

Justin Baroukhian, 2013

GNBCC Students & Scientists Research Program

Great Neck North High School

My first day was a wild adventure full of sound, fury and wonder – Okay, to be fair it was actually made up mostly of intense safety training but I never experienced a dull moment at Warner Babcock. After the first day was behind me, my partner Sammy and I were ready to begin brainstorming ideas to explore during our four privileged weeks at the lab. The ideas we came up with were all over the spectrum from searching for perflurooctanoic acid in non-stick pans to comparing the toxicity of different types of cookware but, it was the guidance from our mentor, Dr. John Warner that shaped our project. Like most scientists, Sammy and I were merely trying to prove that a problem existed which is helpful, but far from revolutionary. Dr. Warner helped us see our project in a whole new light – instead of establishing that a problem exists, just dive in and find a replacement.

Dr. Warner then introduced us to a molecule that he had designed years ago called Vinylbenzyl Thymine (VBT) - a most amazing substance which changes its configuration upon being irradiated with UV light. We decided to use this amazing property to apply VBT to the field of dye stabilization in textiles which currently involves carcinogenic chemistry namely, polychlorinated biphenyls (PCBs) which have been linked to the development of breast cancer.

We spent the remainder of the first week developing a rough version of our methodology for testing VBT's effectiveness as a dye stabilizer in textiles. Our basic process was as follows: the textile would be cut into 1.5"x2" rectangles from a master roll, then washed with soap and water to remove any substances that may have settled while the textile was in storage, next the

fabric would be dried and afterwards the VBT polymer would be applied in an aqueous solution and allowed to dry, next the fabric samples were irradiated with UV light on both sides and finally the samples were submerged in dye baths then washed with water, dried and processed. Processing included the sample being attached to a data collection sheet together with information about the conditions that produced the sample and finally the sheet being scanned and digitally analyzed.

While the methodology proved to be effective as a whole, Sammy and I had many variables we had to work out before we found the ideal conditions for applying dye to a textile treated with VBT. Some of the variables we eventually nailed down were: the concentration of the dye (in solution), the method for drying samples, the intensity of UV light to apply, and the method for applying the dye to the textile.

Ultimately, the data we produced will facilitate further research into VBT's application as a green replacement for the currently carcinogenic dye stabilization pathways. Furthermore, I grew not only as a scientist but as a person during my time at the lab and got to be a part of an experience which is often reserved only for degree holding scientists and is hardly ever opened to high school students. The entire staff of the Warner Babcock Institute (WBI) and Beyond Benign Foundation was welcoming and courteous and at all times made Sammy and me feel at home and a part of the team. Having the opportunity to speak with real researchers about their colorful backgrounds was personally one of my favorite parts of the entire experience. I got to learn how people with very different backgrounds all ended up in the same amazing space and it really helped me gain some perspective for my own future career.

I just want to take this time to thank the Great Neck Breast Cancer Coalition (GNBCC) for creating one the most amazing and unique academic experiences in existence and then allowing me to take part in it. I hope to keep making my entire GNBCC and WBI family proud for years to come and will always look back upon my summer with fond memories (so if you're reading this right now, thinking about whether or not you should apply for the program – do yourself a favor and DO IT!)