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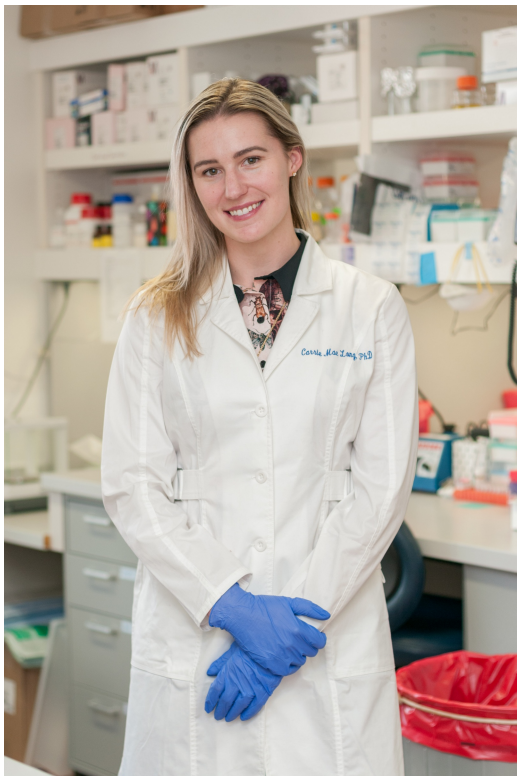
Dr. Carrie Long, '11, Works at National Institutes of Health Facility in Montana

In early January, before COVID-19 and coronavirus became daily news, a Gardner-Webb University alumna worked in a lab that was gearing up to study the disease. Dr. Carrie Long, who graduated in 2011 with a degree in biology, is an independent research scholar at Rocky Mountain Laboratories in Hamilton, Mont., part of the National Institute of Allergy and Infectious Diseases (NIAID), which is a component of the National Institutes of Health (NIH). "You may have seen Dr. (Anthony) Fauci on TV recently," Long noted. "He's my boss about five times removed."



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The New York Times recently reported on the important work and 120-year history of the Lab. Its researchers have contributed important discoveries related to the 1918 influenza and coronaviruses like SARS and MERS. According to the article, researchers from the Laboratory of Virology have been working on SARS-CoV-2 since shortly after hearing rumors that the illness in Wuhan, China, was caused by a coronavirus.

Long joined the Lab in 2016 after receiving her Ph.D. in immunology and microbial pathogenesis from West Virginia University (Morgantown, W.Va.). She usually works in the Lab's Coxiella Pathogenesis Section. *Coxiella burnetii* is a highly infectious and deadly bacteria that causes a disease called Q fever. "I'm working on characterizing the host immune response to the bacteria as well as developing a vaccine for

the pathogen," she stated. "I was awarded an independent research scholar award, which allows me to have an independent research group at the NIH. It's been a huge learning experience and a great opportunity for me."

Her work on Q fever has been put on hold while the Lab focuses its resources on the coronavirus. Long has been assigned to the group developing preventive treatments and vaccines to combat COVID-19. "I am currently assisting with SARS-CoV-2 projects in the Laboratory of Virology," Long related. "SARS-CoV-2 is the virus that causes the disease COVID-19. Basically, we are able to model the human disease (COVID-19) in animals (e.g. rodents and monkeys) to get a better understanding of the disease course and try out novel therapies and preventive treatments. I actually just got back to my computer from infecting a batch of hamsters with the virus this morning."

She explained some of the research process. "We are treating animals with compounds that may confer—at least some degree of—protection against the SARS-CoV-2 virus and the disease that it causes (COVID-19)," she said. "Because of our unique high containment laboratory facilities and expertise, we are able to safely handle the virus and infect animals after they have been experimentally treated, allowing us to test a number of different compounds. Being able to utilize my expertise in a way that may ultimately help people during this crisis has been a respite in these challenging times."

Long, a pole vaulter on the GWU track and field team, said her professors and coaches at Gardner-Webb helped her develop her interests and abilities. "I am confident that my experience both as a student and an athlete at GWU helped to prepare me for this role by contributing to the development of foundational skills such as those related to communication, critical thinking, team building, and time management," she asserted. "Interacting with professors and staff who were excellent, caring mentors themselves has been a crucial cog in my own development as a mentor. I began developing these skills at GWU in a supportive, student-centered environment surrounded by faculty and peers who cared not only about me but also the greater good. My time at GWU was a catalyst in my desire to pursue science as a career in the hopes of ultimately enhancing human health."

Carrie Long wears Personal Protective Equipment (PPE) while working in the training lab at Rocky Mountain Laboratories in Hamilton, Mont. Photography isn't allowed in the facility's high containment lab where actual experiments are conducted. (Photo courtesy of NIAID)

Previous GWU Newscenter story on Carrie Long