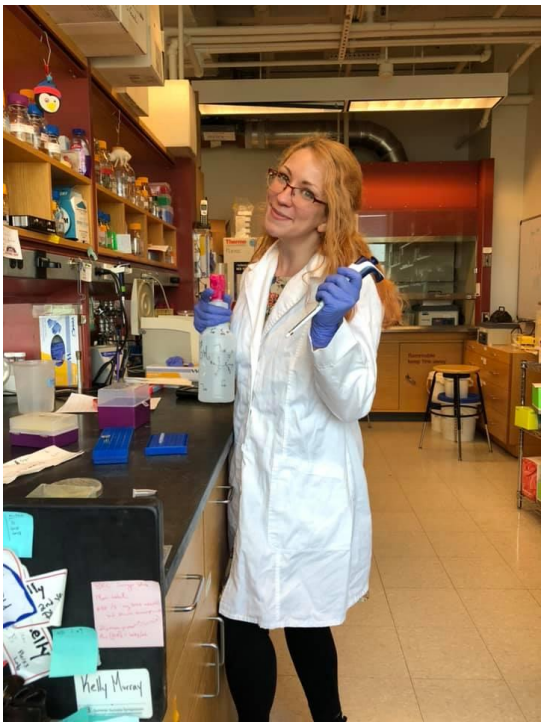
Bioscience Degree leads to cutting-edge medical research

Some of the most versatile career options for NC State graduates begin with the study of STEM+M majors (Science, Technology, Engineering, mathematics and medicine). Alumna Kelly Murray is one of those students. She started at North Central State College in the fall of 2011 where she enrolled as a biotechnology major. "North Central was the obvious choice for me given the low cost to attend, and transfer options," Murray explains. She is a non-traditional first-generation student who never actually planned on going to college.



As part of her financial aid package at NC State, Murray was awarded a Choose Ohio First Scholarship (COF), which helped her as an undergraduate immensely. COF is a state-funded program for Ohio residents pursuing a major in one of the STEM+M fields.

The second year she received the COF award, it allowed her to accept an unpaid internship in a research lab that helped her gain valuable experience in her chosen field. "I would not have been able to afford to take an unpaid internship without the scholarship," she says. "The experience I gained ultimately resulted in my deciding to continue to earn my bachelor's degree and then begin my doctoral work in 2017."

Today Murray is a Ph.D. candidate at Cornell University studying cells and Ribonucleic Acid (RNA), a molecule similar to DNA. "Any time your cells need a specific protein, the process starts with transcribing RNA, using your DNA as a template. This RNA is then used as a sort of blueprint for making the protein," Murray explains. "But there's a catch. The RNA needs to be processed before it's ready to be used. I study how machinery in the cell processes that RNA- specifically, how regions of the RNA that need to be removed are identified and cut out of the RNA transcript."

She goes on to explain, "This process needs to occur very quickly, but also with very high precision. Many diseases in humans are caused by mistakes in the removal of these pieces of RNA. Our cells have the remarkable ability to balance the tradeoff between accuracy and speed, removing these pieces of RNA very quickly, while maintaining a high level of accuracy. My doctoral work is focused on understanding this process."

It is no surprise that Murray's favorite class at North Central State College was the biotechnology course. "It was my first biology lab and I was able to learn so much about lab techniques," she says. "We also covered a lot of laboratory math, which I admit was a little frustrating at the time, but has been very helpful for me both in more advanced coursework and my current day-to-day lab work."

The combination of lab and coursework in the classroom at North Central helped prepare her with a firm foundation in biological research. "I am especially thankful because I was able to get inside a research lab very early in my undergraduate career," Murray says. "I was able to take a wide variety of courses and that helped to broaden my depth of knowledge and was instrumental in my getting a good score on the subject GRE for graduate school application. After obtaining her associate degree in the spring of 2014, she was able to transfer her credits and continue her education at Ashland University.

Murray truly enjoyed the educational experience at North Central State College. "I loved the small class sizes," she explains. "I benefited from having the opportunity to discuss course content one-on-one with my professors, and to talk about career options. I felt welcomed into the community."

After earning her doctorate, Murray hopes to enter a teaching-focused career. "I am very lucky to have gotten experience while tutoring at North Central State and now at Cornell where I am teaching a course I designed myself about RNA," she says proudly. "Starting at a community college and interacting with professors who are passionate about teaching inspired me toward my career path!"

Murray's journey to the cutting edge of medical research began at NC State. We look forward to hearing of Kelly's next accomplishment.