This summer I worked as a Research Assistant for Dr. Rongson Pongee in Sewanee: The University of the South’s chemistry department. My responsibilities included running reactions, isolating the product from the remaining starting material or other unwanted by-products, and interpreting data from the Nuclear Magnetic Resonance (NMR) machine. The information that I acquired on a daily basis was combined with one of my lab partners, who worked on the same project as I. Together, we pursued the same goal, but by running different chemical reactions under different conditions.

The project that I and a fellow classmate worked involved a chemical reagent that I synthesized over the spring semester, a carboxylic acid. Our goals over the semester involved the addition of an aldehyde and a Weinreb amide, as well as the conversion to an alcohol, followed by the conversion to a lactone and the addition of a PMB group. The reactions that added an aldehyde and Weinreb amide proved successful early in the summer. However, the reaction yielding an alcohol proved more difficult and took roughly three weeks until we found a set of conditions that converted our carboxylic acid starting material into an aldehyde. Once this conversion was successful, the reagent was then converted to a lactone. This process took the last two weeks of the summer, as we had acquired over 80 grams of carboxylic acid that needed to be converted. However, while converting our store of carboxylic acid to a lactone, we added a PMB group to a small sample of our available lactone. The reaction, though taking a week to run to completion, yielded a large amount of product that will be used for research later in the Fall semester.
This summer, I developed and honed many different skills, from the technical skills required to work in a lab safety and efficiently to skills I can use outside the lab, such as time management and autonomy. As I worked, I grew more comfortable with the daily activities inside the lab, such as measuring reagents, creating spotters for TLC plates, organizing the hood for efficient usage, as well as many other similar tasks. Setting up reactions correctly, working them up through the usage of a separatory funnel, and isolating them via column chromatography grew easier as the summer progressed. But working in the chemistry lab made me work on more skills than just the technical ones required for working with chemicals. I learned patience, a skill highly required when working with chemical reactions. Often what seems simple in the paper used as a reference takes a week of trying before progress in any fashion is observed. If, I found out, it works at all. Therefore, patience is a valuable skill I gained over this summer’s work. I also learned to multitask and time management, both skills important when working with timed reactions. Because a reaction would take anywhere from 30 minutes to 7 days to run to completion, I found that I needed to work on both skillsets in order to produce efficient results for my PI. As I grew more confident in my abilities to multitask and task manage, I began running multiply reactions at once or purifying a product via column chromatography while simultaneously running a reaction. As all of these tasks are to be completed at specific times, and definitely before the day was over, it took some juggling to perform both tasks while giving both tasks the necessary focus and time required to ensure a usable result. While all of these skills were specifically used in the lab this summer, many of them I can see using outside the lab. For example, I still have two years left in college, and the
ability to be patient, multitask, and manage my tasks and activities will help me balance my academic course load, as well as the research I might pursue during the semesters. Also, as I’m studying abroad in this Advent Semester, these abilities will help me as I adapt to a new culture and language and school environment in which I will be studying.

The greatest thing that I learned about myself this summer is the environment in which I am able to work well. Before the summer started, I preferred a highly structured job in which I was given a task to complete and told all the details and rules surrounding the task before I completed it. However, because of the nature of chemistry research, my job this summer did not fall into that category. Instead, I was given a task to complete with steps to follow and left on my own to complete the task, taking the necessary steps to create an efficient product and result. This level of autonomy was new to me, and at first, I was uncomfortable with the amount of freedom I had to make decisions in the lab. However, as the summer passed, I became more and more comfortable with the autonomy I possessed working in the lab. By the end, I enjoyed it and found it a thrill. Now that the summer is done, I miss it and cannot wait to exercise more autonomy in my personal life instead of looking for excess approval and guidance from my mentors.