

Life Sciences at Delaware Technical Community College

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One of the great strengths of community colleges is their ability to rapidly develop curricula in response to industry needs and provide the hands-on training that prepares students to meet those needs. Here in Delaware, we are fortunate to be part of a strong network of academic and industry partners that assist us in this work.

One of the fast-growing fields relying upon Delaware Technical Community College to prepare a skilled workforce is the life sciences sector, of which genetics plays a critical role. Because it is a vital component of all aspects of biological science, genetics is reflected in the curricula for our biosciences and biotech programs. These concepts are taught and reinforced throughout our biology courses, as well as other required courses in our nursing and allied health programs, such as anatomy and physiology.

This is important because here in Delaware, the number of degrees in life science disciplines expanded 64 percent between 2010 and 2019, rising from 562 to 921, and this sector employs approximately 11,000 people, according to the “[Life Sciences in Delaware](#)” report developed by DelawareBio and the Delaware Prosperity Partnership. The report also notes that this sector in Delaware generates at least \$2 billion in gross domestic product (GDP) annually.

Thanks to a \$1 million grant from the National Science Foundation (NSF), Delaware Tech and the Christiana Care Health System’s Gene Editing Institute began collaborating three years ago to develop a unique gene-editing curriculum now in place not only at Delaware Tech, but also in many other college classrooms across the country. As part of this grant, Delaware Tech has also held a series of workshops to teach gene-editing techniques to community college faculty nationwide so they can develop their own curricula. The training students receive on the use of gene editing in bioscience and biomedical research as part of this program can accelerate the development of therapies for human diseases such as cancer. This means we are training the next generation on the most important technology of our time.

Last year, the College and the Gene Editing Institute were awarded a second \$700,000 grant from NSF to enhance and expand gene editing curriculum development. Related to these efforts, the “CRISPR in a Box” educational tool kit was released to market by partnering with Rockland Immunochemicals. This training is highly relevant and is used, for example, to instruct students in the ways CRISPR can be used to detect and treat viral infections. This takes on new meaning as we continue to battle a global pandemic that has killed over five million people worldwide. And health care is just one area in which genetics plays a role. Agriculture is also critically important with the study of increased resistance to herbicides and pesticides, as is the field of environmental science.

In addition to the NSF grant, students at Delaware Tech have benefited from our long-standing partnership with the [Delaware INBRE](#) (Delaware Idea Network of Biomedical Research Excellence). Through the INBRE partnership network, Delaware Tech students have engaged in biomedical research opportunities and activities with demonstrated increases in student persistence, retention and graduation. Students from across Delaware Tech have also attended the NIH Community College Day to learn about biomedical and life science research initiatives.

All this work is preparing our students with the skills they need to compete in a rapidly developing field. As noted in the “Life Sciences in Delaware” report, life sciences employment reached a record high in the first quarter of this year, and employment in that sector has grown by 16 percent over the past four years. Delaware’s geographic location, combined with the fact that the state has the nation’s fourth-highest concentration of PhD’s in health, science, and engineering, means we are uniquely positioned to attract even more companies in the life sciences sector. The report also notes that “nearly 30 percent of all biochemists and biophysicists in the United States are employed in Delaware, Maryland, New Jersey, and Pennsylvania, and one out of six U.S. pharmaceutical employees works in the Mid-Atlantic region.” Clearly, we are operating right in the middle of an area of tremendous growth and opportunity for our students.

Thanks to our collaboration with our partners in the public and private sectors, we continue to tailor our curricula to meet industry needs. Our work in the life sciences field is not only groundbreaking, but it will change the lives of people beyond Delaware—in both our nation and the world. The field of gene editing has wide-reaching benefits, from developing new medical treatments for disease to improving the environment around us. We are proud to engage in this critical work with our partners at Christiana Care and throughout Delaware, and we look forward to continuing to share the educational tools we have developed with community colleges nationwide.

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