaders in the coming decades. In addition to workforce development, the CSL Behring Fermentation Facility is a major asset for continuing the long tradition of interdisciplinary research with the Huck Institutes of the Life Sciences at Penn State, other colleges and institutes, and industry partners.

The industry has taken the initial work with beer and moved on to growing other organisms such as bacteria or yeast, explained Signs. "We'll be growing e. Coli modified to produce a specific protein. We may also be growing different species of yeast. They each have different biological capabilities for modifying proteins. We'll be growing these organisms to produce a specific protein that a scientist wants to produce, or we may be growing what we term a 'wild-type' organism, something that's not genetically engineered."

While the technology of the fermentation process itself has changed very little over time, the industry donations enable the facility to deploy state-of-the-art equipment for monitoring, sensing, and handling data flow, increasing the capabilities of researchers. "This builds on thirty years of experiences that we've had. We've done everything from looking at extracellular polysaccharides for bacteria that would cause problems for patients with cystic fibrosis to work producing biodegradable plastics in yeast," explained Signs. "There's one project where we're working with a Penn State researcher who is looking at a self-healing biopolymer, the gene for which was isolated from squids. We've worked with external companies on methods of growing heat-resistant spores for testing sterility components, and with other external firms to produce flavors and fragrances. There's a whole host of applications which can be achieved through fermentation," Signs concluded. It's limited only by the laboratory skills and imaginations of the researchers.



Subscribe to Huck eNews

E-mail Address	Subscribe
----------------	-----------

[Contact](#) / [Accessibility](#) / [Login](#)

Copyright © 2019 The Pennsylvania State University / [Privacy & Legal statements](#)