

STUDENTS & SCIENTISTS UNITED FOR BREAST CANCER PREVENTION RESEARCH

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Throughout my stay at Tufts and at the lab at New England Medical Center I learned a great deal about the lab and what it takes to work in one. In addition I realized for the first time the amount of time and effort that is necessary for an experiment to not only be documented, but to run so that there are no flaws in the experiment.

There are many procedures that are taken to see the results of the numerous rat experiments in the lab. After the mammary glands are taken out of the rat they are put onto a slide where they are then covered and preserved in a procedure called bagging the mammary glands. At first the slide goes through numerous fixes and alcohols and then it goes into a solution called toluene which dissolves all the fats so you can see what has happened to the glands and then they are stained and put into bags to preserve them so they can be observed and any abnormalities can be recorded.

Then for the tumors and such things like organs, such as the ovaries, are taken out and are put into a waxy paraffin solution so that they can harden into a block for sectioning. Sectioning is the process where you would take the waxy block and put it onto a machine that will cut the waxy block with the hardened tumor or organ into extremely thin slices that would then be put onto a slide which would go through two different types of procedures so the experimenters can see the results. The first and most basic type of procedure is the H and E which is the most general and is used to see the structure, using the chemicals Eosin and Hemotoxylin to see the different structures. Hemotoxylin dyes the nuclei of the cell blue while the Eosin dyes the cytoplasm and the extra cellular matrix a pinkish color so that the cells can be seen under a microscope to see if there are any abnormalities. There is also the ICC which also used the Hemotoxylin and Eosin, this procedure is used to see cells that don't stain with the brown dye. This staining uses a combination of peroxidase, a primary antibody, dab and a secondary antibody to see the structures.

Then finally the other procedure I learned was e-screening where to make sure there are no chemicals or hormones or things of that nature that could affect the results in any of the tools they will be using they take little amounts of the things being used and then add cells that grow profusely in the different types of hormones to see if there is any in the tools and objects.

The general lab experience was an unbelievable one; my co-workers could not have been nicer. I learned a great deal about the work that it takes and the amount of time it takes to run a single experiment. These experiments can run for years because they need to be perfect and have to have the ability to be repeated. I also learned many things like all these procedures which I probably would never have been able to do if I wasn't given the chance to do this.

I have learned a great deal about environmental exposures and breast cancer. Well, I learned a lot more about the general effects of the chemical BPA. Many things such as plastic bottles are made out of this cheap chemical. And when unsafe levels of this chemical leach into the water, lets say a person is drinking this could possibly be very detrimental to a person's health. Yet the study at the Ana Soto lab found that these unsafe levels when ingested by mature adult rats had little to no effect on there health but when rats who were exposed pre-natal to this chemical there were many defects in the baby rats and mice. Many of them had tumors or abnormal mammary glands. Many developed breast cancer and many of the specimens also developed numerous neurological defects. This chemical when ingested by a mammal acts as an endocrine disruptor; this specific chemical mimics the hormone estrogen. One can only imagine why this could be so detrimental to the health of a mammal. Because the minute something foreign is put into a body and starts disrupting the normal endocrine system it is almost impossible not to see changes in the specimen. Yet BPA is not the only chemical out there that can do this. Now as food, beverage, plastics and all these different types of industries are creating new cheaper ways to make their products through the use of artificial chemicals. What they don't know is that by using these chemicals they could be putting their consumers in grave danger. Because although the effects will not be immediate, little by little people could possibly begin to see increases in neurological problems and an increase in tumor cases, in addition to many other things. People will be wondering where the spike came from and it could possibly be from the increase in chemicals that act as endocrine disruptors.

The overall experience at Tufts was an unbelievable one. At first I was a little intimidated by the lab workers and everyone. It was a bit of an overwhelming experience probably because I had not been home for more then 12 hours when I was shipped off once again. But after I was settled in and figured my way around and figured out the subway system, my time spent there became a lot more enjoyable. I began to learn a great deal about what it meant to work in a lab and to be a part of a study. It was not like writing a research paper, it was so much more; to do this it takes years and years of schooling to be a part of an experiment such as the one I witnessed. Working with people who were both older and smarter than me was also very intimidating, yet as the weeks progressed I began to feel to be a part of the team. And many of the lab technicians took me under their wing and showed me the ropes. Many things that I had learned I would probably never learned if I were never given the chance to do such a program. But the great experience was not just at the New England Medical center but at Tufts as well. I had to adjust to living by

myself and figuring my way around the campus and the city. I must say it was a learning experience even just getting to the subway and going from Tufts to New England Medical was a learning experience. I think that it was an unbelievable and unforgettable experience and I would recommend it to anyone who even had the slightest interest in it.