Welcome to the first issue of Environmental S.T.O.R.I. (Student Translation and Outreach Research Initiative). This dedicated newsletter provides a platform to highlight the extraordinary accomplishments of our high school students from the Long Island region. A Road Map for Prevention could not be complete without focusing on the contributions made by young adults; they are in fact, Our Guardians of the Future. These students embody a combination of knowledge, focus and self-determination, and the Students and Scientists Environmental Research Scholarship Program provide them with the right connections. It is our hope that these young adults will redefine the future of emerging science and how it translates into regulatory Action.

Lisa Kratter, Program Coordinator

Welcome to our first edition of Environmental S.T.O.R.I. (Student's Translation and Outreach Research Initiatives) Newsletter devoted exclusively to our prestigious HBCAC Students and Scientists Environmental Research Scholarship Program.

It is with great pride that we forge forward. The Students and Scientists Environmental Research Scholarship Program equips our youth with a solid knowledge base, providing a forum for high school students to integrate their discoveries into their personal lives, as well as educating the community about environmental factors impacting public health. As we partner with neighboring High School Science Research Departments, world respected Principal Investigators encompassing an array of laboratories and research centers nationwide, and of course, our exemplary group of young scientists - we empower our prestigious program to attain new heights.

Students are awarded “Scholarships of Merit” enabling them to take advantage of summer internship opportunities, while utilizing their acquired knowledge to raise public awareness regarding environmental triggers of disease, reform public policy and shape the way for improving upon health and wellness. The Environmental STORI Newsletter will highlight the scope and involvement of our students who have played an integral role as they share their perspectives, knowledge, and offer constructive insight on how to reduce exposure to environmental toxins, creating a healthier living environment for all.

Support from HBCAC’s Prevention Is The Cure signature event Bag Ladies Benefit; Edge Electronics Charity Golf Outing; Walk FM 97.5 Radio; Town of Huntington; Suffolk County; and a grant from US Representative Steve Israel enabled the coalition to appoint six students with “Scholarships of Merit.” “These eager, bright young women and men engaged in hands-on research under the tutelage of Principal Investigators at Fox Chase Cancer Center, in Philadelphia; Silent Spring Institute, in Massachusetts; Stony Brook University, in Long Island, and Tufts University, in Massachusetts. Moving forward, it is our expectation to maintain these valued partnerships while we continue to seek out new opportunities.

Our students demonstrate their commit-
Over the years HBCAC’s Students & Scientists Environmental Research Scholarship Program has continued to grow. Since 2007, eighteen students have been selected from four high schools on Long Island to participate in the program. We are so proud of these young ladies and gentlemen and their accomplishments. We know the knowledge they gain will serve them well and we look forward to the contributions they will make in our community and beyond.

Recently, our students received awards of recognition for their abstracts and scientific poster presentations at the National Breast Cancer Environment Research Program Conference (BCERP) which convened November 17 – 18, 2011 in Cincinnati, OH. The BCERP Program is sponsored by the National Institute of Environmental Health Sciences (NIEHS) and the National Cancer Institute (NCI). These exceptional students who attended were: Joshua Solomowitz of Huntington H.S., Melissa Wing of Northport H.S., Megan Hansen of Huntington H.S. and Kayla Neville of Commack H.S. The prestigious research facilities represented students’ environmental research work from: Fox Chase Cancer Center, Stony Brook University, Soto/Sonnenschein Laboratory at Tufts University School of Medicine and the Silent Spring Institute.

“The partnerships formed between the high school teachers, science administrators, and the coalition provides an unprecedented opportunity for Long Island students to witness the state of the science at laboratories around the United States. We will count on these young folks to be the generation that moves environmental health research into action.” Karen Joy Miller, HBCAC president.

“The BCERP Conference was truly an eye-opening experience for me. I was so fortunate to have this opportunity to meet scientists who are on the cutting-edge of disease prevention re-

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search. Much of the data presented will change the world and hopefully help mankind’s fight against cancer.” Josh Solomonowitz, a junior, Huntington HS.

“The BCERP Conference was one of the most memorable experiences in my entire high school career. It was inspiring to see highly acclaimed scientists and advocates presenting their work and it truly was eye opening. The poster session was one of the highlights of this event because we got to meet and talk with these scientists about their research on a more personal level. It also gave us the opportunity to communicate with the scientists and advocates about our projects and the work we accomplished during our internship. This is an experience that I will always remember.” Melissa Wing, a junior, Northport HS.

“The BCERP Conference really was a great experience for me. It’s great to have the opportunity to go to one of these conferences because not only do you gain knowledge about how you can improve your own lifestyle, but you can circulate this knowledge back into your community and make others more aware of how they can live healthier lifestyles. I learned a lot at this conference and I’m already starting to put together something that will increase the awareness of breast cancer in my community among younger groups. First, surveys will be distributed to 7th and 8th graders at the middle school I

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I recently went to the Breast Cancer and the Environment Research Program’s (BCERP) Extended Environmental Exposures Annual Meeting in Cincinnati, Ohio, on November 17-18. This scientific meeting seeks to build on the growing interaction between biologic and epidemiologic lines of research inquiry.

Attending a National Scientific Conference was a very thrilling experience. The first day of the conference, I listened to scientists present their work about Windows of Susceptibility. Windows of Susceptibility are certain periods during a person’s life when one is likely to develop breast cancer. From this series of speakers, I learned how, on certain periods in my life I need to be more conscious about decisions I make, as they could possibly change my life forever. After the first poster session, I went to “Lunch with the experts” where I was able to interact with the researchers in a more casual way. I asked many questions about the Windows of Susceptibility that I learned about.

The next sessions involved advocacy work and communicating the research to the public. I understood how if research is conducted and new information is obtained, it is important to translate this message to the public. I take for granted my ability to read and my access to the internet to obtain information on current scientific findings. After listening to the presentations, I realized how many people around the world lack the ability to gain information about diseases such as breast cancer. It amazed me how in a world filled with so much progress, people still do not know basic information about cancer.

My lab partner, John Yang, and I presented our research completed over the summer at Dr. Sitharaman’s lab at Stony Brook University and presented a poster entitled “Towards Graphene-Based Imaging and Drug-Delivery Agents for Breast Cancer: Cytotoxicity of Graphene Oxide Nanoribbons in Human Breast Cancer Cell Lines”. I explained my research to representatives from the National Cancer Institute and the National Institute of Environmental Health Sciences, as well as many Principal Investi-
Melissa Wing, Northport HS

Getting accepted into the BCERP Conference with my lab partner, Vita, felt as though all of the hard work we did over the summer had paid off in such an accomplished way. This would now be a once in a lifetime opportunity to share the experience and knowledge of endocrine disruptors we gained from our internship. It was an overwhelming feeling to know that we’d be meeting and interacting with renowned scientists and advocates from around the country.

When the day finally came to depart for Cincinnati I was still in shock that this was really happening. Arriving at the airport with the other students was exciting, especially since this was going to be my first flight. It gave me an insight as to what research scientists experience in terms of traveling to various places for collaborations, and to gain acquired information from other researchers around the country and world. When the conference began it was like nothing I had ever seen before. I couldn’t believe I was in a room filled with remarkable scholars who were willing to take the time to personally meet and share stories of what their work involved. It was an absolute honor to listen to the many presentations given because it was immediate how passionate they were about their area of study. I began to realize that we were some of the only high school students that would ever get a chance to attend this type of a conference which made me appreciate this opportunity to an even higher degree. The poster session was one of the highlights because we got to communicate with other scientists about the research we did on a more personal level as well as learn about what their research involved and the progress being made. When our time was up in Cincinnati I left with a new confidence and an incredible feeling of accomplishment for contributing to this national conference.

The poster session was one of the highlights because we got to communicate with other scientists about the research we did on a more personal level as well as learn about what their research involved and the progress being made. When our time was up in Cincinnati I left with a new confidence and an incredible feeling of accomplishment for contributing to this national conference.

I can honestly say that those three days were some of the best in my high school career. I had never been on an airplane before or traveled much and this really opened my eyes to new surroundings. The other students and I made many fond memories during the trip that I will never forget. From exploring the mall by the hotel and going out to dinner, to having fun and enjoying a visit to the aquarium, there was never ending fun the entire time. The students and adults were some of the most intelligent, generous, and charismatic people that I’ve ever met. This was definitely an experience that I will carry with me for the rest of my life.

Josh Solomowitz, Huntington HS

My experience at the BCERP Conference cannot be said with few words. My name is Josh Solomowitz, and in November this year, I went with multiple students from the HBCAC and GNBCC to a science conference held in Cincinnati, Ohio. There, my partner Yonatan, and I presented our data collected from our summer internships. We met many scientists who also presented their research as well. As it turned out, the scientists explained that it would also be a poster competition, in which every poster there was entered. Two of my peers ultimately won first place, topping everyone else, including professional researchers.

My data consisted of all my research collected at Fox Chase Cancer Center in Philadelphia, PA. I studied rat mammary glands, and how numerous hormones affected their development. My data concluded that hCG, a hormone released during pregnancy, was very effective in reducing the risk of acquiring breast cancer.

The BCERP Conference was truly an eye-opening experience for me. I was so fortunate to have this opportunity to meet scientists who are on the cutting-edge of disease prevention research. Much of the data presented will change the world and hopefully help mankind’s fight against cancer.

I hope to spread the word about breast cancer awareness in my community, and currently I’m involved in a science project that will educate my peers. Hopefully, I will be able to speak to one of the lower grades in my school district to bring them the information they need.

This wouldn’t have been possible without the biggest advocates of breast cancer prevention that I will ever meet: Karen Miller, Laura Weinberg, and Lisa Kratter. I am very thankful for the hands-on-experience I enjoyed and that I will never forget.
Megan Hansen, Huntington HS

Going to the BCERP conference was really an amazing experience for me. It was quite intriguing to talk with other professional scientists from all over the nation, and there was so much to be learned from them. I gained a lot of knowledge, and I will certainly circulate that knowledge back into my community to improve my life as well as the lives of others living here.

I have already started to bring my newly-acquired knowledge back into my community. What I propose to do is split into two steps: the first one involves creating a survey testing one’s knowledge of breast cancer and breast cancer-related topics, and administering it to 7th and 8th grade students at Finley Middle School. The second one will be collecting these surveys, recording the results, and seeing what the kids do and do not know about breast cancer. I would then use those results to assist me in creating and presenting to them an informative yet interesting PowerPoint presentation, which would educate them about breast cancer.

But why middle school students? Middle school students, who are generally between the ages of 11 and 13, should be approaching or already going through the first steps of puberty, during which time vulnerability to breast cancer is increased. They are about to enter what is known as a window of susceptibility, a certain period of one’s lifetime during which one’s risk of breast cancer is increased or vulnerable to being increased, and during which exposure to harmful carcinogens or endocrine-disrupting chemicals can have worse effects than it can during other periods of one’s life. One may also acquire breast cancer during one of these windows of susceptibility and not even know it until a much later age, when the cancer shows itself. It is, therefore, important that they must know what habits and exposures to avoid while going through these stages.

I am taking the steps to complete this project not because I am required to, but because I, having attended the BCERP Conference and learned some valuable information, feel that it is my duty to educate those in my community and spread my knowledge about breast cancer. I also plan to carry out this project.

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**Student’s Summer of Science**

**Harrison Ferlauto - Commack HS**

Ever since my Mother’s diagnosis in June of 2009, Breast Cancer has been a part of my life. This summer, it was my life. This past spring I was awarded a fellowship, courtesy of the Huntington Breast Cancer Action Coalition (HBCAC), to perform breast cancer research at the Fox Chase Cancer Center in Philadelphia during the month of July. There, I studied structures of the rat mammary gland under the supervision of Dr. Jose and Irma Russo, a world renowned husband and wife breast cancer research team. Specifically, I was part of a project that attempted to eliminate mammary gland stem cells by treating rats with hormones that mimicked pregnancy. This is important because stem cells become cancerous if exposed to an environmental agent such as BPA or radiation. During pregnancy, mammary gland stem cells differentiate into other structures so in theory, a pregnant woman’s mammary glands have no stem cells and cannot become cancerous when exposed to an environmental agent.

The goal of our research was to develop a drug that could eliminate mammary gland stem cells during a woman’s window of susceptibility. The window of susceptibility is a period in a woman’s life, 14 to 24 years of age, where her mammary glands contain high amounts of stem cells which have the potential to become cancerous when exposed to envi-

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**Ishara Lareef - J.R. Masterman HS, Philadelphia PA**

During the summer of 2011, I had the opportunity to be a part of the Students and Scientists Program at the Breast Cancer Research Laboratory, directed by Dr. Jose Russo at the Fox Chase Cancer Center (FCCC). The previous summer, I had volunteered in the same laboratory, but participated in a different experiment, which tested the effects of retinoic acid on breast epithelial cells.

This summer’s internship provided a different experience than that of last year’s. Instead of conducting experiments, we learned about the roots of breast cancer prevention. The other students and I learned that there is a certain period of time known as the window of susceptibility in mammals. During this time, females are highly responsive to environmental carcinogens, which eventually cause tumor growth. The window of susceptibility for Sprague-Dawley rats, which are the experi-

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**Josh Solomowitz - Huntington HS**

My internship at Fox Chase Cancer Research Center proved to be an analytical experience in more ways than one. My first day in Pennsylvania started off with a bang, literally! We arrived in Philadelphia on July 4th, our nation’s 235th birthday, in time for Philly’s magnificent fireworks show. My mom, dad, and I also enjoyed a patriotic concert by the Philadelphia Pops Orchestra on the lawn of Independence Hall, and a late night visit to the Liberty Bell.

We arrived two days early for my one-month internship at Fox Chase Cancer Research Center, co-sponsored by the Huntington Breast Cancer Action Coalition (HBCAC) and Prevention Is The Cure. I was chosen for this prestigious position to work alongside world-renowned scientists as a result of a recommendation from my high school chemistry teacher, Ms. Dame Forbes, completion of an essay, and an interview.

The next morning, we did some last-minute shopping before heading to my new “home,” where we were greeted by Betty Cirigliano, the owner of the house in Rockledge, PA, where I would be living for the duration. Over the years, Betty had hosted dozens of students from all over the world, including Japan, France, Italy, and Canada. Before saying goodbye to my parents, I unloaded my necessities—a gallon of Tide detergent, a case of Coca-Cola, a new Wilson basketball, and a month’s supply of Reeses Peanut Butter Cups.

I awoke the following morning with a bittersweet sensation. Here I was in a new town, on my own for the first time in my life, with feelings of independence and trepidation. At 8 A.M., my roommate, another student from Long Island, and I set out for our one mile trek to the Center. When we first walked in, we bumped into two ladies who would turn out to be one of my bosses, Dr. Fathima Sherriff, and her daughter, Ishara, a co-intern who would be working with me. Before taking our grand tour of the Center, we met up with the final intern of the team, Yonatan David, a high school student from Great Neck, New York.

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I don’t know where to begin, but I can definitely say I thoroughly enjoyed my internship experience at Silent Spring Institute. It was my first time on an internship, as well as my first time away from home for a prolonged period of time. I had really expected the place to have more rigid qualities like a tight time schedule, but it turned out that there was no strict schedule and that I could work at my own pace, which I really enjoyed. It wasn’t an actual laboratory, as I thought it would be, but I had more materials available to use than I would have with one of my other research projects (for which I must find and obtain the specific materials on my own). My partner and I were still able to conduct our experiments.

Everyone there was very friendly and we were given a warm welcome. Meeting world-renowned scientists like Dr. Brody and Ruthann was a great honor for me, especially because I aspire to be an environmental scientist. I have designed and conducted research science experiments two in the past two years. I knew this experience with research science was going to be different because the topic would already have been chosen for us. However, I didn’t plan on coming up with a specific experiment under an already-selected topic to do here- I thought we were going to conduct an experiment that had already been planned but not done yet. That made me feel independent, but since it was unexpected and we didn’t have a whole lot of time to think about it, we had some trouble coming up with exactly what to do, so designing our experiment may have been rushed.

Our topic was on optical brighteners, chemicals in certain laundry detergents that create the illusion of clothing being much brighter than usual. What causes this is the absorption and re-emitting of UV light as blue light, which counteracts with the appearance of dull spots. When released into the environment through wastewater, they are toxic to small organisms such as fish; some of the chemicals from which they are derived are also extremely harmful to humans. The two things we tested were the optical brighteners’ rate of photodegradation- since optical brighteners chemically break down when exposed to light for extended periods of time- and which types of fabrics- such as cotton, denim, silk, and synthetic types- retain them the most.

I don’t think any of our research on optical brighteners was of major significance, but that is the outcome of most experiments. No experiment can technically be considered a “failure”- they usually lead to greater experiments that go deeper into the topic or expand the topic and may be of more significance- and I hope to elaborate on this experiment during my research science course this year. And here’s another positive outcome: I got my mom to buy an eco-friendly laundry detergent containing zero optical brighteners.

Overall, I think this is a great program, and any student that wishes to work as a scientist in the environmental or health field should definitely consider something like this. I would like to acknowledge the workers and scientists at SSI for having me at the institute, particularly Melissa White for being our mentor and guiding us through designing this experiment. I would also like to thank Agi Sardi for her hospitality and for being such a great housing hostess, as well as her son, Zach. They made my stay very enjoyable. Most importantly I want to thank you all, the members of the Huntington Breast Cancer Action Coalition, for choosing me to be an intern. I deeply appreciate everyone’s efforts that allowed me to have this experience. Thank you all so much!!!

Student’s Summer of Science
Megan Hansen – Huntington HS

Harrison Ferlauto - Commack HS

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Student’s Summer of Science

Melissa Wing – Northport HS

This past summer I was given an amazing opportunity by the Huntington Breast Cancer Action Coalition to spend two weeks at the Soto and Sonnenschein Lab at Tufts Medical Center in Boston. During this time I got to personally meet and learn from the professors, Ana Soto and Carlos Sonnenschein, as well as all of the researchers working there.

My internship at the Soto and Sonnenschein Lab was an enjoyable experience and what made it memorable was how welcoming and kind everyone was. This lab was mainly focused on studying the chemical Bisphenol A (BPA) which is found in everyday objects and can lead to an increased risk of health problems, such as breast cancer, and mammary gland development, if a person is exposed to it. Bisphenol A is a synthetic estrogen and an endocrine disruptor, meaning it mimics estrogen in the body. This can have negative and very serious health effects on humans and animals. BPA has been proven by experiments involving rats and mice that at low doses it has significant effects on the body, including the development of tumors and birth defects in their offspring.

While BPA is a harmful substance it is also important to know that it is not the only one of its kind. There are thousands of chemicals that can do the same damage as BPA and there’s not enough government action being taken to screen these substances for their effects on humans, animals, and the environment.

Since this lab works with mammary glands the researchers talked to us a lot about them and taught us about mammary gland development at different stages and the structures in them. My lab partner and I got to view these mammary glands under a microscope and take pictures using a camera that was attached to the microscope. After we took many images of them we got to put a specially modified grid over them and count the number of terminal end buds (TEB), alveoli buds, stroma, and ducts there were in each of them in order to run statistical data.

During my internship, along with learning information about this toxin, I also got to experience what it was like to work in a professional lab setting as a researcher. Throughout the day other researchers would take the time to show me and my lab partner various procedures that were critical for their experiments such as sectioning tissue and viewing slides using a 3D confocal microscope. We even got to attend their lab meetings where they would share interesting findings and talk about where they were as well as where they were going with their experiments that were in progress.

Being away from home gave me a real sense of independence and responsibility which made this experience very meaningful. Taking the subway into Boston from my dorm at Tufts everyday to get to the lab and working with some of the most caring and respected researchers in this field as well as bonding with an amazing lab partner was one of the best experiences of my life. I would like to give the biggest thanks to the Huntington Breast Cancer Action Coalition, everyone at the Soto and Sonnenschein Lab, and my lab partner Vita Jaspan for making this an unforgettable life experience.

Ishara Lareef - J.R. Masterman HS, Philadelphia PA

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ated were treated with the three different peptides, hCG or two control groups. There are six different types of structures normally found in mammary glands throughout its development. These structures vary depending on their differentiation, with the most primitive, or least differentiated, being more susceptible to becoming cancerous. We analyzed these pictures for the structures, and depending on the most prevalent structures per picture, we came to a conclusion in regards of the effects of the peptide groups.

Learning about cancer and the fight for its prevention or cure is not all I learned this summer during my internship at FCCC. On weekdays, I learned about different people, and how people interact with one another in both social and work environments. I made new friends, and I got to know some great people. On the weekends, I gave a few tours of Philadelphia and administered some lessons on Philly slang (instantly deemed nonsensical by my peers). Looking back on my experience, the knowledge and friendships I gained were well worth the experience. For this I am very grateful to Dr. Russo and his lab, along with everybody who made my internship possible.

The Time Has Come

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Top-tiered representatives from the National Institute of Environmental Health Sciences (NIEHS) and the National Cancer Institute (NCI) along with many world-renowned Principal Investigators were in attendance and expressed the highest of praise to our Long Island high school students.

Personally speaking, I could not be more proud of the dedication and accomplishments of all our students who have graduated from our program of prestige. I am looking forward to the continuation of a thriving, vastly expanding scientific journey.
Congratulations to our 18 student alum …
Our Guardians of the Future

Lisa Kratter,
HBCAC Program Coordinator
Students & Scientists Environmental Research Scholarship Program

Megan Hansen, 2011
Huntington HS,
Silent Spring Institute

Kayla Neville, 2011
Commack HS,
Stony Brook University

Joshua Solomowitz, 2011
Huntington HS,
Fox Chase Cancer Ctr.

Harrison Ferlauto, 2011
Commack HS,
Fox Chase Cancer Ctr.

Melissa Wing, 2011
Northport HS,
Tufts University

Ishara Lareef, 2011
JR Masterman HS
Philadelphia,
Fox Chase Cancer Ctr.

Emily Lopes, 2008
Commack HS,
Fox Chase Cancer Ctr.
attends Cornell Univ.

Shirou Wu, 2008
Commack HS,
Fox Chase Cancer Ctr.
attends Brown Univ.

Zachary Rotter, 2008
Walt Whitman HS,
Fox Chase Cancer Ctr.
College of Wooster, OH

Pablo Palacios, 2010
Walt Whitman HS,
Silent Spring Institute
accepted to Johns Hopkins Univ.

Chirag Munim, 2010
Northport HS,
Silent Spring Institute
attends Univ. of Michigan

Kimberly Shen, 2010
Walt Whitman HS,
Silent Spring Institute
accepted to Columbia Univ.

Savitha Racha, 2010
Commack HS,
Tufts University
attends Boston Univ.

Farooq Ansari, 2009
Commack HS,
Fox Chase Cancer Ctr.
attends Stony Brook Univ.

Travis Fishstein, 2009
Northport HS,
Fox Chase Cancer Ctr.
attends Middlebury College, VT

Rubab Rehman, 2009
Walt Whitman HS,
Stony Brook University
attends Columbia Univ.

Aliyah Cohen, 2009
Huntington HS,
Silent Spring Institute
attends Univ. of California, Davis

Tehreem Rehman, 2007
Walt Whitman HS,
Fox Chase Cancer Ctr.
attends Columbia Univ.
Kayla Neville - Commack HS

The night of July 4th, I was filled with excitement. While everybody else was watching the fireworks and eating hot dogs, I could only bite my nails in anticipation. Tomorrow, July 5th, was the day I would begin researching at the Sitharaman Laboratory at Stony Brook University, thanks to the Students and Scientists Environmental Research Program sponsored by the Huntington Breast Cancer Action Coalition.

When I entered the lab, I saw some people typing away at their computers; others were wearing lab coats as they stood next to scientific apparatuses. I have to admit, I was a little intimidated. I went upstairs where there was an orientation for the new summer researchers. I met John, who was also in the Students and Scientists Environmental Research Program. We filled out paperwork, and then we learned about the different experiments being conducted in the Bioengineering Building. The research building was very diverse, and it was exciting to discover the many fields that involved bioengineering.

After orientation, I met my mentor, Sayan, who explained the project that John and I would be working on. I learned that I would be investigating the cytotoxic effects of graphene oxide nanoribbons, a form of carbon nanoparticle, in breast cancer cells. In particular, I would work on the MCF-7 breast cancer cell line, while John would work on SKBR breast cancer cell line. The terminology was a bit intimidating at first, but once Sayan explained exactly what the project would be, I felt at ease.

He explained that multi-walled carbon nanotubes have many potential applications in drug delivery, scaffolds, and imaging. They can be visualized as sheets of graphene, one-atom-thick sheets of carbon atoms densely packed in a honeycomb pattern, that are rolled around each other. From these nanotubes, we synthesized nanoribbons by unzipping the nanotubes longitudinally.

It was astonishing to learn that although so many uses for carbon-based nanoparticles have been discovered, their toxicity status remained uncertain. Before they could be incorporated into useful applications, their toxicity had to first be determined. We used many cytotoxicity assays, such as lactate dehydrogenase, neutral red, clonogenic and cell counting assay in order to determine the LD$_{50}$ value, or the dosage required to kill half the cells after a specified time. This needs to be accomplished before the nanoparticles can be used in the human body, and also to make sure that the nanoparticles are safe to use in the body.

I felt like I belonged in the lab immediately; on the first day I became actively involved in the project. For example, on the first day I created several different concentrations of nanoparticles suspended in DSPE-PEG and maintained my cell cultures. I would continue repeating these procedures, since both nanoparticles and cells were needed for all my experiments.

There were other high school students working in the lab, and I soon became acquainted with all of them. Of course, there was John. Though we were both from the Students and Scientists Environmental Research Program, he was sponsored by the Great Neck Environmental Research Program, he was sponsored by the Great Neck Environmental Research Program, he was sponsored by the Great Neck Environmental Research Program, he was sponsored by the Great Neck Environmental Research Program. We became very close and collaborated on our projects. Another student, Kevin, was working on a project similar to mine, except he was using HeLa Cells (a type of cervical cancer cell). He was a part of the Simons Program and came from Pennsylvania for the summer. Prady and Sonia were two other high school students. They were working on functionalizing the carbon-based nanoparticles, a process which makes them water soluble. All of us frequently ate lunch together, research transformed from not only a great academic opportunity into a fantastic social experience as well.

Aside from working on our experiments, there was a lab meeting held every Friday morning. There were two types of lab meetings that alternated each week. For the first kind of lab meeting, three research articles were uploaded to Research Gate. Research Gate was a website that resembled Facebook; however, it was designed specifically for scientific researchers. We were expected to read the articles and then discuss them at the lab meeting. The articles contained many words and concepts I did not understand, but if I asked Sayan or another member of the lab for help, they were more than willing to provide it. I certainly was not as knowledgeable as the other members in the lab, but they did not look down upon me. In the second kind of lab meeting, everyone would present their work over the two weeks and share what was accomplished. These lab meetings fostered the communication that is so critical in scientific research.

These past two months I have learned so much; before this experience I had no idea what graphene oxide nanoribbons were! I truly felt like I was a part of the lab and I was so lucky to be granted the opportunity to continue my research throughout the school year. I am excited to enter a research paper into science fairs and share my gathered information with others, because education is a necessary first step to preventing any disease, including breast cancer.

Megan Hansen, Huntington HS

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Community Action … Students Give Back:

HBCAC members, Laura Sposato and Karen Miller give the Congressman an update on Students and Scientists program.

LI Fall Festival held at Hecksher Park, student Melissa Wing (far right) and HBCAC members are greeted by Congressman Steve Israel.

Rotary Club of Huntington’s Tom Finnegan (middle) invited Joshua Solomowitz (far left) and Kayla Neville (far right) to speak at their annual charity dinner.

Health fair hosted by LI Parent Magazine at Whitman Mall, Kayla Neville volunteers with HBCAC members Meryl Kessler and Michele Caro.

Huntington Awareness Day, Fall 2011 with volunteers Megan Hansen and LITEA members, Siraat and Kabir Zafar.

HBCAC members, Laura Sposato and Karen Miller give the Congressman an update on Students and Scientists program.
Following the tour, we were brought into a conference room to meet the rest of the team and to find out what the project we would be working on was all about. We were introduced to our direct report, Jhanzelle Francis, who gave us a PowerPoint presentation on breast cancer development in female rats. Then, the head of the breast cancer department, Dr. José Russo, briefed us on their main objective, that is, to test proteins and hormones in rats and find ways to prevent breast cancer in humans.

Carcinogens can only mutate in the mammary gland by attaching to terminal end buds. Dr. Russo was looking to create a vaccination of either proteins or hormones that reduced the number of Terminal End Buds – essentially preventing cancer from spreading in the body. It was the interns’ job to count the structures we found and compare them to the control group to see which treatment worked best. We looked at numerous rats, many yielding different results based on the treatment that was given.

I was anxious to get started. We proceeded to view pictures of rats’ mammary glands, or breast tissue, and record what we found. A mammary gland is composed of various structures. We noted many terminal end buds (TEB’s), terminal ducts (TD’s), and lobule type ones. Our mentor chose a few practice slides in order to get us used to the process.

I was extremely excited to be working alongside professionals who were dedicated to preventing breast cancer and helping mankind. Each one was very accommodating and friendly and always willing to help out. They took the time to explain things we didn’t understand and showed us shortcuts around the facility. They really helped make this a memorable experience for all of us.

That weekend was very eventful. After returning home from work Friday night, Betty informed me the power was out. This had to be one of the hottest days of the summer, and with no air conditioner blaring, everything felt sticky. Fortunately, Yonatan had invited me to sleep at his host family’s house (which had air conditioning). While I was brought up as a Reconstructionist Jew, I enjoyed the chance to experience life with an Orthodox Jewish family and found their customs very interesting.

Our team of four interns spent another week counting. This was tedious at times, but most of us finished the remainder of them on time. We were challenged and determined to compare results and show which treatment worked best. As this was our first real experience with mammary glands, there were various discrepancies in our data. Once finished, it would leave us about two hours before we were to go on. This left us little time to rehearse. We quickly distributed the slides each of us were going to present, practiced what we were going to say, and before we know it, it was show time.

We all gathered in a large conference room, with over 30 spectators eagerly waiting. I was nervous and tired, having gotten little sleep the night before. But I didn’t let that faze me however. Our 45-minute presentation seemed to go on for hours, yet was received with thunderous applause. A question and answer session followed, and finally a “look back” video, made by our team, was shown.

Afterwards, I was greeted by my parents, who I hadn’t seen for a whole month. I was congratulated by some of the other scientists, as well as Dr. Russo. My goodbyes were brief, however, because my parents and I were due to attend my brother’s recital at the Tilles center, where he would be performing with an elite orchestra later that evening. After goodbyes we rushed back to Long Island.

As we drove home, I knew I had received an opportunity that very few ever get the chance to experience. It was quite an adventure. I got to live and depend on myself, enjoying and taking responsibility for my life well before college. Having just completed my sophomore year in high school, I was fortunate to have this once-in-a-lifetime opportunity that I will never forget. That night, my twin brother’s concert ended with a crescendo, much the way my first day in Philadelphia began.

Kayla Neville, Commack HS

(Continued from page 4)
HBCAC’s Students and Scientists Environmental Research Scholarship Program is a place for discovery, awareness and the exchange of ideas. Enter a bold and exciting new classroom and take an unprecedented journey, working beside world-renowned researchers at a national state-of-the-art facility. Students & Scientists internship program is designed for highly motivated students with a proven interest and academic strength in biology and chemistry. The program focuses on the importance of environmental research and the causation of diseases.

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