

Since the first time I saw a nuclear image on a computer screen, I wanted to learn more about the field. This internship at the National Cancer Institute's Molecular Imaging Program (MIP) allowed me to gain further insights into my passion for this field. I was introduced to my supervisor, Dr. Liza Lindenberg, through a family friend, who knew I was interested in the medical field. I mentioned that at a previous internship at Montgomery General Hospital in Olney, Maryland, I was intrigued with the fields of radiology and nuclear medicine. At the hospital, I spent all day with the radiologist and nuclear scientist and was amazed by how much I had learned. Dr. Lindenberg was trained in the field of nuclear medicine and offered me an internship to further develop my research interests and skills.

Interning at MIP which is located on the National Institutes of Health's (NIH) campus, I was exposed to clinical- and animal-based research. Established in 2004, MIP, directed by Peter L. Choyke, M.D, is staffed by imaging scientists, chemists, physicists, engineers and molecular biologists. This department focuses on clinical translation of targeted imaging agents for cancer imaging and is divided into three sections: pre-clinical development, physics, and instrumentation and molecular imaging. According to my internship mentor, Liza Lindenberg, M.D, the lab "investigates potential diagnostic imaging agents that employ nuclear, optical or magnetic resonance reporters in human subjects". Furthermore, the lab is interested in pre-clinical research in which they are pursuing a variety of targeted agents such as optical imaging. This is a major area of investigation because it is highly sensitive, requiring low-cost imaging equipment, and does not expose the patient to ionizing radiation.

My internship consisted of a specific project that will aid the researchers in writing a paper in the near future. I looked at 60 patients who were given a sodium-fluoride 18 ($^{18}\text{F-NaF}$) tracer which up-took in their bones. Researchers at MIP were interested in how disease spreads to the bones after a cancerous prostate is removed. This study had two arms, one consisting of patients with lesions considered to be metastatic and the other with patients with non-metastatic lesion. Each patient received scans at baseline and 6 months and 12 months post-baseline. My role was to observe lesions that presented high SUV (a unit used to measure intensity of tracer) on the PET scan and indicate whether the lesion was visible on the CT scan. If the lesions were not visible or would go unnoticed by the reader while observing the CT, this was described with the term “ground-glass”, which can be visualized as a smudged or smoky gray. Furthermore, I indicated if the lesions changed from ground-glass to dense, indicating that the lesion had become sclerotic. On August 8, 2013, I will give a presentation to my lab about my specific findings which they will use to further their own research.

This experience was absolutely fabulous because my supervisor really understood my goals for the summer. I wanted to have exposure to every aspect of the program which meant that I aided the lab technicians with the patients being scanned as well as getting hands-on experience with the mice and rat studies. On a few occasions, I was working next to the researchers and recorded the data while they dictated the data. Furthermore, my supervisor was very encouraging and often informed me about lectures on the NIH campus. During one of the lectures, I was privileged to hear the person who helped make the Human Papillomavirus Vaccine (HPV). Also, the NIH campus held a graduate school fair with universities from all across the country

which was very useful and informative. I gathered many pamphlets on different programs which will definitely guide me this year as I apply.

One of the best aspects about working at MIP was the weekly lab lectures and staff meetings. Each week, the team reviews their protocols and does a follow up of everyone's activities. It was enlightening to learn about each project the team members were working on and the meetings provided a good overview of MIP for me in my first weeks. Moreover, the lectures were often very dense; however, this type of presentations was a good learning environment for me. It allowed me to stretch myself and to learn outside my comfort zone. During the internship, I made sure to learn as much as possible and to ask questions whenever I could. The people at MIP are natural teachers and were enthusiastic about answering my questions.

The opportunity to work at MIP really highlighted that medicine is something I really enjoy as a hobby, but not as a profession. At the beginning of the summer, I was very interested in applying to medical school, but after some thought, I have decided I would rather be reading the research journals than producing the research. Currently, I am thinking about entering into the field of social work and public health so I am not venturing too far away from medicine. This summer experience really pinpointed the definition of an internship which is to discover if a career suits your interests and while I gained useful knowledge, I have decided to pursue other career paths.

Sewanee has truly aided me in my success while at the internship. Often the head of my lab would ask me if I was a science major because of my knowledge during the internship. I remarked that I was a political science major and that the beauty of a liberal arts education permits students to be exposed to all subjects. Many members of

the lab are interested in Sewanee and have asked me to give a quick summary of the university during my presentation. While presenting, I look forward representing the fabulous education and skills I have received at Sewanee. YSR!