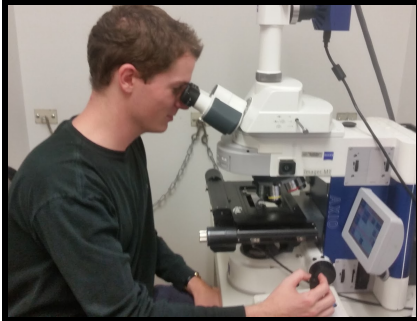


Summer Internship Report 2017

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Neuroscience Research Assistantship Sewanee, Tennessee

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

This past summer, I worked full time in the behavioral neuroscience lab of the University of the South under the purview of Dr. Kate Cammack. Together with Dr. Cammack and another student, we worked diligently to set up various basic amenities of most neuroscience labs, including behavioral tracking software, protein quantification analysis protocols/machinery, and basic behavioral testing apparatus. My personal project was to use the above materials and techniques to investigate sex differences in opiate addiction using a rodent model.

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?

Throughout the summer, I was tasked with setting up and troubleshooting various fundamental aspects of the lab that aided us in our research, including learning and optimizing the animal behavior observation software AnyMaze, as well as piloting out Western blots of neurotransmitter receptor proteins isolated from neural tissue. These processes taught me valuable lessons in patience, diligence, commitment, and proactivity in how I approach my research. In bringing these tasks to fruition, I at once aided in establishing techniques/machinery that may be used in years to come at Sewanee, as well as honing skills that are applicable to my work as a current graduate student in the neurosciences.

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?

One large problem that I more or less solved throughout the summer was that of Western blotting. Western blotting is a biochemical technique by which researchers can quantify levels of certain target proteins from animal tissues or cell cultures. During my career at Sewanee, I had the opportunity to practice Westerns in my biochemistry classes. However, in my class labs, the students started from cell cultures; this summer, I had to start from harvested neural tissues from our rodent models, which proved to be a much more difficult procedure due to additional considerations such as tissue

preservation after harvesting, microdissection of target structures within the brain tissue, and the brute time which each trial took to complete (one working day). After 10 days of piloting out and troubleshooting a protocol I had designed myself, my Western blot finally worked, much due to my training at Sewanee which taught me the persistence, insight, and ingenuity required of successful research scientists.

In what way were your teamwork skills strengthened?

One particular way in which my teamwork skills were strengthened was my work over the weekends this summer. When another student working in the lab was out of town or unable to come into the lab on the weekend (which was unavoidable due to experimental design), I would cover for them and complete the necessary tasks to maintain their experiment on its proper course. While going in to work for a few hours on the weekend is not an ideal situation for most people, this was actually a poignantly satisfying time to work in that I could take solace knowing that the experiment was surviving and progressing as it should thanks to my extra hours of work.

How did your internship affect your career plans?

This internship further built upon my dedication to pursuing a career in scientific academia. As I write this, I am in my first week of classes as a first year PhD student in a behavioral neuroscience program at Wake Forest School of Medicine. This past summer working with Dr. Cammack allowed me to glimpse what it is like to start up one's own lab, to frame research questions and design a unique experiment, and to run all aspects of a lab, from animal husbandry to running software and performing wet lab bench work. All of these skills will come in handy when I am finishing up my degree and looking for post-doctoral positions in which designing my own experiments will be compulsory and instrumental in my search for a faculty position in the future.

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?

As the lab I worked in this summer consisted of myself, Dr. Cammack, and one other student whom I knew from classes, my interaction with persons of diverse backgrounds was limited in the sense of racial or socioeconomic backgrounds. So, on a much more minor note, the only real difference between the backgrounds of our lab members concerns our education background: I am trained more formally in biochemistry and mathematics, whereas the other lab members were mostly trained in psychology or other social sciences. As this might not sound like a large disparity in backgrounds, many differences and misunderstandings arose when discussing/analyzing very nuanced portions of our experiments, such as particularities of neurotransmitter biophysics or maternal rodent behavior in response to foreign pups. The various perspectives from across the spectrum of the sciences produced within our group very fruitful and insightful conversations that allowed us all to practice explaining tricky technical topics to one another, as well as listening to others and trying to learn from them. From these conversations I learned to consider all aspects of an experimental question and to never be fearful of asking for assistance in understanding a particular topic.

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

Be dedicated, passionate, and proactive in your work, and learn to cook your own meals.

Words of thanks to your internship funding donors:

Thank you so much for this opportunity -- for a graduating senior, being able to spend one last summer on the mountain was a time I will always cherish, and the work I accomplished and

relationships I formed further substantiate the claim that Sewanee is truly unlike any other place to live and work.