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Pollution research at WU

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Winthrop senior Savannah Moritzky's passion for research began with a book. The summer after her freshman year she discovered a book about the rabies virus. The book discussed the history of the virus and the creation of a vaccine for the virus. Though she originally wanted to go to medical school to become a doctor, she realized that she was less interested in patient care than she was in researching the patients' diseases.

"I wanted to solve mysteries. Helping people was just a side thing," Moritzky said.

Moritzky majors in biology with a minor in chemistry and a concentration in biomedical research. While at Winthrop she has been researching the source of E. coli contamination on a local beach with the help of professors Dr. Victoria Frost and Dr. Matthew Heard. By graduation she will have worked on this project for two years.

This research began during her sophomore year when she was accepted to the McNair Scholar's Program, which seeks to help qualified first-generation, low-income and underrepresented students obtain PhDs. For eight weeks she did intensive research on E. coli with Dr. Frost and Dr. Heard.

For her individual project, Moritzky spent many hours driving to different beaches to collect sand samples, extracted the E. coli from the samples, and used a PCR to separate them into groups. By studying the trends among these groups, she discovered from which animals the E. coli originated. Because E. coli is associated with fecal matter, the EPA uses it to indicate pollution.

"By being able to determine which organisms the E. coli is coming from, we can better pinpoint the sources of pollution on our beaches," Moritzky said. "For example, if we are finding E. coli from humans, we know that there could be some sort of sewage overflow onto the beach."

Moritzky discovered human and animal sources throughout her research.

"The results were that we found human associated and wild or domesticated animal associated E. coli in the sand of Folly Beach," Moritzky said. "We cannot definitively say what

has caused the pollution. Further research would be needed to conclude the definite source of pollution."

Frost a professor in the Department of Biology at Winthrop aided Moritzky in her research process through discussions, instruction regarding necessary microbiological and molecular techniques, and guidance in Moritzky's presentation of the results.

"Savannah is focused, motivated and easy to get along with," Dr. Frost said. "She works hard and goes above and beyond to perfect her lab techniques. Often times she works late or on the weekends collecting data and running experiments."

According to Dr. Frost, Savannah is not afraid to undertake new tasks.

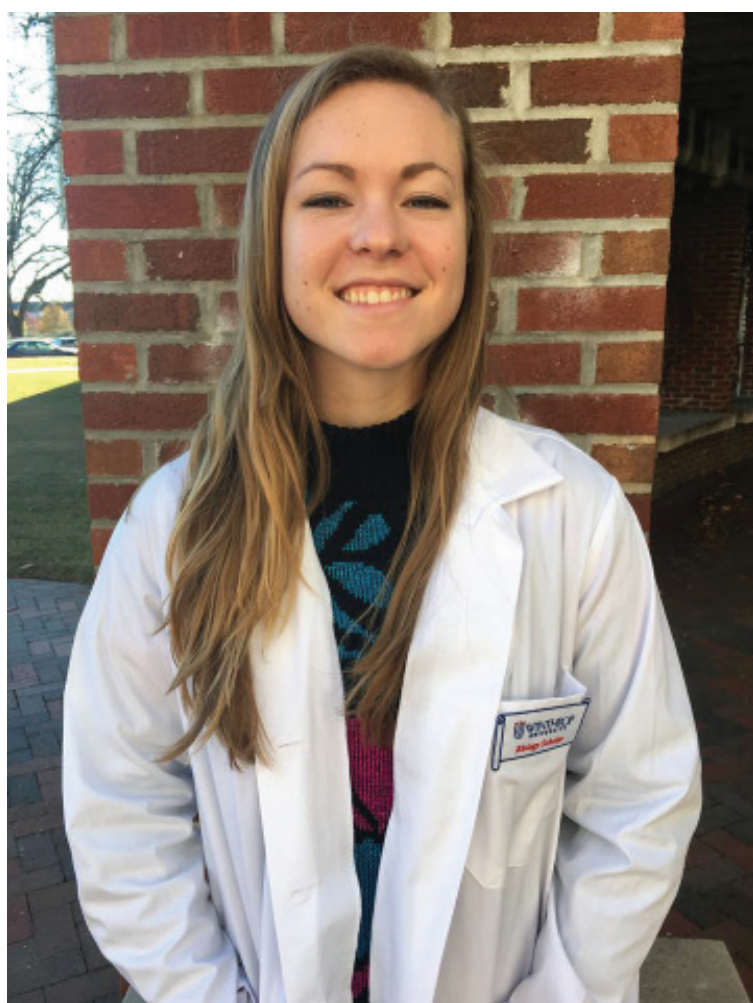
"She enjoys being in the academic setting but also loves adventure. For instance she skydives, camps in the wild for days and travels often," Dr. Frost said.

Winthrop senior Savannah Glenn has been close friends with Moritzky for over three years.

"She's super ambitious and studious. She's a great friend and will have your back no matter what," Glenn said. "She spends all her time in the lab doing research, she's super dedicated and wants to get her PhD."

In the spring, Moritzky plans to submit her work for publication in a journal of Letters in Applied Microbiology. She has also presented her research at local and national conferences including SOURCE and a session at the University of Michigan. She presented at the National Conference for Undergraduate Research and the Annual Biomedical Research Conference for Minority Students.

Before her senior year, Moritzky was accepted into a research program at the University of Michigan where she worked under Dr. Cascalho to measure the memory response of mice with a genetic mutation.



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Senior Savannah Moritzky works to pinpoint pollution sources on SC beaches with E. coli research.

"It was a completely new experience," Moritzky said. "The University of Michigan is a much larger school than Winthrop, so the labs are bigger and better funded."

Moritzky is pursuing a PhD in microbiology and immunology to research vaccines. After she attains her PhD, she hopes to work for the Centers for Disease Control and Prevention or the National Institutes of Health as a microbiologist.

"It is a unique opportunity to be able to work one-on-one with professors in their labs as an undergraduate," Moritzky said. "The close connections you can make are great for letters of recommendation and work experience, and I have gained so much knowledge from working with Dr. Frost and Dr. Heard in their lab."



TECH TIP OF THE WEEK

Lock your computer by pressing the windows button in the lower left corner of your keyboard and the "L" button. Unlock your computer by pressing CTRL+ALT+DEL (or Command on Mac).

Shopping sustainably

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The new year is a great time to develop environmentally conscious habits. This can be as simple as being sustainable and mindful with clothing choices.

High fashion is a large business in the United States. According to a report by the Joint Economic Committee, it is a \$98 billion industry in New York City alone.

"Fashion is a \$1.2 trillion global industry, with more than \$250 billion spent annually on fashion in the United States, according to industry analysts," the report stated.

Over-consumption of unsustainable clothing takes a toll on the environment from which the resources used to make these products have been extracted. Fortunately, there are several ways to maintain a stylish closet while being eco-friendly.

Clara Kress, co-president of Winthrop's Student Environmental Action Coalition (SEAC), suggested recycling the fabric of old clothing in textile recycling centers.

"You could repurpose old t-shirts that you don't wear anymore by making quilts out of all of the designs. There are tons of companies that would love to do this for you, also. Or, if your clothes are really ratty, use them as a rag or furniture polisher around the house," Kress said.

According to Kress, an easy way to waste clothing is by negligence in cleaning it.

"I have shrunken many articles of clothing before," Kress said. "My advice would be that if you get a nice piece of clothing, do what it says when washing and drying. It would be a waste for your nice new outfit to shrink and you have to get rid of it."

Kress suggested recycling and reusing clothing by shopping at Goodwill, Plato's Closet, Clothes Mentor and thrift shops in order to purchase

new clothes while repurposing your old clothing.

"I would say that it is all up to you where you buy your clothes depending on your values, but I highly recommend second-hand as the co-president of the environmental club," Kress said.

Students can support the growing number of brands that commit to green fashion. SVILU, Kowtow, Freedom of Animals, H&M Conscious Collection, Mina+Olya, A Peace Treaty, and Amour Vert are eco-friendly fashion labels.

In 2012, Winthrop's common book was "Where am I Wearing?" by Kelsey Timmerman. Timmerman traveled to the places where his clothes were made to meet the workers in the factories.

"Unfortunately, many of the people that make our clothes do not get a good pay for their work in many parts of the world," Kress said. "Since it does not directly concern us, we usually do not care about it so much. I would recommend the book to anyone to see how our clothes directly link us to the people that make them and their lives."

The book suggests places to shop based on various preferences. All-American Clothing Company and Cotton of the Carolinas are American-made clothing brands. Maggie's Organics is a brand that uses organic farming practices and fairly compensates the clothing-producers for their labor.



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Second hand stores are a great way to recycle clothing.

According to the Joint Economic Committee, the United States apparel manufacturing industry runs a trade deficit. In 2014, apparel exports were around \$6 billion and imports were around \$82 billion. Thirty-six percent of these imports come from China.

"It would be a change in attitude in order for us to combat our overconsumption," Kress said. "A good resolution for the new year would be to shop less. Enjoy what you have already."

This can be done by taking the minimalist approach to shopping by purchasing new clothes only when needed. Another sustainable approach is searching for utilitarian clothing by evaluating if the clothing item fulfills multiple uses and occasions.

"It may be tough at first because of the American lifestyle, but it is entirely doable," Kress said. "You will feel so much better at the end of the year by not accumulating as much stuff and taking pleasure in non-material things."