ENVIRONMENTAL S.T.O.R.I.

(Student Translation and Outreach Research Initiatives)

*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.*

Are YOU A Guardian Of The Future?

Students & Scientists
Environmental Research Scholarship Program

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.

Long Island students join with Frank Biro, MD, Cincinnati Children's Hospital and host for 2011 BCERP Annual Extended Exposures Conference.

The Time Has Come

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, on 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-

(Continued on page 9)

Long Island Students Present At The National Breast Cancer & Environment Conference

NCI, Gary Ellison, PhD, congratulates students on the awards received for their poster presentations.

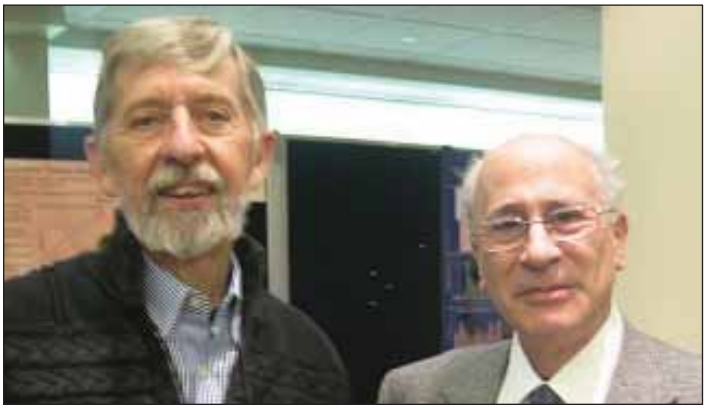
Over the years HBCAC's **Students & Scientists Environmental Research Scholarship Program** has continued to grow. Since 2007, eighteen students have been selected from four high schools on Long Island to participate in the program. We are so proud of these young ladies and gentlemen and their accomplishments. 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-

(Continued on page 3)



Jose Russo (right), MD, Fox Chase Cancer Ctr. and Coral Lamartiniere (left), PhD, University of Alabama at Birmingham at the BCERP conference.

Students attend a workshop on Key Messages and Communicating Findings: Collaborating with the Public.

Long Island Students Present At The National Breast Cancer & Environment Conference

Megan Hansen speaks with Claudia Thompson, PhD. NIEHS

Kayla Neville speaks to Mary Gant, MS and Dr. Thompson, NIEHS

(Continued from page 2)

search. Much of the data presented will change the world and hopefully help mankind's fight against cancer." ***Josh Solomowitz****, 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

(Continued on page 4)

Students enjoy dinner out with Lisa Kratter, (1st left), Karen Miller (2nd left) and Laura Weinberg (center).

Photo op of students taking some leisure time while in Cincinnati, OH.

Long Island Students Present At The National Breast Cancer & Environment Conference

Students discuss their summer internship projects with NIEHS members and attendees.

(Continued from page 3)

went to, Finley Middle School, to see how much they know about breast cancer, and then I will present to them the information I learned at this conference, so they know all about breast cancer and how they can take action to prevent themselves from getting it. Imagine how much of a difference this is going to make, all because I attended that conference." ***Megan Hansen****, a junior, Huntington HS*

"The BCERP Conference was a wonderful opportunity that allowed me to share my summer research with others, and in return gain knowledge through learning about their experiences. I learned so much from interacting with such esteemed scientists, researchers, and advocates." ***Kayla Neville,*** *a junior, Commack HS*

"The Students and Scientists Environmental Research Scholarship Program equips young people 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. Our students demonstrate their commitment and abilities in countless ways. Most recently, at the BCERP National Conference, held in Cincinnati, Ohio, not only did our students

Josh Solomowitz (right) and Yonatan David (left) speak to Liam O'Fallon NIEHS

cover important research, but truly understood the science and were able to articulate in a sophisticated, intelligible direction. Their contributions were most favorably received by the science community. Personally, I could not be more proud of the dedication and accomplishments of all of the students who have graduated from our program of prestige." ***Lisa Kratter,*** *HBCAC Program Coordinator.*

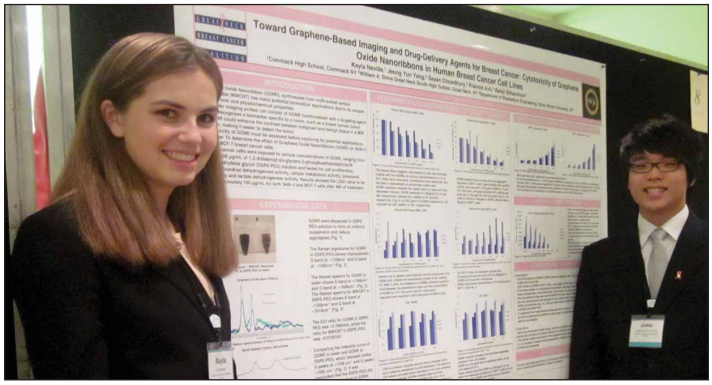
For more information about the program, please visit www.preventionisthecure.org or call HBCAC office at 631 547-1518.

Kayla Neville, Commack HS

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



Kayla Neville(left) presented abstract poster along with John Yang (right) from their internship at Stony Brook University.

amazed me how in a world filled with so much progress, people still do not know basic information about cancer.

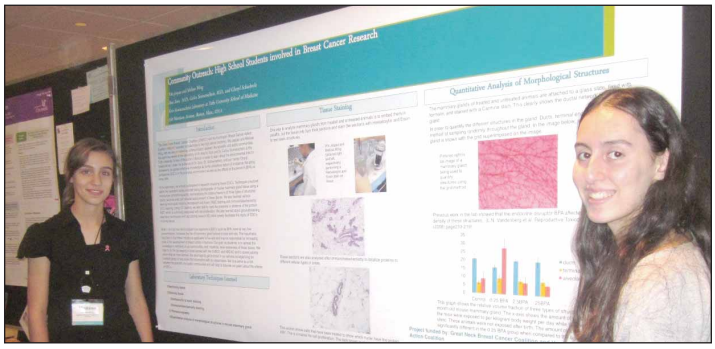
My lab partner, John Yang, and I presented our research completed over the summer at Dr. Sitharaman's lab at Stony Brook University and presented a poster entitled "Towards Graphene-Based Imaging and Drug-Delivery Agents for Breast Cancer: Cytotoxicity of Graphene Oxide Nanoribbons in Human Breast Cancer 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 Inves-

(Continued on page 13)

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.



Melissa Wing (left)) presented abstract poster along with Vita Jaspan (right) from their internship at Tufts University.

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.

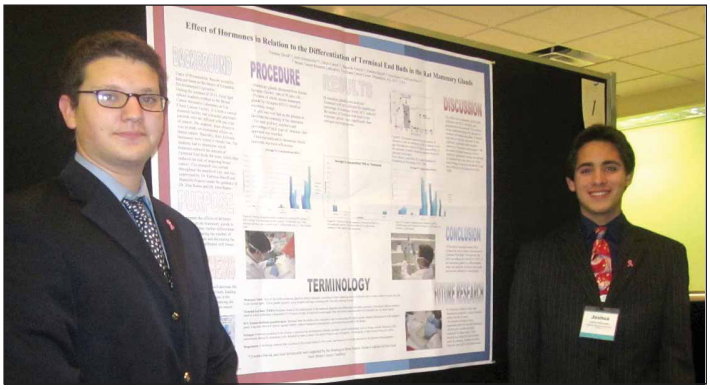
Josh Solomowitz, Huntington HS

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.



Josh Solomowitz (right) presented abstract poster along with Yonatan David (left) from their internship at Fox Chase Cancer Center.

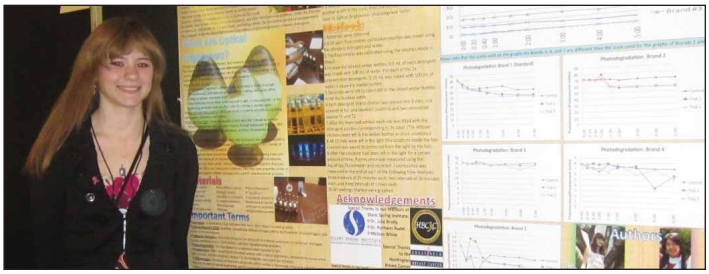
This wouldn't have been possible without the biggest advocates of breast cancer prevention that I will ever meet: Karen Miller, Laura Weinberg, and Lisa Kratter. I am very thankful for the hands-on-experience I enjoyed and that I will never forget.

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.



Megan Hansen presented abstract poster of work with Catherine Wang (not present) from their internship at Silent Spring Institute.

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

(Continued on page 11)

Long Island Teen Environmental Activists (LITEA) ***Speak Out ...***

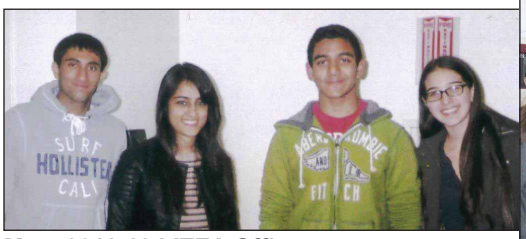
Launched 2007, LITEA is sponsored by Prevention Is The Cure.

By Afnan Gilani, 2011 President

The purpose of LITEA is to educate others on some of the most prevalent environmental toxins, what products contain them, and how exactly these chemicals are contributing to increasing rates of diseases in humans. Some of the most recent emerging trends in disease patterns can relate to environmental exposures.

On the issue of hydraulic fracturing, the public health office of New York State has deemed methods used to obtain natural gasses unsafe. More than 25% of the chemicals used in natural gas operations have been known to have adverse effects on humans, which include mutations, brain damage, birth defects and cancer. This detrimental process as we all know is called "Hydrofracking." Three of the known carcinogens used in Hydrofracking are benzene, formaldehyde, and naphthalene. These chemicals are so toxic that even the slightest concentration of them exposed to our air or ground water supply can pollute our environment enough to cause both short term and long-term health effects on humans.

On behalf of LITEA, we call on NYS Governor Cuomo to ban Hydrofracking!



Meet 2011-12 LITEA Officers
Co-Presidents, Afnan Gilani, Malverne HS and Zara Naqvi, Francis Lewis HS
Secretary, Siraat Zafar, Walt Whitman HS
Co-Vice Presidents, Sydney Markowitz, Syosset HS and Pablo Palacios, Walt Whitman HS (not in photo)

LITEA members were instrumental in the BPA ban legislation, shown here with Leg. Steve Stern

About Long Island Teen Environmental Activists - (LITEA) is a community based; volunteer driven organization comprised of like-minded high school teenagers who wish to heighten the public's awareness of environmental pollutants and their effects on human health. Meetings take place once a month at the South Huntington Public Library. Members participate in events that provide them with the opportunity to earn community service such as the cleaning of local parks. LITEA is on Facebook!

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.

Josh Solomowitz, Ishara Lareef, Harrison Ferlauto conducted their internship project at Fox Chase Cancer Center.

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-

(Continued on page 8)

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 experimental model studied at the Breast Cancer Research Laboratory, is between 35 and 55 days of age; for humans it's between 14 and 24 years of age. However, if, during this time period, a female becomes pregnant, and therefore has the pregnancy hormone hCG in her body, tumor rates decrease drastically.

Together, the other students and I analyzed breast cell structures to test the effects of different peptide groups from the hormone hCG, with the hypothesis that the peptides would act in the same cancer preventative manner as that of the larger hormone they were derived from. We looked at pictures of whole mounts, whose procedure requires placing breast cells on a slide for evaluation, and then analyzed the pictures in regards to the quantity of structures. The mammary glands we evalu-

(Continued on page 9)

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 nations' 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.

(Continued on page 13)

Student's Summer of Science

Megan Hansen – Huntington HS

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.

Megan Hansen interned at Silent Spring Institute under mentors Dr. Julia Brody and Ruthann Rudel.

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!!!

Harrison Ferlauto - Commack HS

(Continued from page 7)

ronmental factors. It is during this period that a woman would acquire breast cancer. Studies demonstrate the window of susceptibility in Japan during World War II. When the atomic bomb was dropped on Hiroshima and Nagasaki during World War II, almost all of the women between the ages of 14 and 24 developed Breast Cancer later on in life. One important concept to understand is that the cancer might not show itself right away; it could hide in the genome for years and appear at any moment throughout a woman's life.

So what does this research mean for society? Well, if you have a daughter 14 to 24 years of age, be careful of the things she comes in contact with. For example, try not to put plastic cups and utensils in the dish washer, for the heat causes the plastic to break down and release toxic chemicals such as BPA. Also, stay away from fertilizers and cleaning agents because they often contain carcinogenic ingredients. Lastly, try not to be in the area when an x-ray is being taken. It would also behoove your daughter to avoid too much UV light from the sun. It is always best to be on the safe side because there are many unknown substances that will cause mammary gland stem cells to become cancerous.

In addition to the research aspect of the fellowship, my experience at Fox Chase was wonderful. My host, Betty Cirigliano, was one of the nicest people I have ever met and it was a pleasure to stay in her home. We often sat on her porch and talked about the day's events. She even cooked for me from time to time. The Huntington Breast Cancer Action Coalition did a tremendous job of placing me with Betty and Dr. Russo. They also made sure that all the students were safe and well fed during our stay. I thank them very much and I look forward to working with them in the future. I am committed to spending time helping to teach community about what I have learned about Breast Cancer.

Watch You Tube video of FCCC internship http://www.preventionisthecure.org/index.php/publications-and-media

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.

Melissa Wing interned at Soto and Sonnenschein Lab at Tufts Medical Center.

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 confocul 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 meeting and 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

(Continued from page 7)

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

(Continued from page 1)

ment and abilities in countless ways. Most recently, after a rigorous selection process our "Young Scientists" were invited to present their research at the National Institutes of Health (NIH) Breast Cancer Environmental Research Program (BCERP) National Conference, held in Cincinnati, Ohio. Each of the students presented their data and were able to articulate their findings to the scientists attending the conference in a sophisticated, intelligible manner. Their valued contributions were most favorably received by the science community. 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

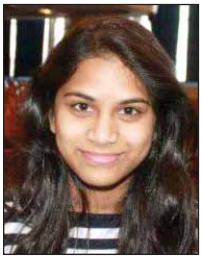
Megan Hansen, 2011
Huntington HS,
Silent Spring Institute

Kayla Neville, 2011
Commack HS,
Stony Brook University

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

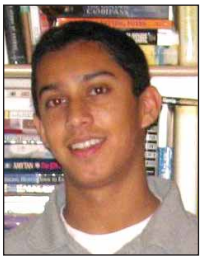
Harrison Ferlauto, 2011
Commack HS,
Fox Chase Cancer Ctr.

Melissa Wing, 2011
Northport HS,
Tufts University



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

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.

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

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

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.

Tehreem Rehman, 2007
Walt Whitman HS,
Fox Chase Cancer Ctr.
attends Columbia Univ.

Student's Summer of Science

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 Breast Cancer Coalition. 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

Kayla Neville (far left) with lab partners at Sitharaman Laboratory at Stony Brook University.

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

(Continued from page 6)

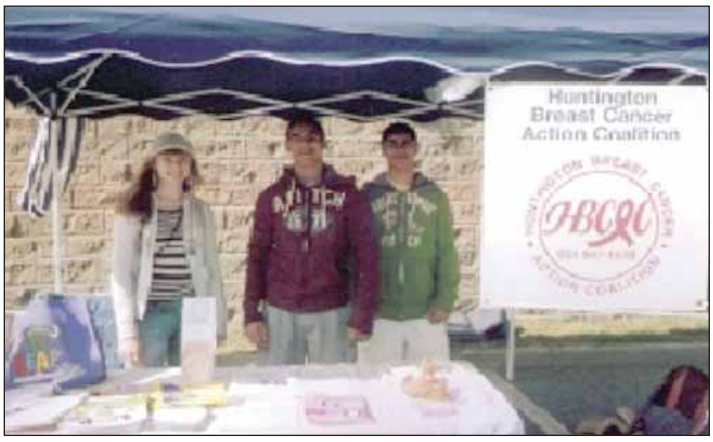
project as soon as possible, as it can never be too early to start learning how to prevent breast cancer. Why wait until one has breast cancer to get rid of it, when changing one's habits now can prevent one from getting breast cancer at all? The answer: there is no good or logical answer. What I hope to do is to let this fact be known throughout my community, so that it may start changing its ways as a result of that knowledge, that the cure to breast cancer is prevention.

Community Action … Students Give Back:

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

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

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.



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

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

Josh Solomowitz - Chase For A Cure

(Continued from page 7)

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 four-and-a-half days to complete our PowerPoint presentation before the entire team of scientists, families, and friends.

Not all of our time in the lab was spent looking at pictures, though. On occasion, we were able to shadow some of the scientists and view the experiments they were conducting. We also proceeded to dissect mammary glands ourselves! Yonatan, Ishara, and I even created a system in which the glands were stored before viewing. Afterward, we typed up a protocol that the scientists could follow to handle the process in the future.

For our last weekend in Philadelphia, Yonatan and I had bought tickets to a Phillies game. Despite the unbearable heat that day, we had a blast watching them win. We also ventured into the town of Philadelphia with Ishara. She proved a great tour guide, and we even got to attend a Spanish fiesta in town for the weekend.

During our final week at Fox Chase, preparations were now in motion for the PowerPoint presentation we had been working towards. We spent countless hours charting graphs, finalizing data, and editing. The work had been divided equally among the four of us, and despite disagreements, we finished barely 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)

tigators. This opportunity to share my knowledge with others was truly remarkable, and I felt so accomplished when everybody could easily understand the difficult concepts I was describing. Out of all the scientists and experts who presented at the event, we won the award for the "Best Basic Research Poster". This prestigious award was never given to high school students before.

The opportunity to participate in the BCERP Extended Environmental Exposures Annual Meeting was one I will never forget. I thank the Huntington Breast Cancer Action Coalition for the opportunity to participate in this event, as it has shifted my perspective about the world around me.

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.*

Find out how a local high school student can get involved with the program, contact HBCAC office (631) 547-1518, or visit Prevention Is The Cure website to download an application: http://www.preventionisthecure.org/images/stories/pdfagh2/ssapplication08.pdf

HBCAC is on Facebook.

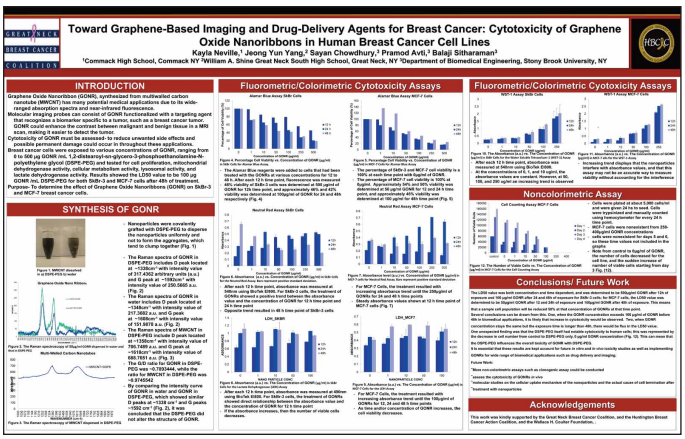
To receive e-alerts and stay in Constant Contact, visit the link below to join our list on our Facebook page
http://www.facebook.com/pages/Huntington-Breast-Cancer-Action-Coalition-HBCAC
or send us your email address to friends@hbcac.org.

SAVE THE DATE:
BCERP CONFERENCE
NOVEMBER 14-16, 2012

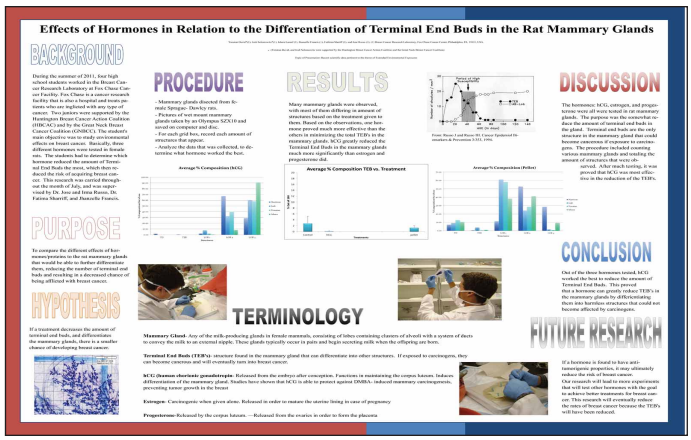
San Francisco, CA

www.bcerp.org

Students & Scientists 2011 Abstract Posters

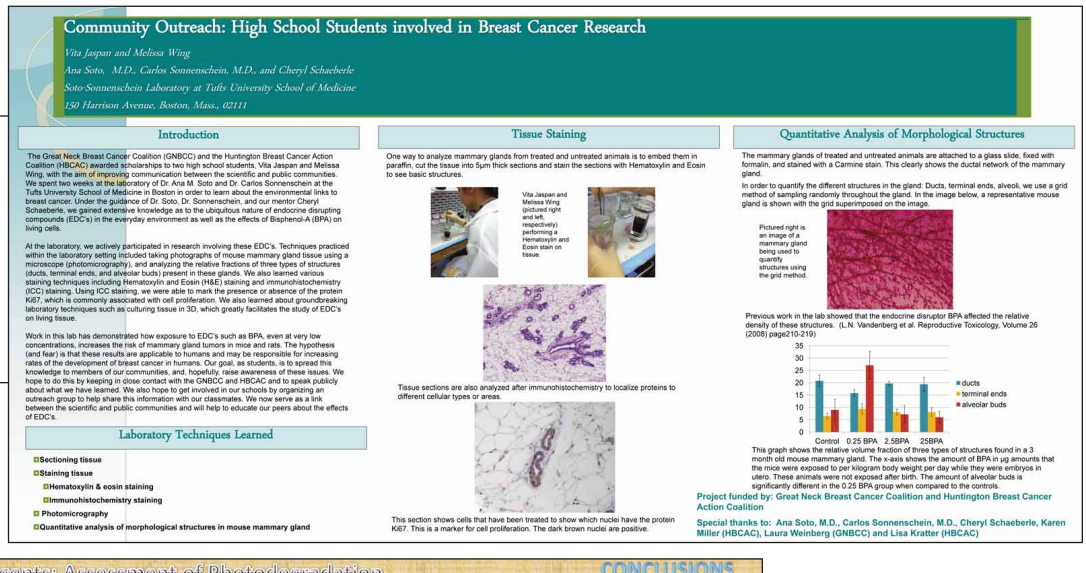


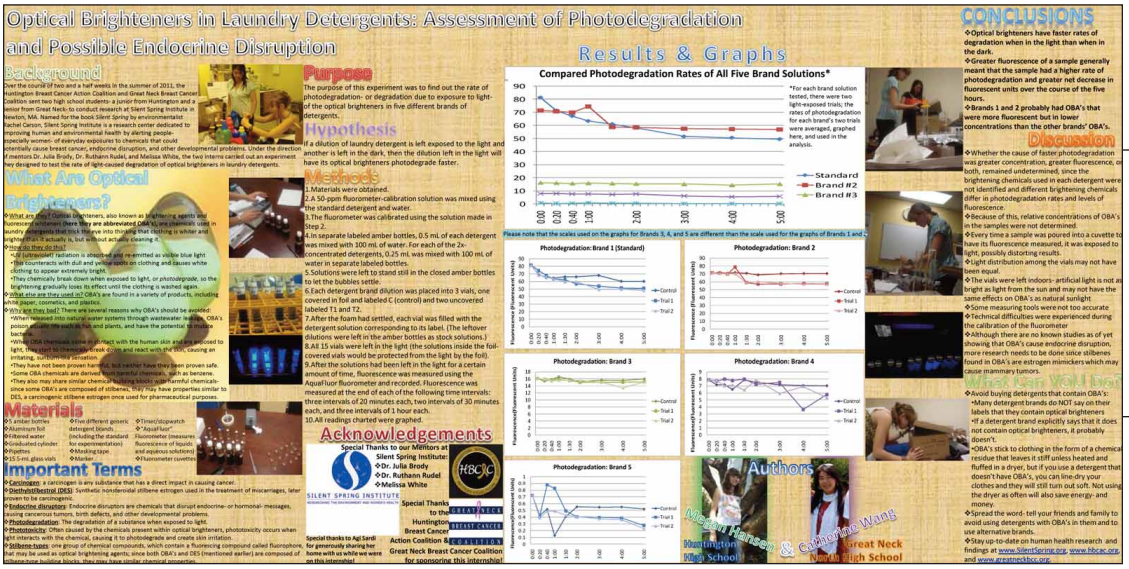
Kayla Neville, Stony Brook University, Sitharaman Laboratory Toward Graphene-Based Imaging And Drug-Delivery Agents For Breast Cancer: Cytotoxicity Of Graphene Oxide Nanoribbons In Human Breast Cancer Cell Lines



Joshua Solomowitz, Harrison Ferlauto, Ishara Lareef, Fox Chase Cancer Ctr. Effects Of Hormones In Relation To The Differentiation Of Terminal End Buds In The Rat Mammary Glands

Melissa Wing, Tufts University, Ana Soto Laboratory Community Outreach: High School Students Involved In Breast Cancer Research





Megan Hansen, Silent Spring Institute Optical Brighteners In Laundry Detergents Assessment Of Photodegradation & Possible Endocrine Disruptors

The Huntington Breast Cancer Action Coalition
Mailing Address: P.O. Box 1446, Huntington, NY 11743
www.hbcac.org **631.547.1518**

NONPROFIT ORG.
U.S. POSTAGE
PAID
HUNT. STA. NY
PERMIT NO. 56

Huntington Breast Cancer Action Coalition
P.O. Box 1446 • Huntington, NY 11743

Invest in Your Future
Support the Next Generation of Scientists

HBCAC's Students & Scientists Environmental Research Scholarship

prevention is the cure™

is a program of Prevention Is The Cure, Inc.

Pledge Form:

I would like to sponsor a student internship experience in a cancer research facility.

- □ **Partial Sponsorship $1,000**
- □ **Partial Sponsorship $500**

Please accept my contribution in the amount of _____

Name: _____

Address: _____

City/ State / Zip: _____

Phone: _____ **Email:** _____

Visa/MasterCard accepted: Acct #_____ Expiration _____

Signature: _____

HBCAC is a 501c3 not-for-profit organization (ID# 11-3159224).
All contributions are tax deductible as allowed by law.

Please make checks payable to – HBCAC / Prevention Is The Cure, 746 New York Avenue, Huntington, NY 11743.