Megan Novak, a fourth-year student in the Driskill Graduate Program in Life Sciences (DGP), studies dysregulated cell-cell adhesion in cancer progression in the laboratory of Carl Gottardi, PhD, associate professor of Medicine in the Division of Pulmonary and Critical Care.

Novak earned her undergraduate degree in Chemistry from Furman University. She plans to work in higher education advising, specifically with STEM students to help them learn to translate their quantitative, analytical and critical thinking skills into skills that are broadly applicable for any career.

Q&A

Where is your hometown?
I lived all over growing up, but I have now officially lived in Chicago long enough that I call it home. There’s nothing quite like flying into Chicago over Lake Michigan. Every time I see the skyline from that prospective, I think to myself that I live in such an incredible, beautiful city.

What are your research interests?
I study cell-cell adhesion – basically the molecular “velcro” that keeps cells sticking together. Cell-cell adhesion provides structural support, creates important barriers (i.e. your skin), and is important for a number of cellular processes, including cell signaling. This cell-cell adhesion is often dysregulated during cancer progression. Cancer cells stop “sticking” to an adjacent cell, which is dangerous because this allows the cancer cell to leave the primary tumor and metastasize to somewhere else in the body.

I study one particular protein involved in cell-cell adhesion, called alpha-catenin. We know a lot about alpha-catenin’s role at the cell-cell junction, but there is evidence that it can be found in other parts of the cell, where it plays additional roles. My my research goal is to learn what alpha-catenin does when it leaves its day job at the junction, and goes on to a second, part-time job, in other parts of the cell.

What exciting projects are you working on?
Most of the experimental methods I use during my PhD studies involve the use of the microscopes at the Center for Advanced Microscopy on the Feinberg campus. I love live cell imaging and watching proteins move around within the cell. One particularly cool experiment I recently did for a paper revision involved adding a fluorescently-tagged membrane phospholipid into a part of the cell where that lipid is not normally found. Using time-lapse live cell imaging, I was able to watch my protein of interest (tagged with a different colored fluorophore) get recruited to the site where this phospholipid was exogenously added. This experiment showed that the phospholipid was sufficient to recruit my protein of interest. I was also able to introduce point mutations into my protein of interest that reduced this recruitment to the newly added phospholipid, suggesting that these amino acids contribute to the interaction between my protein and the phospholipid.

What attracted you to the PhD program?
I was an undergraduate chemistry major with a strong interest in biology, so I was really drawn to the integrated science programs where I could complete rotations in different in fields before choosing a thesis lab. I also knew that I did not want to run my own lab after graduation, so I looked for an institution that supported a variety of careers after completing a PhD. Northwestern has so many certificate programs and master’s programs to support professional development beyond bench research – teaching, business management, clinical investigation, and science law to name a few – that I felt I would be well-supported no matter what career path I chose.

What do you do in your free time?
As a self-admitted foodie, I love trying new restaurants in Chicago. I recommend the poutine at Fork in Lincoln Square, cocktails at The Sixth in Ravenswood and a date night meal at Table, Donkey, & Stick in Logan Square. I also can’t wait for summer to arrive so I can get back to playing beach volleyball with friends at North Avenue beach and going to free concerts in Millennium Park.

What are your plans for after graduation?
I am searching for career advising jobs within higher education. I find that many students are overwhelmed by the process of career exploration and job searching, and that I really enjoy breaking down this process into achievable steps that will allow students to identify and pursue a job they are passionate about. I am particularly interested in working with STEM students, and helping them learn to translate their quantitative, analytical and critical thinking skills into skills that are broadly applicable for any career.

Connect with Megan on LinkedIn.