ACADEMICS

Undergraduate Researcher Gains Hands-on Lab Experience for Medical School

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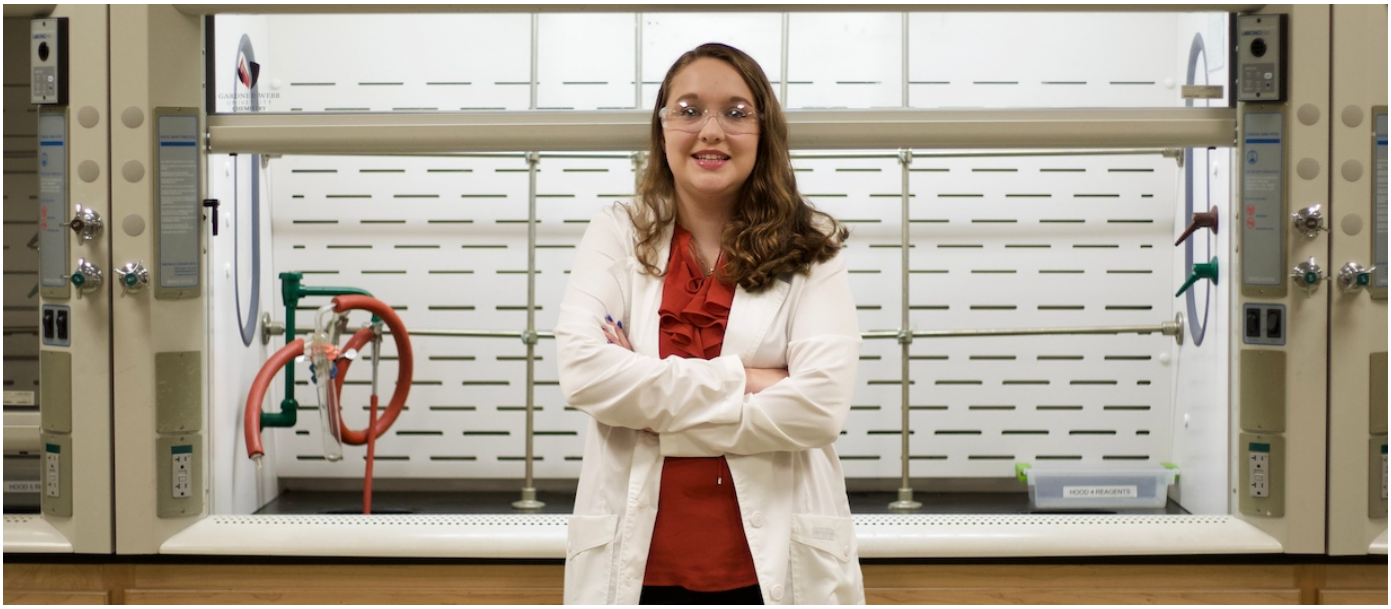


Photo by Robin Jackson / GWU Photo Team

Jordan Mitchell, ’23, Tests Citrus Peelings for Chemical Used to Disinfect, Fight Cancer

By Sarianna Miranda-Rosado, ’24, Intern for Communications

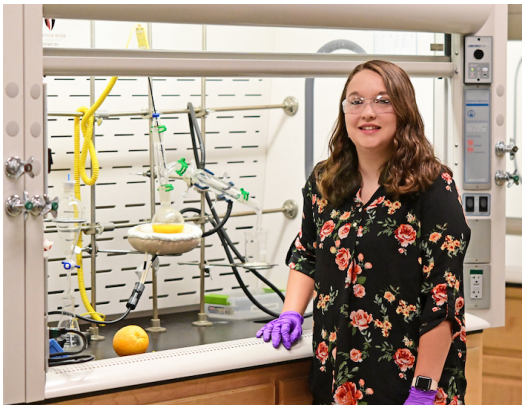
Research by a Gardner-Webb University student explored more efficient ways to turn kitchen waste into useful and possibly life-giving materials. Jordan Mitchell, ’23, tested various citrus fruits to determine which peelings produce the most limonene, a chemical that works as an eco-friendly disinfectant and pesticide—and has shown promise in the fight against cancer.

Mitchell is one of eight scholars who received a grant from the GWU Undergraduate Research Scholar Program to pursue an academic interest. Guided by her faculty mentor, Dr. Benjamin Brooks, she worked 40 hours a week on her project for five weeks. Undergraduate researchers are also required to publish their research or present their work in a professional forum, such as GWU’s Life of the Scholar Multidisciplinary Conference.

The experience gave Mitchell, of Hiddenite, N.C., an opportunity to participate in a hands-on project that will aid in her future success. Mitchell is a biology and chemistry major with a biomedical science minor.

“This topic interested me for a number of reasons,” Mitchell explained. “Dr. Brooks used limonene to make a disinfectant spray for the natural sciences department to use during COVID-19, which made this

project seem very timely and important. Additionally, I—and pretty much anyone in the medical field or medical research—would love to find a better treatment or ultimately a cure for cancer, so when I was researching limonene and found that it has shown potential in not only treating cancer but also preventing it, I knew this would be an important topic to study and a great research project for me."



Jordan Mitchell extracted limonene by setting up a steam distillation apparatus. Photo by Dr. Benjamin Brooks

Mitchell hopes to go to medical school after completing her undergraduate degree and believes the research experience provided valuable preparation for graduate school. "I wanted to do research to gain more experience in the lab and with research overall," Mitchell expressed. "Research is directly related to critical thinking, independent thinking, creativity, and discovery. In my opinion, gaining more experience with research, and in turn with these attributes, will not only help me during medical school but will also help me as a doctor."

Mitchell started her journey into the medical field in high school, earning a Certified Nursing Assistant certificate and working in healthcare. "I loved biology and the medical field, so I chose to major in biology at Gardner-Webb University," she noted. "During my first semester, I discovered my love was not only for biology but also for chemistry."

For her research, Mitchell extracted the limonene by setting up a steam distillation apparatus, zesting the peels off the fruit, adding them and water to a flask, then distilling until the product was collected. Through various tests and analysis with Infrared (IR) spectroscopy, Nuclear Magnetic Resonance (NMR) spectroscopy and other instruments, she was able to identify (R)-(+)-limonene.

Brooks offered advice throughout the project. "He helped me decide on my research topic, showed me ways of finding more reliable and useful sources online, helped me condense down my research to be more manageable, helped me in the laboratory when I had a question or was unsure of something, and he has taught me many different things along the way," she asserted. "I also have to give a shoutout to

Jacob Willis, our lab coordinator, because he has also helped me during this research experience countless times and is always willing to help if needed."

For students who are considering applying for an Undergraduate Research Scholar Grant, Mitchell said, "Go for it!" Then, she added, "This research project has taught me so much about science, the researching process, and given me so much hands-on experience. Choose a topic that interests you but will also challenge you. Just be prepared for lots of hours of research inside and outside of the lab. It's a lot of work and dedication, but it is all worth it!"

Learn more about the Undergraduate Research Program.

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