

Abstract Category: Community outreach/engagement and/or advocacy strategies/programs

### Effect of Prepubertal Exposure to Environmental Contaminants in the Rat Mammary Gland

Farooq Ansari<sup>(1)</sup>, Travis Fishstein<sup>(1)</sup>, Johana Vanegas<sup>(1)</sup>, Lucas Bidinotto<sup>(1)</sup>, Fathima Sheriff<sup>(1)</sup>, Kara Snider<sup>(1)</sup>, Julia S. Pereira<sup>(1)</sup>, Coral Lamartiniere<sup>(2)</sup> and Jose Russo<sup>(1)</sup>.

<sup>(1)</sup> Breast Cancer Research Laboratory, Fox Chase Cancer Center, Philadelphia, PA, 19111, USA.

<sup>(2)</sup> Department of Pharmacology and Toxicology, University of Alabama at Birmingham, Birmingham, AL, 35294, USA.

#### **Background**

Over the course of one month, we had the opportunity to participate in the BCRL through “The Students and Scientists Environmental Research Scholarship” sponsored by *Prevention Is The Cure*, Inc., a campaign of the Huntington Breast Cancer Action Coalition (HBCAC).

#### **Objective**

The aim of this internship was to learn how scientific research was conducted through studies on the effects of environment contaminants in the rat mammary gland.

#### **Work performed**

To accomplish our objective we studied the morphology and the effects of prepubertal exposure to Bisphenol A (BPA) and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), two well known endocrine disruptors (ED) in mammary glands. For our experiment we used whole mounts (WM) and tissue sections of mammary glands, collected and prepared at a collaborating institution. Lactating rats were treated either with solvent (control groups), BPA or TCDD. The treatments were given as follows, either: a daily intragastric administration of BPA for 21 days; or TCDD when the pups were 14 and 17 days of age. Tissue was collected from female offspring of all groups at 50 days of age.

First, we learned about the mammary gland structures, by counting the number of terminal end buds (TEBs) from previously prepared WMs. Secondly, we learned how to recognize the cell division phases, counting cells that were in metaphase and anaphase, in 500 epithelial cells from hematoxylin and eosin stained sections. Ten slides per group were counted and the treatments were maintained blinded. Thirdly, to assess the interpersonal variation the individual results from both groups were counted by each of us and compared. Lastly, we learned how to use the student t-test to assess the statistical significances of the data.

#### **Conclusions**

Through this experience, we gained an understanding of the research process and the significance of environmental contaminants to human health. We understand that it is possible that early exposure to hormonally active environmental compounds may affect the architecture and cell division of the rat mammary gland during critical stages of development. These effects could facilitate the occurrence of mutations and eventually initiation of cancer.

(Ansari and Fishstein were supported by HBCAC and this work was supported by grant U01 ES/CA 12771 from NIEHS and NCI)