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This summer I worked as a research assistant for Dr. Rongson Pongdee in the Chemistry department of Sewanee: The University of the South. Dr. Pongdee is an organic chemist, and our research was focused on organic compounds. My responsibilities included running reactions, isolating the compounds produced, and identifying whether these compounds were starting material, the desired compound, or some undesired compound. I did this by interpreting data from the Nuclear Magnetic Resonance (NMR) machine and comparing it to my own and others' previous work. I would then use this data to decide the next course of action: whether I was unsuccessful and would retry the same reaction with different conditions or if I was successful and would use the desired product to move on to the next step of the synthesis.

My research was focused on the preparation of the initial fragment of pochonin J, a naturally-occurring compound that could later be developed into a potential anticancer agent. This fragment contained a tetrahydropyran (oxygen containing six-membered ring), which was what I was attempting to synthesize with the desired stereochemistry using the Tsuji-Trost Allylic Alkylation reaction to form the ring closure. This reaction is usually done with a palladium catalyst, but we decided to explore nickel catalysts as well to see if they would work in the same way because they are a more inexpensive alternative. First I had to create the initial compound, composed of a benzene ring with

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an alcohol and a carbon chain ending in a carbonyl, which would be used to form the ring closure. I succeeded in creating this compound in the first few weeks of the summer. The end of my research was focused solely on attempting to complete a ring closure reaction to form the tetrahydropyran, but as of yet I have not found the correct nickel or palladium catalyst to complete the ring closure. However, I still have a large amount of the initial compound remaining and have ruled out many options for palladium and nickel catalysts. This will be useful for more research in the Fall where the remaining possible catalysts will be attempted and then other options can be explored if these are also unsuccessful.

From this internship, I developed and sharpened many of my skills in the lab, such as working with ice baths, column chromatography, the NMR machine, and doing things safely and efficiently. I also developed skills out of the lab such as time management and independent research. Everyday tasks in the lab, such as TLC blotting or working with a separatory funnel, became much easier as my time practicing grew. However, I also worked on skills that are less technical but are just as important for working in the chemistry department. I learned the value of trying things over and over again to make sure there were no mistakes. This method of repetition also allows for more results which can be used for comparison and for the reaction to be done in the best way to be certain that the results are accurate and reproducible. I also learned

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patience since some of the chemical reactions could take hours to run to completion and because many of the reactions would not go as planned or expected from reading articles about them. I also learned how to multitask and manage my time efficiently since some reactions would need lots of maintenance within a small time frame, and sometimes I would be running more than one reaction at the same time. I am sure that while these skills were aimed towards lab work, they will also help me outside of the lab. I learned many useful technical lab skills, but I also believe the patience and ability to multitask will help me with my school work and even keeping my academic life balanced with my personal life.

This internship will also assist me in my career goals. I intend to go to graduate school for chemistry and eventually find a career in this field. This internship has helped me to develop some of the technical skills I need to work in Chemistry labs as well as some of the personal skills and knowledge of this field that will really help me in my journey to becoming a chemist. This internship has also made me realize that I would like to pursue a career in the field of chemistry that involves developing drugs from natural products. I believe there could be many valuable drugs found in nature that can also be synthesized in a lab and given to those in need.