The Great Neck Breast Cancer Coalition (GNBCC) and the Huntington Breast Cancer Action Coalition (HBCAC) awarded scholarships to two high school students, Vita Jaspan and Melissa Wing, 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. 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.

At the laboratory, we actively participated in research involving these EDC’s. Techniques practiced within the laboratory setting 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. The dark brown nuclei are positive.

One way to analyze mammary glands from treated and untreated animals is to embed them in paraffin, cut the tissue into 5μm thick sections and stain the sections with Hematoxylin and Eosin to see basic structures.

This section shows cells that have been treated to show which nuclei have the protein Ki67. This is a marker for cell proliferation. The dark brown nucleti are positive.

In order to quantify the different structures in the gland: Ducts, terminal ends, alveoli, we use a grid method of sampling randomly throughout the gland. In the image below, a representative mouse gland is shown with the grid superimposed on the image.

![Image of a mammary gland being used to quantitate structures using the grid method](image-url)

Previous work in the lab showed that the endocrine disruptor BPA affected the relative density of these structures. (L.N. Vandenberg et al. Reproductive Toxicology, Volume 26 (2008) page210-219)

This graph shows the relative volume fraction of three types of structures found in a 3 month old mouse mammary gland. The x-axis shows the amount of BPA in µg amounts that the mice were exposed to per kilogram body weight per day while they were embryos in utero. These animals were not exposed after birth. The amount of alveolar buds is significantly different in the 0.25 BPA group when compared to the control.

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