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# From North Montco Technical Career Center to Yale University Lauren Harkins Pursues Dreams in Biomedical Technology

In the wake of COVID, during these past two years, we became a little more attuned to the term "following the science." And because each of us eagerly awaited for the vaccines and therapies that would return our lives to normal, people championed the dedicated researchers, scientists, and medical professionals that would help us decode and fight this terrible illness. Individuals in biomedical careers work every day to better understand and solve many puzzling diseases that can affect one's health. For the high school student who has been dreaming of such a career, North Montco Technical Career Center offers a selective admission program open to high school students of the sending districts.

In this interview, former North Montco Biomedical Technology student Lauren Harkins discusses why she choose North Montco and her future career plans. Lauren currently is a graduate student at Yale University, earning her Ph.D. in Biomedical Engineering. She was a part of



the first class taught by the program's Biomedical Technology teacher, Mrs. Mary Courtney, in 2016! Lauren graduated from Souderton Area High School in 2016, then went on to graduate from the University of Virginia (UVA) in 2020 with a BS in Biomedical Engineering.

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Mrs. Courtney enjoys the deep dive her students are able to take in Biomedical Technology. "The program at North Montco is designed to provide a 'jump-start' advantage to students who are ready to pursue the path at a young age. Students that are selected for this program have taken advanced science and math classes, performed well, and are ready to practically apply their knowledge to real world scenarios."

North Montco's Biomedical Technology program is quite impressive, and spots are limited for the many bright students who apply. Mrs. Courtney explained how this program differentiates itself from other advanced science courses. "The Biomedical Technology program at North Montco introduces students to the world of medical research. These students learn to think and work like a medical scientist every day, by applying the theory and laboratory skills to solve real-world problems in the medical field. This involves the investigation of the causes of disease, while developing diagnostic tests and new treatments for human diseases and disorders. In the laboratory, students work with the state-of the art equipment that allows them to perform genetic engineering, fluorescent microscopy, PCR, 3-D printing, electrophoresis for both DNA and protein, and mammalian cell culture to explore cancer

cells. This program is a dual enrollment class whereby students also can earn eight college credits at Montgomery County Community College."

Furthermore, it is very interesting that all of all of students end up pursuing a career in the scientific and/or medical field. All of North Montco's Biomedical graduates attend four-year colleges with majors in biology, Biomedical Engineering, pre-Med, and other related areas. "In fact," Mrs. Courtney continues, "medical researchers at many universities already know about this program and are excited to hire our students for their lab positions. Therefore, these students have the opportunity to make contributions to medical research before many of their peers."

With her start at North Montco, Lauren is well on way to doing very important work in the biomedical industry. She shared more on her background in the interview below:

Did you have some personality traits that led you and your parents to have insight into your interest in science?

I was always a scientist at heart! I grew up in a very science-oriented family, which influenced me. My dad studied computer science, my mom studied biology, and my brother studied mechanical engineering. (Continued on page 56)

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### FROM NORTH MONTCO TO YALE UNIVERSITY

(Continued from page 55)

techniques we learned helped me confirm

that this is something that I wanted to

pursue. It is easy to think you might enjoy

something after learning about it in class,

but it is helpful to get the chance to try the

techniques yourself and run an experi-

ment. It was also great to hear about

biotechnology's various applications

(medical, environmental, etc.) and think

about which area I was most interested in

learning. Finally, I also enjoyed hearing

about Mrs. Courtney's career path and her

How do you believe North Montco's

North Montco's program was beneficial

in preparing me for my future! Participat-

ing in this program and gaining the

biomedical technology knowledge and

experience helped me stand out among

applicants and make UVA's Genetically

Engineered Machine Team (part of the

iGEM competition). Furthermore, perform-

ing actual lab work like running PCR and

DNA gels was very helpful when I joined

a research lab and had to run DNA gels

almost every day! Having all these experi-

ences, which all started with North

Montco's program, helped me know that I

wanted to go to graduate school and gave

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me a strong resume when applying.

research experiences in the industry!

program prepared you for your future?

My grandfather taught high school chemistry, so I would go in with him and play with the molecule-building kits when I was little. Then, when I was in elementary school, he would come into my school and run science experiments with us (like Elephant's toothpaste!), which I absolutely loved.

When did you learn about North Montco's program, and were your parents supportive of you attending the technical school?

I learned about the program my junior year. Two of my friends were enrolled in the program and told me about it. My parents were very supportive of me attending the technical school. They liked that I had the opportunity to take a more specific class to my interests in science.

How many years did you attend? Were there options for dual credit then?

I attended for one year (Fall and Spring semesters) of my senior year. However, I did enroll for dual credit.

I know Mrs. Courtney is a champion of her students and encourages them to "shoot for the stars" in their future careers. What part did the Biomedical Program and Mrs. Courtney play in your decision to move forward in the direction you did?

First, having the opportunity to do the

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Were there any memorable moments from your experience at North Montco that you would like to share?

One day that stood out to me was when we had the opportunity to visit Fox Chase Cancer Center. It was fascinating to learn about the type of work being done there. It was also great to see how the specific skills we learned and practiced in class are directly applicable to research and solving real-world medical issues!

Many Biomedical Technology students find their way into top-tiered colleges. What made you select Yale?

I chose Yale for many reasons:

Graduate school is very lab and research-focused. I liked the research in Dr. Greg Tietjen's lab at Yale, where the work centers on organ transplants. There is a very clear issue: we don't have enough transplantable organs for the number of people that need transplants.

I liked that we were encouraged to use any tools and techniques (genomics, nanoparticles, etc.) to figure out why the organ is not transplantable and how to fix the problem.

Yale encourages collaboration among its departments and schools. I am in the Biomedical Engineering department but work with researchers in the immunobiology department and the medical school. This experience has allowed me to work directly with transplant surgeons and access resources and equipment that the other departments have that we may not.

I like the culture at Yale in the Biomedical Engineering department. It is a very positive and supportive environment!

#### What are your career goals?

After completing my Ph.D. in drug delivery or biopharmaceuticals, I plan to go into the industry.

Tell us a little about your thesis?

My thesis work is focused on achieving cell type-specific drug delivery in the liver through nanoparticles and protein engineering. We receive human organs that have been recovered from a donor but were declined for transplant, which allows us to test our drug delivery techniques in the organ. Ideally, we want to take these drug delivery techniques and use them to treat pathophysiologies in recovered livers so these methods can be used for transplant or potentially for liver diseases.

Anything else you would like to add?

I would highly recommend the Biomedical Technology class at North Montco to anyone interested in science, especially those who want a hands-on learning experience! This class benefitted me and helped shape where I ended up!



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