“Working in the Experimental Pathology Laboratory has enhanced my interest in public health and has been a great learning experience. Along with the lab skills that I honed, I also garnered a better understanding of the scientific process.”

This summer I intended to acquire a valuable laboratory experience in order to gain training in laboratory techniques, learn the thought process behind designing and carrying out an experiment, and advance my academic and vocational goals, which include graduate school and a career in public health research. The past three months I worked (8 A.M - 5 P.M weekdays) as an intern in the Experimental Pathology Laboratory (EPL) of the National Cancer Institute on the Bethesda, Maryland campus of the National Institutes of Health focusing on three different projects to help advance the lab’s research goals. The EPL examines translational pathology research collaboratively with the Laboratory of Pathology, which investigates the biology and genetics of cancer and other diseases.

For the first two projects I worked in concert with others in the laboratory to aid their research, and the third project was one that I completed myself. The first project I worked on was aiding the completion of a post-doc fellow’s research on the correlation between the presence of anexin proteins and negative ovarian cancer outcomes. In addition to the laboratory support I provided running western-blots and protein extractions, I was a member of the editing team of the final paper, for which publication is forthcoming.

My second project involved viewing the histology and diagnostic process of tissue samples from a study looking at breast cancer in Ghanaian women in an attempt to discern the genetics behind the higher prevalence of triple negative breast cancer in women of African descent. For this project I observed and began to learn the processes
used by pathologists to obtain tissue samples via autopsy, embed them in paraffin after fixing them in formalin, and then cut them onto slides for staining and diagnosis. Being able to follow this process from start to end was not only a valuable experience for me, but also allowed me to observe a number of autopsies, which provided my first clinical experience and certainly has helped shaped my future career goals and aspirations.

The third project took the majority of my time. In this project I investigated melanin bleaching of formalin fixed paraffin embedded tissues in order to optimize the protocol for bleaching. Removing melanin pigments from tissue samples is important to the histological analysis of them because while melanin affords great benefit by providing protection for humans from harmful solar radiation, it hinders histological analysis of tissue samples by obfuscating morphology and obstructing antibody antigen interaction. These issues make properly analyzing the results of melanoma tissue samples for malignant or non-malignant characteristics very difficult. In designing and working on this experiment I learned a number of important laboratory techniques such as DNA, RNA, and protein extractions, western-bLOTS, and different gel staining methods.

Along with learning new skills and improving prior skills in the lab, this experience has helped me better understand the scientific process, appreciate the progression of an experiment, and acquire a more full picture of what life is like as a researcher. I presented my project at a poster session of the NIH summer symposium and I am currently working on a manuscript and hope to move it toward publication this fall along with the other paper on which I have my name, from the first project. This was an incredibly formative and enlightening summer that would not have been possible without the stipend provided by the Environmental Studies department.