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Great Neck Breast Cancer Coalition Student Research Internship

University of Massachusetts - Amherst, Vandenberg Lab

After a long three hour ride filled with silly jokes exchanged between my parents and I and different genres of music blasting one after another, we finally arrived on campus. With my windows down, letting in a breath of fresh air, I stared out at the immense campus before me. This was going to be my home for the next 3 weeks - or that is what I originally thought.

I entered this summer with an understanding that it was going to be one full of exciting and insightful findings. However, it was also going to be one of hard work and self-reflection. Entering my senior year, I worried about the many college applications I had to write and how I would make the big decision of where I want to spend the next four years of my life. Being at the University of Massachusetts in Amherst helped me explore these concerns and pave a path in the direction I want to follow towards a future career in medicine.

After spending the morning in a Lab Safety required course, my roommate and school friend Belle Lim and I finally entered the long sought after Vandenberg Lab. We instantly fell in love with Dr. Vandenberg and the three grad students working in the lab, who all greeted us with an infectious smile. Within minutes after meeting her for the first time, I was amazed by Dr. Vandenberg's down-to-earth personality. She immediately defied my stereotypical fear of a research environment being one that is quiet and harsh. I was astonished by the sociable environment she created; one filled with intellects who were able to have academic conversations that they were enthusiastic about. Dr. Vandenberg encouraged us to ask questions, try new things, and compose our own set of data. The highly productive atmosphere of the lab was contagious and we immediately got to work.

Dr. Vandenberg and the other students in the lab were patient with us. Through weekly lectures about the history of endocrine disrupting chemicals (EDCs) and how they mimic vital hormones, such as estrogen, Dr. Vandenberg broadened my knowledge about how we were being affected by daily products, despite their containing low doses of EDCs. These meetings painted the larger picture of our project and helped us understand the importance of the work being done. Estrogen is crucial to one's body, for it allows for the growth of breast tissue, and is most effective during the windows of vulnerability that occur during mammary gland development. However, when there are estrogenic chemicals such as Propylparaben (PP) and Oxybenzone (BP-3) binding to estrogen receptors, there is an increase in growth activity and the formation of cancer cells. At the lab, we tested how these two estrogenic chemicals would affect mammary gland development in pre-pubertal and pubertal mice exposed to the chemicals during pregnancy and lactation.

We were soon surrounded by numerous slides filled with mammary gland tissue that requested staining. I have now mastered the many methods of staining we learned: Hematoxylin and Eosin used to stain the nucleus and surrounding tissue respectively, Toluidine Blue used to stain mast cells, and Trichrome used

to stain ducts. It was shocking at first to discover that staining this many slides was only a minute part of the project we would be conducting. Although this process took several days, it was necessary when we moved on to the next step: microscopy. We found that the various stains had allowed the mammary glands to look like beautiful pieces of artwork under the microscope. Using an inverted microscope, Dr. Vandenberg taught us how to detect the differences between what we were looking for, for example, mast cells, and the “junk” that can be found on slides. After spending hours looking through the tiny binoculars, the tissues began to blend with one another, showing little variation from one to the other. Soon enough, however, we began to produce a set of data that was our own! And much to our surprise, there was a significant difference between the control group and the mice exposed to the endocrine disrupting chemicals.

Not only was this an academic summer, but it was also one filled with lots of fun memories. Being a part of the UMASS Summer Programs allowed Belle and I to branch out and meet new people and try new activities. My days were filled with lots of groundbreaking discoveries, laughter, and happiness, and I was not ready to say good bye after just three weeks. Having permission from GNBCC and Dr. Vandenberg, I extended my research experience and was once again filled with gratitude for the GNBCC.

I cannot thank Laura Weinberg and Lisa Levine and the rest of the Great Neck Breast Cancer Coalition enough for giving me the wonderful opportunity to work alongside such a prestigious researcher. Without them, I would not have been able to discover new hobbies, meet new people, and have a collegiate experience. I would also like to acknowledge Dr. Vandenberg and those who spent their time at the Vandenberg Lab helping us and ensuring our project ran smoothly and that we learned as much as we could. I gained so much insight about the environment and its effect on our bodies, as well as received a true research experience that I cannot wait to replicate in the years to come. I am extremely proud of the work Belle and I were able to accomplish during our time on campus, and I look forward to sharing all that I have learned from my four weeks at the Vandenberg Lab. The Great Neck Breast Cancer Coalition has given me a once in a lifetime experience, and for that I will forever be grateful!