This summer, I performed research in Dr. Alyssa Summers’ lab for 8 weeks. Dr. Summers’ lab is a part of the biochemistry department, and does research focusing on epigenetic regulation in cancer cells. My lab partner, Sara Jayne, and I continued research performed by Angelica De Freitas and Sydney Philpott, having picked up where they left off upon graduation.

Angelica and Sydney’s (now SJ and my) research involves studying the role of extremely specific proteins in gene regulation of breast cancer cells. The previous project had been presented at Scholarship Sewanee, and as such we had an incredible amount of freedom with where to take the project. Obviously, the direction we took the research in was backed by evidence and plenty of study on our part, but we were tasked with planning eight weeks’ worth of experiments and then executing them, staying up-to-date in the scientific community by doing constant literature research, and presenting all of our findings on a weekly basis. The first step was probably the most difficult, first in finding any direction founded in previously performed research (i.e. finding a logical direction for the project) and then designing the experiments to take the project in this direction. Finally, it turns out that staying on schedule for an eight week period takes a great deal of doing, and this was enough work to keep us both plenty busy regardless of the literature research. Dr. Summers not only provided us with research opportunities, but also provided us with opportunities to research and write sections of a review article she is currently working on for publication, and balancing all of the opportunities and responsibilities proved to be plenty challenging for one summer.
While organizing an entire project, time management and organization are two of the most important things. This is true for any field, but especially so for science. It is critical to know not only when to do what experiment, but detailed notes must be kept on how the experiment is set up. For example, we needed to test how cells responded to treatment with a certain chemical (whether they lived or died, and at what percentage). In order to do this, we not only needed to decide when we would perform the experiment and what procedure to use, but we needed to take careful note of which cells were in which petri dish, when we treated with which chemical, who counted what, and when the cells were counted. In order to perform these experiments it was necessary to grow the cells, and tissue culture requires a great deal of care and precision. We used near-sterile technique and were beholden to the cells, messing up our entire, neatly-planned eight week schedule. This snag in the plans provided the perfect opportunity to learn to think on our feet and adapt, as well as teaching the lesson that life does not stick to the plans. Rather than just sitting and waiting idly, we took the opportunity to adjust experiments so that something could be accomplished during the downtime, and when all else failed there were always scientific articles to be read. By the end of the summer, we had amassed a sizeable chunk of data and analyzed it, but rather than having reportable results we had simply gotten a good background picture to be used in experiments during the semester. This, however, also provided learning opportunities.

Having spent eight weeks struggling to keep cancer cells alive (usually the opposite of the problem with cancer) and instead adapting as best as was possible, only to wind up with enough background data to finally begin the experiments we had elected as the future of our
project, we had some time to learn the lessons presented. Most importantly, this showed the reality of a career in research. There is a lot to be done to get even a single data point, and while it seems like simply a matter of asking the right question and then finding the answer, often times there are many smaller steps to be taken. In a meeting at the beginning of the summer I asked Dr. Summers if it made sense to look into a certain protein. Rather than disagreeing, she told me that I needed to find the journal articles to back up why I was asking the question. The question I asked was the one that needed looking into, but her point continues to stand. In the world of scientific research, it is not simply enough to seek the answer, it is important to find why it is that question we ask. Beyond just this, I got an up close and personal look at how much time goes into the research that I have spent 3 years studying. It was incredibly eye opening, and I am continuing to research in Dr. Summers’ lab over the course of my senior year at Sewanee.

My future career goals have bounced around a great deal. I entered Sewanee pre-law, but always pursued a biochemistry major. Then I dropped the pre-law track and considered going into entrepreneurial endeavors (specifically gastronomy), after which I elected to go pre-med. Finally, I decided that being a physician wasn’t at the heart of what I was after, and rather was more of a surface desire. Doing research in the lab this summer showed me that while I may not pursue an explicitly scientific career, research is something I would like to continue. I am open to the possibility of graduate school in the sciences and continuing to work in labs whether full- or part-time, as scientific studies provide an outlet for the curiosity that has so often gotten me into trouble in my youth. The ability to ask questions and follow through to the end, use creative problem solving and critical thinking skills, as well as advance the scientific community, is an
opportunity and a pursuit I cannot give up. Having gotten a taste for research, I think it is something that will follow me no matter my future path.