

Maura Vrabel

Graduation Year: Senior

College: Engineering

Major(s): Chemical Engineering

Minors(s): Bioengineering

Scholar Group Membership: N/A

Did you received other funding for this project?: N/A

Could you have completed this project without CUSE funding? Yes

More details on CUSE funding assistance? I would have been able to fund my own stay at Notre Dame since my on campus summer job covered my housing, which is the most expensive part. However, it has been a great burden lifted from my family's shoulders to not have to pay for my food and transportation this summer.

Project Title: Detailed Characterization of the Nucleotide Binding Site

Project Location: USA, IN, Notre Dame, Bilgicer Lab

ND Faculty Mentor: Basar Bilgicer

Project Type: Research, Creative Endeavor

Why did you undertake this project/experience? Research/experience necessary for senior thesis or capstone project, Prepare for graduate school (MA or PhD)

Did your funded experience help you:

[Deepen your understanding of your coursework or field of study]: Yes

[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]:Yes

Tell us about your experience.

I worked on two related projects this summer. The first was a catalog of binding affinities between nucleotide binding site (NBS) molecules and pharmaceutical antibodies. This is useful for applications in antibody drug conjugates. The second project was utilizing this site in a purification method for single-chain variable fragments (scFVs), which are small parts of the antibody that still retain the NBS. This purification method would not need large amounts of solvent and would yield a more efficient purification. I learned that the synthesis of the binding molecules is very involved and does not always go as planned. It is important to plan ahead for these setbacks and keep a positive attitude.

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

Through the many setbacks during the summer, I learned resilience and a way to approach problems in a way to minimize losses. These skills will be important as I start graduate research

and will need to efficiently manage my time. My graduate student mentors also had the chance to teach me new skills and pass on some of their wisdom from years of doing research.

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

I plan to continue my education at the graduate level in a Ph.D. program focusing on molecular engineering. Afterwards, I hope to work in Research and Development at a pharmaceutical company.

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

I would advise them to plan for more time than they think they need. Originally I had only planned to stay for 10 weeks this summer, but I ended up staying for two additional weeks in order to finish up my work for the summer.

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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