

**Summer Internship Report 2017**

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Hometown: Decatur, Georgia



**Biology Research: Virology**  
**Sewanee, TN**

**Provide an overview of the organization/research project and a summary of your responsibilities, tasks, and/or projects.**

This summer, I worked with Dr. Clint Smith's virology research lab in the Sewanee Biology Department. My summer work was part of a continuous project that I started in the fall of 2016 and plan to continue until I graduate. The findings will be used for a honors thesis and as preliminary data in a grant proposal. They will also direct future research, which I aim to publish in a peer-reviewed scientific journal. My research focuses on how the murine hepatitis virus interacts with the cellular molecular chaperone protein HSP 70 during viral replication, and how small molecule inhibitors of HSP 70 such as MKT-077 can be used to inhibit viral replication. Throughout the summer, I read relevant literature and worked with Dr. Smith to design and carry out experiments. These experiments drew techniques from virology, molecular biology, and evolutionary biology.

**During your internship, what did you accomplish or how did you make a difference? In what ways did you grow in your professional and technical skills?**

Over the summer, I made significant progress toward narrowing down the possible points in the viral replication cycle that rely HSP 70. I can therefore proceed to future research with much more of a sense of direction. My research was largely self-paced, so I got experience in experimental design and time management in a lab. My research is an extended, multi-year project and I am working closely with the P.I., so I have also gotten a sense for the broader, long-term arc of biomedical research projects. I also practiced a large variety of microbiology and virology techniques of the course of many experiments. At the end of the summer, I presented my findings to another coronavirus lab at the Vanderbilt University Medical Center.

**Describe a problem that you helped to solve at your internship. What skills or knowledge from your education at Sewanee helped you address the problem?**

The entirety of my research project is a long series of problems to solve and questions to answer. Every day that I work in the lab, I use my knowledge of the scientific method to break these questions down into manageable experiments that will provide specific answers that I can piece together to form a bigger picture and inform future research.

**In what way were your teamwork skills strengthened?**

I have worked very closely with the P.I., Dr. Smith, throughout the research project. We continuously discuss the research findings, possible scientific explanations for our observations, future directions for the research, and specific experimental design. I work together with Dr. Smith and the other undergraduate student in the lab to maintain stocks of laboratory equipment and solutions and to collaborate for larger-scale and extended time-point experiments. I am currently the only undergraduate working on my specific research project though, and I have done most of the hands-on research, so I have not had a lot of experience with organizing research with peers.

**How did your internship affect your career plans?**

My research allowed me to see the pacing and lifestyle of research biology. I am considering pursuing a M.D./Ph.D., so research biology could play a large role in my future career. I was happy to find that I enjoyed the lab environment and found myself motivated to put in extra work to look for the answers to all the questions that I had.

**In what ways did your internship cause you to encounter people of different backgrounds from your own? What steps did you take to communicate effectively with such persons? What did you learn from such persons' perspectives?**

Because of the nature of the research lab, I did not do a lot of outreach beyond the lab group. We were focused on making progress on the research; this involved many experiments and a lot of reading, but not a lot of collaboration with people of different backgrounds. We did visit Vanderbilt for a day to present research findings, look at the coronavirus lab and medical research labs there, and discuss graduate school and post-graduate research, which allowed us to see how research is conducted at larger institutions.

**Words of advice for future interns (housing, transportation, etc.)?**

Sewanee is beautiful during the summer, especially on long bike rides and hikes. Bridal Veil Falls can be a great microbiology reading room. Good Indian restaurants aren't abundant though, so bring your own coriander and garam masala.

**Words of thanks to your internship funding donors:**

My summer research was a wonderful experience. I learned a great deal about biomedical research and made a lot of progress toward drawing conclusions that I may be able to publish in a couple of years. I would not have been able to have this research experience without the funding that you provided, and I can't thank you enough for providing me with this opportunity.