

Summer Research Experience

This summer, I worked under Dr. Burke and did organic synthesis with hopes of applying biological aspects to it. Tyrosinase is an enzyme that is involved in the production of melanin, which is a pigment that gives our hair and skin its color. The production of melanin in the body is a complicated pathway and if anything goes wrong, it can cause skin disorders in humans. Derivatives of the organic compound resorcinol have been found to inhibit tyrosinase. Finding inhibitors can be beneficial for medicinal purposes. New drugs for skin disorders can be made based off new found inhibitors. However, in my undergraduate research, the focus was to find if certain resorcinol derivatives have stronger inhibitory effects and discover how the chemistry of that compound plays a role in inhibiting the enzyme. However, due to synthesis difficulties, enzyme assays were not conducted and the shift focused more on the synthesis of the resorcinol derivatives. To get my desired product, I had to conduct two reactions. Throughout the summer, I explored many procedures for both reactions. The most difficult part of synthesis is the purification. Each compound purifies differently and finding the right way is a process. Different methods were explored and compared. By the end of summer, I got closer and closer, but didn't quite find the ideal way to make these resorcinol derivatives. I found a lot of things in the synthesis that did not work, which is part of the research process. In the future, new research students can take my work and pick out what did work and use it as a platform for success in the future. This summer was a wonderful learning experience for me and gave me more confidence in my scientific goals for the future. Thank you to the Saint Mary's Summer Research Program for this opportunity.

