

Maddison Staff

**Graduation Year:** Junior

**College:** Science

**Major(s):** Biology, FTT

**Minors(s):** N/A

**Scholar Group Membership:** No

**Did you received other funding for this project?:** No

**Could you have completed this project without CUSE funding?** No

**More details on CUSE funding assistance?** CUSE provided me with the opportunity to live in South Bend and continue my research this summer. Without CUSE, I would not have been able to do this, and I am very grateful to them for providing me with this grant.

**Project Title:** Generation of Visual Mutants in *Aedes aegypti*

**Project Location:** United States, Indiana, University of Notre Dame, O'Tousa Lab

**ND Faculty Mentor:** Dr. Michelle Whaley

**Project Type:** Research

**Why did you undertake this project/experience?** Deepen your knowledge of a topic or issue, Prepare for graduate school (MA or PhD)

**Did your funded experience help you:**

**[Deepen your understanding of your coursework or field of study]:** Very Much

**[Discern your interests and post-bac goals]:** Yes

**[Become confident in your ability to set and achieve your goals]:** Very Much

**[Gain a more nuanced view of local, national, or global communities]:** Not Applicable

**[Improve your written and verbal communications skills]:**Very Much

**Tell us about your experience.**

This summer, I conducted research in a manner that I never had before. I spent upwards of 8 hours a day, 5 days a week, dedicated to the project – something I had never done before.

During the weekdays, my lab partner and I would spend time isolating and cloning genes to prepare solutions for our injections. We worked with high-tech machines that I had never even seen before, and were able to operate them ourselves after only a week of training!

We also spent a huge amount of time caring for our animals. This may sounds strange, because, yes, our animals are mosquitoes; however, they require a LOT of work! Even the leader of our lab, Dr. Joseph O'Tousa, who works predominantly with flies and not mosquitoes, was taken aback by just how much time every day we spent tending to their water cups, replenishing their food, and ensuring that they were alive and healthy. Not only was all of that important to us as researchers (because we did need them alive to carry out our experiments!), but we were also very proud of our work, and wanted very much to keep them alive and well for their sake, too.

We also prepared many presentations, at least 3 about our work (which were heavily critiqued to perfection), and two about our improving organizational skills. Both of those types of presentations, along with the online lab notebook we diligently kept and improved all summer, took up a fair amount of our time, as well.

While our main focus was of course answering our overall research questions this summer (How does mosquito vision work, and how can we, as humans, use that knowledge to improve vector control and stop the spread of disease?), my lab partner and I learned more than we ever could've imagined from all of the diverse tasks we undertook in our time at Notre Dame.

**Describe the impact this project had, both on you as a student-scholar and on the people you worked with.**

This summer, I learned more than I ever thought I would. Along with finally gathering enough data to put together multiple official presentations, my lab partner and I learned how to conduct research in a professional setting (including learning how to use multiple new and exciting pieces of equipment), prepare quality lab presentations, and maintain an organized and thoroughly detailed account of all of our work.

Having learned all of this will certainly help me in my future endeavors. I am now well-prepared to carry out professional quality research, to think more critically about what I'm doing, and to truly understand the work that I do (and ask questions if I don't!).

And of course, on top of all of this, the advancements we made on our project this summer would be unparalleled if not for CUSE. We

**Describe how this experience is connected to your plans as a student or future professional.**

This summer, I learned hundreds of laboratory techniques I never previously knew, and every one of those techniques will guide my learning in the future. I learned how to use mini-, midi-, and maxi-prep machines. I learned how to efficiently isolate, clone, and amplify DNA sequences. I learned how to carry out visual assays, as well as handle very high-tech equipment. I learned how to bevel microscopic needles, and use living cells to express the DNA we desire in order to use that DNA in our injections.

As my future goal is to attend grad school for Biology, all of these techniques will help me in the future. But, it was not only the physical biological techniques that will help me to succeed in my future; I also learned how to keep a precise and thorough lab notebook, how to give professional scientific talks and presentations, and how to apply for equipment grants when needed. All of these skills are vital in professional research, and I feel lucky to have learned them this summer under the CUSE grant.

**What advice would you give other students who are planning to pursue similar projects?**

The biggest piece of advice I can give, despite how cliché it may sound, is this: STAY ORGANIZED.

Once my lab partner and I had an organized system for how to run each of our projects, and an organized lab notebook with detailed accounts of everything we did, the flow of our project and future goals seemed a lot clearer. It made the project much more manageable, and kept us on track with every one of our goals.

The only other thing I think I can say is, don't get discouraged. Even if your project doesn't go the direction you thought it would, or if you don't get the results you were looking for (or any results at all – it happens!), just keep persevering. It'll be worth it.

I acknowledge that this form has been filled out truthfully and to the best of my ability. I understand that this information will be shared with many different CUSE constituencies. As such, I have provided as much useful information as I was able. I understand that CUSE will not complete my award disbursement until this form is successfully completed. If I have any questions or concerns, I will contact CUSE before submitting this form. To illustrate that you understand all of these points, please enter your Notre Dame email in the box below.

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