

Community Outreach: High School Students involved in Breast Cancer Research

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The Huntington Breast Cancer Action Coalition (HBCAC) and the Great Neck Breast Cancer Coalition (GNBCC) awarded scholarships to two high school students with the aim of improving communication between the scientific and public communities. We spent two weeks at the laboratory of Dr. Ana M. Soto and Dr. Carlos Sonnenschein at the Tufts University School of Medicine in Boston in order to learn about the environmental links to breast cancer. Under the guidance of Dr. Soto, Dr. Sonnenschein, and our mentor Cheryl Michaelson, we gained extensive knowledge as to the ubiquitous nature of endocrine disrupting compounds (EDC's) in the everyday environment as well as the effects of Bisphenol-A (BPA), which was originally developed as a synthetic estrogen. This substance eventually found its way into the manufacture of plastics and many other everyday products. This is just one example of how an endocrine disruptor can be found nearly everywhere in our environment.

At the laboratory, we actively participated in research involving these EDC's. We learned various techniques used in the Soto-Sonnenschein Laboratory to study them. These included taking photographs of mouse mammary gland tissue using a microscope (photomicrography), and analyzing the relative fractions of three types of structures (ducts, terminal ends, and alveolar buds) present in these glands. We also learned various staining techniques including Hematoxylin and Eosin (H&E) staining and immunohistochemistry (ICC) staining. Using ICC staining, we were able to mark the presence or absence of the protein Ki67, which is commonly associated with cell proliferation. We also learned about groundbreaking laboratory techniques such as culturing tissue in 3D, which greatly facilitates the study of EDC's on living tissue.

Work in this lab has demonstrated how exposure to EDC's such as BPA, even at very low concentrations, increases the risk of mammary gland tumors in mice and rats. The hypothesis (and fear) is that these results are applicable to humans and may be responsible for increasing rates of the development of breast cancer in humans. Our goal, as students, is to spread this knowledge to members of our communities, and, hopefully, raise awareness for these issues. We hope to do this by keeping in close contact with the GNBCC and HBCAC and participating in fundraising events. We now serve as a link between the scientific and public communities and will help to educate our peers about the effects of EDC's.

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