MINORITY WOMEN IN STEM DISCIPLINES

Examples from:

The Louis Stokes Alliances for Minority Participation Program

JUNE 2011

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TEXAS A&M UNIVERSITY SYSTEM LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION (TAMUS LSAMP)

Bridge to Doctorate – *"Women in Science"*

Erica Bruce, PhD is an Assistant Professor in the **Department of Environmental Science** at **Baylor University**. She received her B.S., M.S. and P.D. in Civil/Environmental Engineering from Texas A&M University. Dr. Bruce's efforts focus on improving toxicity estimates linking exposure to environmental concentrations of hazardous chemicals to both human health effects and ecosystems. In vitro human and mammalian cell and tissue culture systems are used to assess the effects of exposures to environmental contaminants and elucidate mechanisms of action. She has conducted human health assessments to exposed populations in the Republic of Azerbaijan and the Houston Ship Channel. The goal of her research is to reduce the uncertainty associated with a risk assessment, reduce time and cost involved with extensive experimentation, build quantitative structure-activity relationship (QSAR) models to predict toxic endpoints, and elucidate toxic mechanisms of actions. With over 12 publications and 9 currently pending, Dr. Bruce has a host of honors, awards and professional affiliations, including the National Science Foundation Louis Stokes Alliance for Minority Participation (LSAMP), Bridge to Doctorate (BTD) Fellow (Cohort I), Society of Women Engineers (SWE), and National Institute of Health, Scientific Advisory Board, Centers for Children's Environmental Health and Disease Prevention.

A Ph.D. candidate in **Agricultural and Biological Engineering** at **Purdue University, Lindsay Birt** specializes in quantifying the impacts of best management practices and developing a management framework to track the effectiveness of watershed efforts. She received her B.S. and M.S. in Biological and Agricultural Engineering from Texas A&M University. There, Lindsay evaluated interrill erosion and runoff rates from compost applications mainly used as a best management practice for highways hill slopes. Her research locations abroad include Pantnagar, India, Guanajuato, Mexico and Paris, France. Lindsay currently has 2 publications and her recent presentations were delivered at the American Society of Agricultural and Biological Engineers National Conference and the Indiana American Fisheries Society/Indiana Lake Management Society Joint Conference. Lindsay's honors and awards include the National Science Foundation Louis Stokes Alliance for Minority Participation (LSAMP), Bridge to Doctorate (BTD) Fellow (Cohort II), Purdue Doctoral Fellowship, Myron A. Pugacz Fellowship, Minorities Striving and Pursuing Higher Degrees of Success in Earth System Science Fellowship, and the Purdue University's Alliance for Graduate Education and the Professoriate (AGEP) Scholarship. She also served as graduate student advisor to two EPA-P3 funded student design projects, and has volunteered as the National Society's Black Engineers (NSBE) Special Interest Group Environmental Director. Her career goals include bridging engineering with environmental management and public policy, and exploring the impacts of environmental management at multiple scales and how to effectively communicate these results to communities and engage stakeholders in decision making.

Greater Philadelphia Region
Louis Stokes Alliance for Minority Participation

Bridge to the Doctorate Program

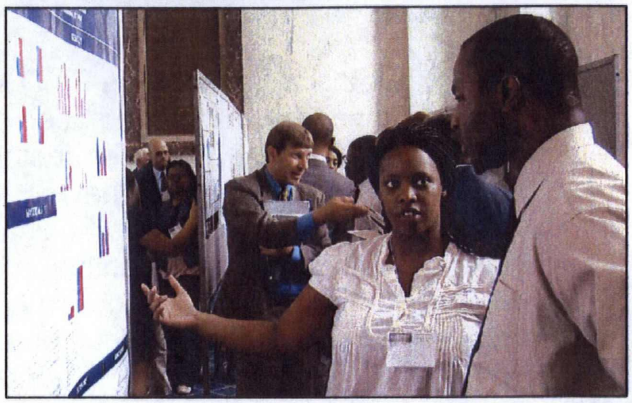
Quincy Brown, Ph.D.
Drexel University

Dr. Quincy Brown is currently an Assistant Professor, Department of Computer Science at Bowie State University. Born in New York on November 8, 1973, Dr. Brown received her BS in Electrical Engineering, Cum Laude in December 1995 from North Carolina A&T State University. As an award recipient of a National Science Foundation's Bridge to the Doctorate Fellowship through the Greater Philadelphia Region Louis Stokes Alliance for Minority Participation (Philadelphia AMP), Dr. Brown completed an M.S. in Computer Science in June 2007 from Drexel University. With additional support from the National Science Foundation's GK-12 fellowship program, she completed her doctoral study and was awarded a Ph.D. in Computer Science, Drexel University in August 2009. Dr. Brown was also a recipient of the Computing Innovation Postdoctoral Fellowship funded through the National Science Foundation. She completed her post doctoral work at the University of Maryland at College Park, in the iSchool, under the mentorship of Dr. Allison Druin and joined the Human Computer Interaction Lab to continue her research with mobile devices and learning. Dr. Brown's primary research has focused on the integration of technology and education, particularly on Multi-User Environments (MUVE) in an educational context, which has the potential to allow educators to tailor their lessons to an individual's learning pattern. Her research incorporated concepts of Girl Games, US/Singapore Math Curriculum pedagogical differences, MUVE technology, and sharable Content Object Reference Model (SCORM) Learning Objects. Within the MUVE, students are able to develop relationships with their avatars. Dr. Brown has published her research findings both nationally, as well as internationally in Montreal, Canada and most notably in Heersching am Ammersee, Germany at the IEEE Symposium on Visual Languages and Human-Centric Computing for her work on "The Design of a Mobile Intelligent Tutoring System." She has also worked in the defense industry for the Raytheon Company (formerly Texas Instruments) and in the telecommunications industry for NEC and Nokia Mobile Phones collectively for nine years, and obtained the Six Sigma Greenbelt Quality Certification. Her work experience also took her to Latin America, South America, Europe, and Asia for software development and design of UIs for various industries.

Greater Philadelphia Region
Louis Stokes Alliance for Minority Participation

Bridge to the Doctorate Program

Yolanda Williams-Bey, Ph.D.
Drexel University



Dr. Yolanda Williams-Bey is a molecular biologist with a dedicated commitment to improving the quality of health in this country and the world. She is a native Philadelphian and attributes her drive to be the best from her parents Mathew and Wanda. Yolanda realized in her sophomore year in high school that she had an affinity for biology and that this could be the path that would lead her to success in medicine and/or research. With the support of parents and friends, she adjusted to the challenges of life, and maintained her focus on education as a teenage parent. She entered Community College of Philadelphia and became an LSAMP academic scholar earning honors until transferring to Cheyney University of Pennsylvania in 2001. During this period, Yolanda was working part-time and participated in the astronomy club, the Student National Medical Association, the National Organization for Black Chemists and Chemical Engineers and also managed to be involved in sports as captain of the basketball team. She was selected for numerous national academic honors and volunteered at Thomas Jefferson University's Physical Therapy department. She completed her undergraduate studies in three years at Cheyney University earning a BA in Biology as an LSAMP scholar and was accepted to Drexel University as a Bridge to the Doctorate Fellow as a doctoral student in Biology. Yolanda was awarded a Ph.D. in Biological Sciences at Drexel University, June 2010. Dr. Yolanda Williams-Bey's dissertation illuminated "The Effect of Regulatory T cells on an Age-altered Specific CD8 T Cell response following Influenza Infection." With the elderly population growing faster than any other age group, it is important to find ways to reduce their increasingly high morbidity and mortality rates due to infections. Several studies have demonstrated that both aged mice and humans have a reduced CD8 T cell response due to influenza infection. Further, it had been demonstrated that these alterations result from both intrinsic and extrinsic factors. Dr. Williams Bey hypothesized that the major contribution to the extrinsic changes that effect T cell responses in aged mice could be influenced by Treg cells. Dr. Yolanda Williams-Bey has been the recipient of many awards and is currently a Post Doctoral Associate, National Institute of Allergy and Infectious Diseases (NIAID) and Intramural Research Training Award (IRTA) recipient at the National Institute of Health.

Terannie Vazquez graduated with a Ph.D in Chemistry and Biochemistry at Arizona State University after having been a LSAMP Bridge to the Doctorate Fellow with the WAESO LSAMP. Her doctoral studies investigated how nanomaterial and electrochemistry have demonstrated an advantage due to their unique structural, electrical, and mechanical properties and have great promise for assays of ultra-small environments and biosensor, respectively. She demonstrated the first use of electrochemistry with magnetically-controlled droplet movement. This new technique employs superhydrophobic surfaces to drastically reduce friction, thus allowing uncovered droplets (containing paramagnetic particles) to be moved rapidly in air rather than in oil. Such magnetic movement and manipulation of droplets (and samples) on surfaces holds promise for a wide range of bioanalytical applications. Special attention in her research focused on the use of carbon nanotubes (CNT), a relatively new material that was discovered in 1991, which has unique electronic properties. Their unique structural features, combined with mechanical, electrical, chemical, magnetic, and optical properties have enabled their use for many applications. One important application is their use for the fabrication of novel modified sensors and biosensors, with particular focus on electrochemical approaches. CNT and inorganic films-based primarily on ruthenium was used to design a sensor for insulin detection, which showed a high degree of electrocatalytic, stability, and sensitivity behavior towards this important biological compound. A new type of biocomposite material was fabricated using a mixture of nanotubes, graphite powder, enzyme composite and poly(dimethylsiloxane) as a polymer binder. This new biocomposite was used to fabricate a needle-type biosensor for subcutaneous implantable purposes. The sensor had an extended linear range, high selectivity, and stability. The optimization, characterization, and attractive performance of these entire novels CNT based electrochemical sensors and biosensors will lead to a significant improvement in the area of clinical and medicinal studied. An improvement of the development of miniaturized sensor for a real-time in vitro measurements based on electrochemical was achieved. These research results were published in the journal *Analitycal Chimi Acta* in 2007 and *Analyst* in 2007.

Ariel L. Arndt received her Ph.D. in Microbiology at Arizona State University after having been a LSAMP Bridge to the Doctorate Fellow with the WAESO LSAMP and has recently accepted a postdoctoral research appointment at the University of New Mexico. During her graduate studies she researched a medically significant group of viruses called coronaviruses which cause a variety of respiratory infections in a wide range of domesticated animals as well as humans. There is significant interest in understanding coronaviruses since they routinely circulate in both populations, and cross species transfer can occur. There is a need for antiviral therapeutics and vaccine development against the viruses. Ariel's work focused on the requirements of one of the viral structural proteins, the membrane (M) protein, in virus assembly. Her research focused on a conserved region and a highly charged region of the M protein intravirion carboxy tail. Ariel's results determined that these two regions are crucial for assembly of infectious particles. The conserved domain is important for crucial M protein-M protein interactions and the charged region participates in M's association with another viral structural protein which is necessary for infectivity. The study increases our understanding of a key player and its role in coronavirus assembly and provides insight that can form the basis for antiviral and/or vaccine development. The results of the conserved domain study have been published in the *Journal of Virology*. Ariel also received a prestigious National Institutes of Health predoctoral fellowship to promote diversity in health related research from 2008-2010 and presented her work at several national and international conferences during her graduate studies.

As a Ph.D. candidate in Chemical Physics at the University of Puerto Rico, Rio Piedras Campus, **Dr. Azlin Biaggi-Labiosa** did her research on the light emission from nanocrystalline silicon when it is irradiated with electrons (cathodoluminescence). Her work in this area led her to demonstrate for the first time that the cathodoluminescence of nanocrystalline silicon can be tuned by decreasing the nanoparticles size. That is, as the nanoparticles get smaller, the light emitted by the nanocrystalline silicon goes to higher frequencies, which proves the quantum confinement effect in the cathodoluminescence of nano-silicon. This was already demonstrated with the photoluminescence of nanocrystalline silicon but not with the cathodoluminescence. These results led to fabrication of the first ever prototype field emission display device using carbon nanotubes as the electron source and nanocrystalline silicon as the light emitting material. This work was published in an article entitled "Nanocrystalline silicon as the light emitting material of a field emission display device" (Nanotechnology 19, 225202, 2008) and was one of the top 10% downloaded articles in the Institute of Physics (IOP) for that year. She graduated in June 2008 and started a postdoctoral position at the University of Puerto Rico in July 2008 funded by the Institute of Functional Nanomaterials (IFN). During that time she continued her research work and developed an upper undergraduate laboratory for Physics and Chemistry titled Wave Guides at the Nanoscale. Since September 2009, Dr. Biaggi-Labiosa has being working in the Sensors and Electronics Branch at NASA Glenn Research Center in Cleveland, OH, where she works on the design and fabrication of chemical sensors for various aerospace applications, including engine emissions, environmental applications and breath analysis. Recently, she designed and fabricated a tin oxide-based sensor without the use of dopants or catalysts by using porous tin oxide nanotubes. This sensor is the first to show detection of methane at room temperature and a patent has being filed. In August 2010, she was selected to be part of Cleveland's 40/40 club which recognizes 40 influential Hispanic Americans under the age of 40 in Cleveland. She actively participates in outreach activities by giving talk to schools with underrepresented minorities and tutoring to high school students.

Denisse Soto-Aquino is a doctoral candidate in Chemical Engineering at The University of Puerto Rico at Mayaguez. She started the PhD program in 2007 under the mentorship of Dr. Carlos Rinaldi. As part of her thesis project, she is studying the magnetorheological properties of ferrofluids under shear and magnetic field by brownian dynamics simulations. Ferrofluids are suspension of magnetic particles which respond to external magnetic fields by changing their viscosity without losing their fluidity, the so called magnetoviscous effect. Denisse's results have excellent agreement with the equation provided by Martsenyuk (and collaborators) for a wide range of shear values and evidenced several magnetization equations in ferrohydrodynamics. She found that it is possible to collapse all data into one master curve using a new definition of the dimensionless mason number. She is also studying transient magnetoviscosity of ferrofluids, which provides further insight into the dynamics of ferrofluids and found practical applications in the design of devices that take advantage of the magnetoviscous effect. The properties of ferrofluids makes them suitable for applications in mechanical and chemical engineering to biomedical employment such as automotive dampers, electronic and mechanical sealing, loudspeakers and cancer treatment by hypertermia . Denisse has presented her results in the 11th International Conference on Electrorheological fluids and Magnetorheological suspensions (ERMR) celebrated in Dresden, Germany in August 2008; at the 12th International conference on Magnetic Fluids in Sendai, Japan on August 5, 2010; as well as in many other scientific conferences in US Mainland. Denisse currently has three publications in peer review journals: Research Letters in Physics, Physical Review and Journal of Magnetism and Magnetic Materials. Denisse is an active participant in the Nanoscale Science and Engineering Center (NSEC) program at The University of Wisconsin Madison. Furthermore, in her interest to the continued development of science, Denisse has collaborated towards the development of a computational simulation center in the Department of Chemical Engineering which is expected to open in August 2011. Denisse is recognized as one of the top ten PhD candidates in her department.

Tomekia Simeon, Ph.D., an alumnus of the LSMAMP received her doctorate degree in Physical Chemistry from Jackson State University (JSU) in 2008. Currently, she is a Postdoctoral Research Fellow at Northwestern University (NU), where she conducts research in calibrating force fields with quantum electronic structure methods for supermolecular compounds. In addition, to her research pursuits she has developed Quantum Chemistry coursework materials for junior level engineering students. Her previous research efforts at JSU resulted in six publications in national and international peer-reviewed journals (*J. Phys. Chem .and Inter. J of Quantum Chem.*) and her mission is the same at NU (she has one submitted and one that will shortly be submitted). Dr. Simeon is passionate about encouraging and motivating students (K-12) and underrepresented populations to pursue careers and professions in STEM disciplines. Her volunteer outreach activities at NU include Science in the Classroom (SITC) (engaging 3rd grade students in different subject-based science demonstrations), weekly Science Club meetings at an inner-city Boys & Girls Club and serving as a mentor for chemistry undergraduate majors at Lake Forest College. Dr. Simeon has extensive international travel and research experiences. In 2006, she traveled to the war-torn country of Liberia (Monrovia) to teach Chemistry and Biochemistry at impoverished high schools. She later returned to Africa twice in 2007 to present her research at the International Symposium on Nanomaterials and the International Conference for Globally Eradicating Health Disparities in South Africa. She has presented her work in other countries such as Poland, Guatemala, Czech Republic and India. In 2007, Dr. Simeon received the ORISE Fellowship to attend the 56th Meeting of Noble Laureates in Lindau, Germany. Her entrepreneurship pursuits also afforded her the opportunity to travel to Shanghai & Beijing, China. Overall, her tenure as a NSF Bridge to the Doctorate Fellow was a noble opportunity of scientific exposure. Dr. Simeon has interned at: the Engineering Research Development Center, Lawrence Livermore National Laboratory, and at the Office of Navel Research in Washington, DC with the 1985 Noble Laureate in Chemistry, Dr. Jerome Karle.


What is the
risk of

Erika Brown is currently a Ph.D. candidate in Environmental Science at Jackson State University (JSU) and is expected to graduate this May of 2011, under the mentorship of Presidential scholar Dr. Paul Tchounwou. Her research focuses on the cellular and molecular mechanisms involved in the toxicity of environmental contaminants such as, arsenic trioxide on biological organisms, in particular human liver carcinoma cells. To date, this research has produced three publications in refereed journals (Metal Ions in Biology and Medicine and J Biochem Molecular Toxicology.) Over the course of her graduate studies, Erika has made nineteen presentations of her research which include presenting a paper at the 10th Annual International Symposium of Metal Ions in Biology and Medicine, Bastia, Corsica, France. Ms. Brown was a NSF Bridge to the Doctorate Fellow at JSU and received her MS in Environmental Science in 2006. During her fellowship, Erika conducted a summer research internship with Dr. Terry Hazen at the Lawrence Berkeley National Laboratory and traveled to Lisboa, Portugal, to present her research at the 9th International Symposium on Metal Ions in Biology and Medicine.

Anastasia Chavez began her mathematical adventure at the Santa Rosa Junior College after high school, where she was inspired by her calculus teacher to pursue a bachelors degree in mathematics. After transferring to San Francisco State University (SFSU) in 2003, she was awarded the Undergraduate Mentoring in Quantitative Environmental Biology (UBM) scholarship. Through UBM, Anastasia joined a mathematical ecology research team that used computer simulation and statistical techniques to analyze sampling methods in order to advise researchers of optimal choices in sampling methods. She received her BS in applied mathematics from SFSU in spring 2006. Also that spring, Anastasia was accepted to the Master's program at SFSU, was awarded the LSAMP-Bridge to the Doctorate fellowship, and learned she was expecting her first child. Her graduate study was paired with family responsibility, motivating Anastasia to pursue a doctorate degree and become an advocate for women and minorities in the sciences. She had her second daughter in winter 2008, and received her Master's degree in mathematics the summer of 2010. Her graduate study included completing a Master's thesis, titled "Bernoulli-Dedekind Sums," with Dr. Matthias Beck. Anastasia's thesis introduces a generalized Bernoulli-Dedekind Sum and uses a novel combinatorial approach to prove it satisfies a relationship called reciprocity. She presented her research at the annual SACNAS conference in September 2010 and was awarded the best Graduate Student Scientific Symposium oral presenter in mathematics. Anastasia's joint paper with Dr. Beck, "Bernoulli-Dedekind Sums", has been accepted for publication in *Acta Arithmetica*. With her daughters now 2 and 4 years old, Anastasia will begin the doctoral program in mathematics at UC Berkeley this fall, funded by the prestigious UC Berkeley Chancellor's Fellowship.

Exploring Periods of Ehrhart Quasipolynomials of Rational Polygons

Anastasia Chavez and Chris O'Neill
Dept. Mathematics, San Francisco State University, California

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Motivation and objective

Background

Background cont.

Methods

Methods cont.

Results

Discussion/conclusions

Future Work

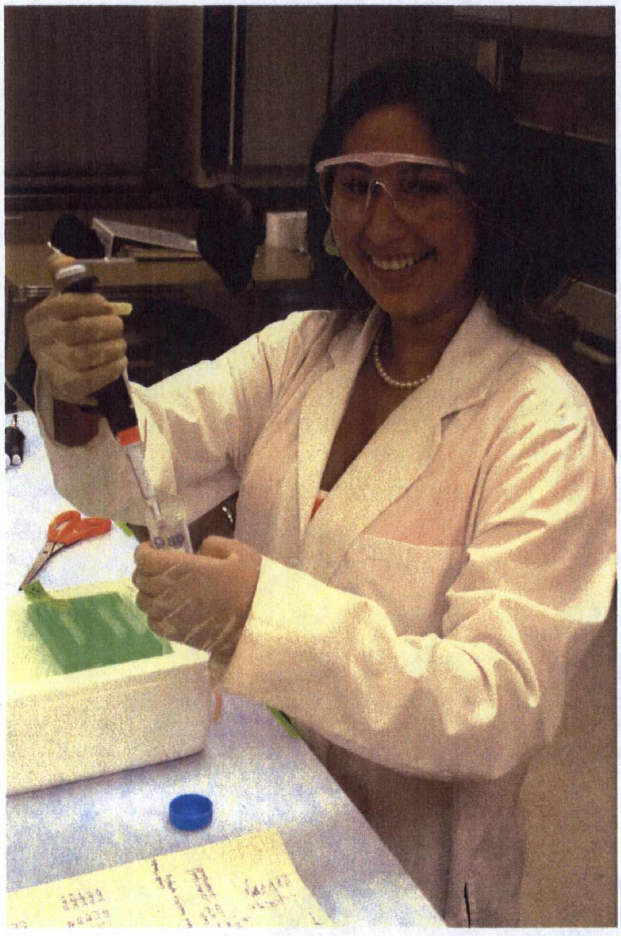
Literature cited

Acknowledgments

For further information

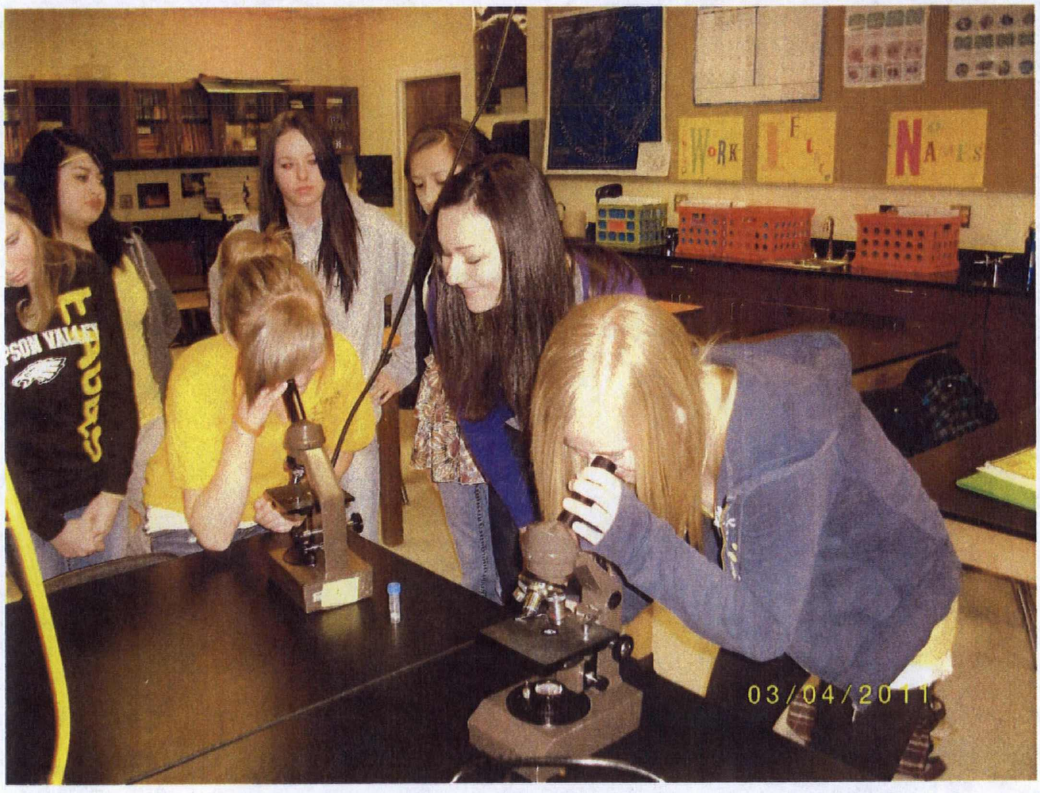
Nadine R. Martinez Rodriguez is a second-year PhD student in **Molecular, Cellular and Developmental Biology** (MCDB) at the **University of California, Santa Barbara**. Her research (under the direction of Dr. Jacob Israelachvili in Chemical Engineering and Dr. Herbert Waite in MCDB) aims to better understand the biological, behavioral, and biophysical properties of the marine mussel in order to enhance the design of a synthetic polymer for the production of an underwater adhesive for a variety of applications in dentistry including surgical implants. Currently, Nadine is in the process of purifying adhesive plaque proteins of the marine mussel to test their antimicrobial properties as well as investigating the effects of biofilm on marine mussel attachment and its possible role in antifouling. In addition, she is currently writing a book chapter section on wet adhesion that addresses a discussion of marine surfaces, attachment process of the marine mussel, architecture of the byssus, and a compilation of known proteins and their location in the adhesive plaque. Nadine was a recipient of the NSF LSAMP-BD two-year fellowship through the California State University (CSU) Alliance from September 2007 through August 2009, while completing her Masters of Science degree in Biology (with a specialty in innate immunology) at CSU, Los Angeles. Her MS degree was officially awarded on September 5, 2009. In addition to her PhD program, Nadine is a participant in the UCSB Certificate in College and University Teaching (CCUT). This program is for doctoral students who plan to teach at the university level and who want to gain a higher competence in teaching at that level. Her goal upon receiving her PhD is to become a University professor with her own research lab where she can mentor students of diverse backgrounds. Her driving forces are her five beautiful, young children under the age of 10.

Vanessa Enriquez is a Ph.D. candidate in the Cell & Molecular Biology program at Colorado State University. Vanessa is researching Ovarian Cancer Biology, the fifth most deadly cancer among women in the U.S. primarily due to the lack of early diagnostic markers, vague symptoms resulting in a late diagnosis, and persistence of dormant, drug-resistant cancer cells. Vanessa is investigating the molecular regulation of metastatic cancer and how it recurs by elucidating the molecular regulation of secreted miRNAs from exosomes of Ovarian Cancer Biology. Approximately 90% of ovarian tumors are classified as "epithelial" and recent studies reveal that human ovarian cancer cells express distinct miRNA (small non-coding RNA molecules) signatures. Importantly, the pluripotency stem cell factor LIN28, a known regulator of miRNA function, is expressed in human cancer cells. Through her research Vanessa has determined that LIN28 mRNA and protein expression was significantly higher in IGROV-1 cells compared to OV420 and SKOV3 cells. The qRT-PCR analysis she completed revealed that *let-7* miRNA was expressed significantly lower in IGROV-1 cells compared to SKOV3 cells. Furthermore, *Let-7f-1, miR-200-b* and *miR-200-c* miRNA expression was present at significantly lower levels in exosomes secreted by IGROV-1 cells compared to their presence in exosomes secreted by OV420 cells. Successful *in vitro* transfer of GFP tagged exosomes isolated from IGROV-1 cell culture medium to OV420 cells indicate uptake of GFP exosomes by OV420 cells. Vanessa's results indicate that a potential regulatory role of LIN28-*let-7* miRNA exists in ovarian cancer cells that may play a role in ovarian cancer tumorigenesis. Furthermore, circulating exosomes secreted by cancer cells contain miRNAs that can be taken up by other cells. Finally, the presence of ovarian cancer cell secreted miRNAs in exosomes may lead to identification of novel diagnostic markers, potentially providing earlier diagnosis of ovarian cancer. Vanessa has just had an abstract describing her research accepted for the 44th Annual Meeting of the Society for the Study of Reproduction.

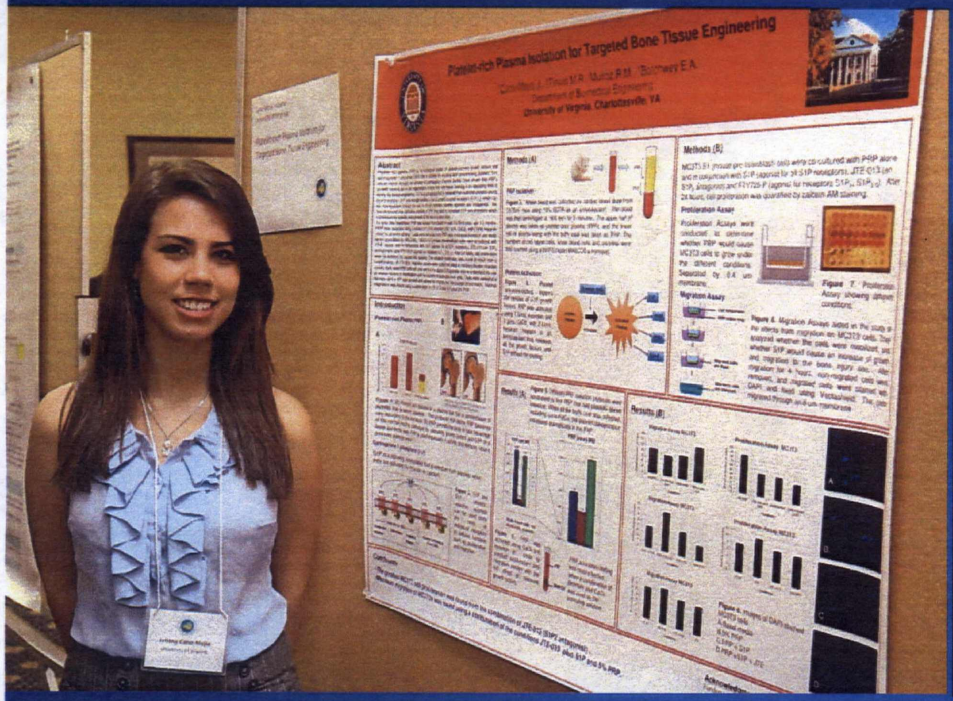


Vanessa Enriquez, Ph.D. candidate in Cell & Molecular Biology, working in the lab at Colorado State University.

Krystle Frahm is a Ph.D. candidate in Biomedical Sciences at Colorado State University. Her research in the Tobet Lab focuses on the development and differentiation of the neuroendocrine brain. In addition, she is interested in understanding the long-term effects of prenatal stress at the level of the Paraventricular Nucleus of the Hypothalamus. Krystle is part of a transdisciplinary collaboration involving graduate students and faculty from Chemistry, Electrical Engineering, Computer Science and Mathematics. She is currently serving as a first-year NSF GK-12 Fellow, and is contributing to the research mission of this grant that involves developing a microchip able to detect neurotransmitter release while viewing neuron migration using fluorescent microscopy. Krystle has worked collaboratively in Gregor Majdic's laboratory in Ljubijana, Slovenina and published her results in *Slovenian Veterinary Research, 47:182.* She has also published in *Pharmacology, Biochemistry & Behavior, 97(3), 416-22.* Krystle has received numerous awards for her research, including the Dr. William K. Riddell Memorial Graduate Scholarship, a departmental award granted to the "best and brightest of available graduate pool to support areas of research with prospect of success/impact within health services," and the MARC FASEB travel award for her platform presentation at the Society for the Study of Reproduction annual meeting in 2010.



Krystle Frahm, (dark hair and purple shirt) Ph.D. candidate in Biomedical Sciences, working with high school science students.



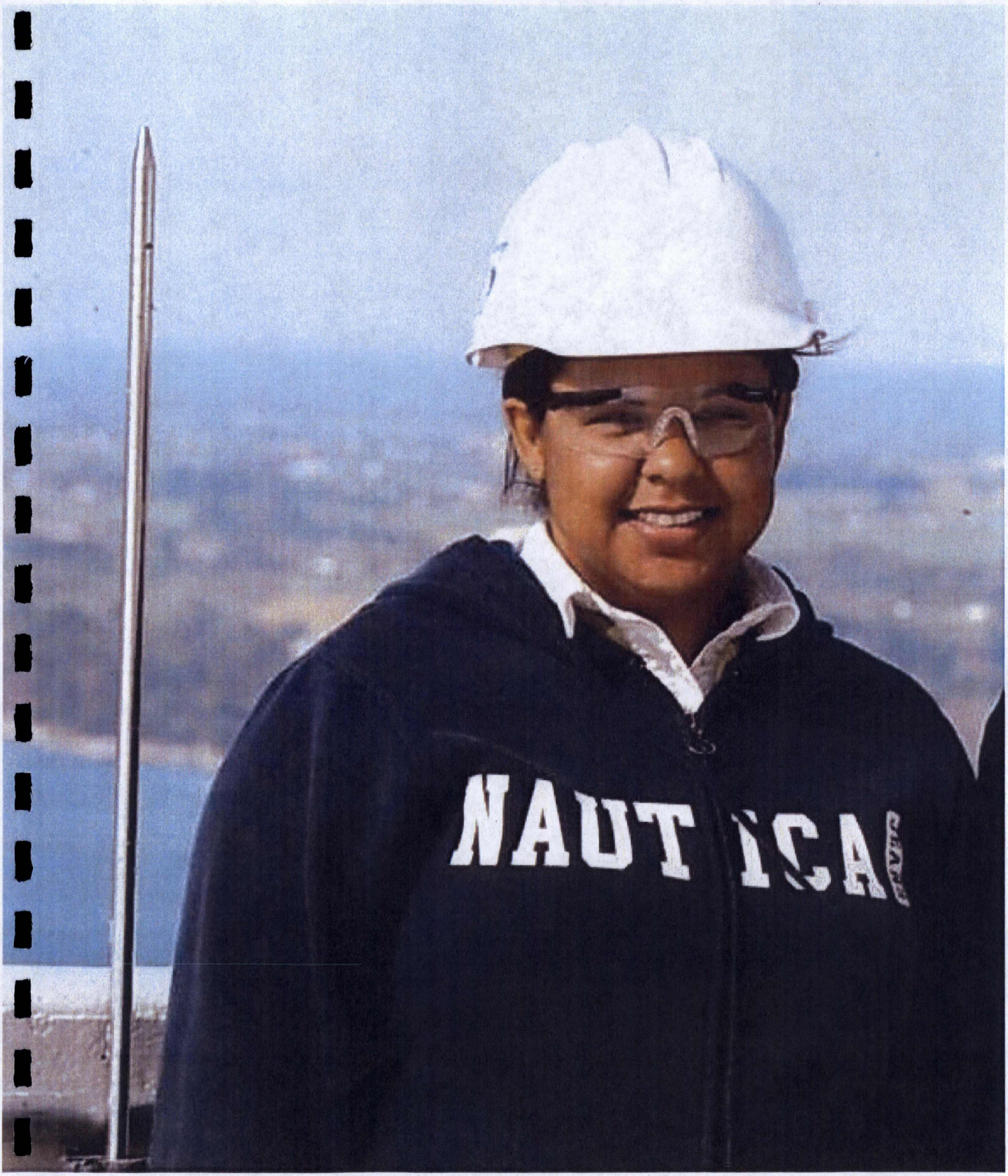
Juliana Cano-Mejia of the University of Virginia presents, at left, and accepts award for, at right, her research poster *Platelet-Rich Plasma Isolation for Targeted Bone Tissue Engineering*

VIRGINIA/NORTH CAROLINA ALLIANCE for Minority Participation

Alabama LSAMP Women in Science Nominees (BD Sisters in Science)

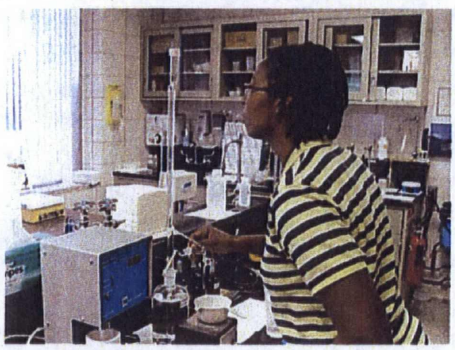
Stephanie Watson completed the Ph.D. degree in Civil Engineering at The University of Alabama at Birmingham (UAB) in August 2010. After receiving her Bachelor of Science degree in Civil Engineering from Lawrence Technological University in Michigan, she was awarded a Bridge to the Doctorate Fellowship (2005-2007) at UAB. Her research focused on pre-disaster planning on a state level for natural and manmade disasters and the need to communicate this information to citizens for emergency preparedness. These research efforts allowed Stephanie to collaborate with numerous emergency managers across the United States. Dr. Watson has made many research presentations and received numerous awards while completing her graduate education, the most notable among them being named Alabama's *University Transportation Center Student of the Year.* She recruited her younger sister, Candace, to UAB before graduating. Currently, Dr. Watson is employed at Michigan Electric Utility Company working as an environmental engineer focusing on EPA proposed regulations related to the classification of coal combustion byproducts, handling of coal combustion byproducts and coal combustion residuals from coal-fired power plant operations. She also prepares comments to the EPA on the proposed regulations and works to ensure maintained environmental stewardship through proper coal waste management. Dr. Watson has received performance merits for her work related to coal ash management and works with minority high school students motivating them to work toward a four-year degree in STEM disciplines.

Candace Watson is a doctoral candidate in civil engineering at The University of Alabama at Birmingham, anticipating graduation in July 2011. She is in the final stage of her dissertation research on sustainable design techniques and aspects of improved urban/city design methods that will reduce energy consumption through renewable energy potential. Her research analyzes how city planning directly correlates with energy consumption in the city of Birmingham. Included in her research efforts is a detailed analysis of how different surface types absorb heat energy from the sun and how that impacts energy use, and how city blocks can take advantage of site elements that have the potential of reducing energy consumption. Candace was selected to participate in a study abroad program in Cairo, Egypt, where she studied sustainable engineering techniques to improve energy performance of Cairo's built infrastructure. She has authored and presented papers at fourteen various professional conferences, both nationally and globally, traveling to Xi'an, Shaanxi, China in 2010. A recipient of both The University of Alabama at Birmingham School of Engineering Outstanding Graduate Student Award [2010] and Department of Civil, Construction, and Environmental Engineering Outstanding Graduate Student [2010], she has received a number of awards and honors recognizing her research efforts and academic achievement. In June 2009, Candace received the Leadership in Energy and Environmental Design (LEED) accreditation from the United Stated Green Building Council (USGBC). Upon completion of her doctoral degree, she plans to work with global leaders to improve how energy is extracted, produced and consumed, focusing on the built environment. Upon completion of her doctoral degree, she plans to work with global leaders to improve how energy is extracted, produced, and consumed, focusing on the built environment.


NAUT ICA

Jaquice Danielle Hughes

Ms. Jaquice Danyelle Hughes is a doctoral graduate student of the Department of Civil, Construction, and Environmental Engineering at the University of Alabama at Birmingham (UAB). During her first year of graduate studies, she was inducted into Chi Epsilon (the National Civil Engineering Honor Society). She has maintained a perfect 4.0 grade point average during her two years of the program. Jaquice has had the opportunity to visit Egypt as part of a joint program with her department. While in Egypt Jaquice studied international engineering practices and there advantages and disadvantages when compared to U.S. practices. Jaquice recently began doing her dissertation research with the Birmingham Water Works Board (BWWB), researching the best corrosion control inhibitor for their distribution system. This research opportunity has given Ms. Hughes the resources to combine her love for advanced water quality treatment and laboratory analysis. Her research will ultimately give BWWB suggestions to optimize their water quality and duration of their piping system. Jaquice has recently been accepted to present her research at a National conference to experts in her field. Jaquice has proven to be resourceful, hardworking and her priorities reflect the desire to do what is right not what is quick. She has a unique spirit and is truly passionate about her research and its potential impact on the environment.



Picture 1 Titration of water samples to test for alkalinity.

CALIFORNIA LSAMP WOMEN IN SCIENCE NOMINEES

Melanie D. Zauscher is a doctoral candidate in Mechanical Engineering at the University of California, San Diego (UCSD), anticipating the Ph.D. June 2012. She investigates environmental, health, and climatic effects of particulate matter, and has developed a method for determining composition of ultrafine aerosol particles. She is the founder and co-president of Biofuels Action and Awareness Network at UCSD, through which she created the Greenline Biodiesel Shuttle project. While at the Center for Energy Research (2005-2007) her work focused on comparing the combustion of biodiesel to petrodiesel. She has conducted research at INSTAAR, University of Colorado, Boulder, measuring stable isotopes of greenhouse gases and studied marine chemistry at the Scripps Institution of Oceanography, La Jolla, CA, where she quantified isotopic composition of nitrous oxide. She was awarded an NSF-Bridge to the Doctorate Fellowship in 2005. She helped design and install a biodiesel processor in Bogota, Columbia, and taught locals how to make biodiesel. In recognition of her green energy work, Zauscher received the UCSD 2009 Graduate Student Sustainability Award. She is a member of Phi Beta Kappa Society and has received a NASA Fellowship as well as awards from the Ronald E. McNair Postbaccalaureate Achievement Program and SACNAS best poster. She is first author on four refereed journal articles and has given numerous scholarly presentations, most recently at the American Geophysical Union Fall Meeting, San Francisco, and at the 29th Annual Conference of the American Association for Aerosol Research, Portland, both in 2010. Her paper, "Approach for measuring the chemistry of individual particles in the size range important for cloud formation," recently appeared in the *Journal of Analytical Chemistry*, 2011, 83 (6), 2271-2278.

Prospective Study: Comparison of Biodiesel and Petrodiesel Combustion

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Center for Energy Research, University of California, San Diego

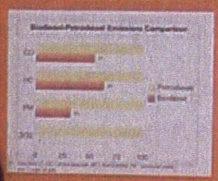
UCSD

ABSTRACT

As the use of petrodiesel continues to rise, biodiesel is becoming more popular as an alternative. It is a carbon-neutral renewable fuel made from any vegetable or animal oil; therefore biodiesel can lessen our dependence on foreign oil and simultaneously reduce greenhouse gas emissions. Particulate matter and carbon monoxide emissions from biodiesel are significantly reduced compared to those of petrodiesel, but more nitrous oxides may be produced. For this reason, biodiesel has not been approved as an alternative fuel in California. The benefits of biodiesel has led to increase study, but most studies done to date have been on engines, having a fundamental lack in the understanding of the combustion of biodiesel. This study will try to fill in some of the gap. Since biodiesel is basically a methyl ester, we are using methyl butanoate as a surrogate to it. Surrogates serve to simplify the chemistry involved and are widely used in the combustion modeling community. We are comparing the surrogate with ASTM certified biodiesel as well as petrodiesel. This study will begin by determining the auto-ignition temperatures at different strain rates. This is done with the use of a counterflow laminar burner. Additionally, we will determine the size distribution of particulate matter emitted from the combustion of biodiesel using a scanning mobility particle sizer. Results are still preliminary. But we expect that with this data we can begin our contribution to a better understanding and smarter use of biodiesel including possible engine modifications and use chemical additives.

BIODIESEL

Alternative to petrodiesel made from renewable animal fat or plant



78% of carbon dioxide as well an biodiesel, whereas petrodiesel has a

it has been shown they depend on age of engine [1], [2]

petrodiesel

s a problem in cold

, so fundamental

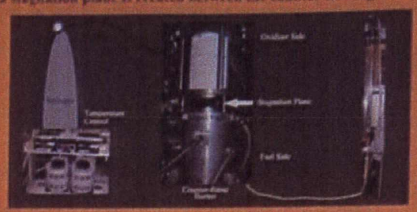
as autoignition

created during

se in future of biodiesel

METHODS

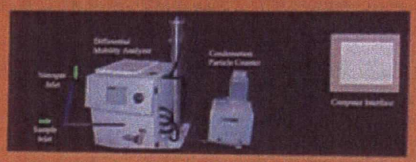
A counter-flame apparatus will be used where the oxidizer (air) flows against and evaporates the surface of the fuel sitting in a liquid pool such that a stagnation plane is created between the counter-flowing streams



Auto-ignition measurements: at each strain rate, increase oxidizer temperature slowly until fuel autoignites. Quench flame with nitrogen, lower temperature and repeat

Extinction measurements: at each oxygen fraction, ignite reactive mixture by torch and increase strain rate slowly until flame is extinguished. Repeat

PM measurements: use a Scanning Mobility Particle Sizer, composed of a differential mobility analyzer and condensation particle counter, with an attached sampling probe diluting the sample gas with nitrogen



EXPECTED RESULTS

Biodiesel should have higher auto-ignition temperatures than petrodiesel since it has a higher flash point

The particle size distribution of biodiesel should match that of petrodiesel in shape, but have fewer total particles emitted

Methyl butanoate will model certain aspects of biodiesel, but not all of them due to the lower molecular weight of the surrogate

REFERENCES

[1] Sheehan, J. *et al.* Life Cycle Inventory of Biodiesel and Petroleum Diesel Use in an Urban Bus: Final Report to USDOE/USDA. 1998

[2] McCormick, R.L. *et al.* Impact of Biodiesel Source Material on Chemical Stucture on Emissions of Criteria Pollutants from a Heave-Duty Engine. *Environmental Science and Technology*. 2001. 35: 1742-1747

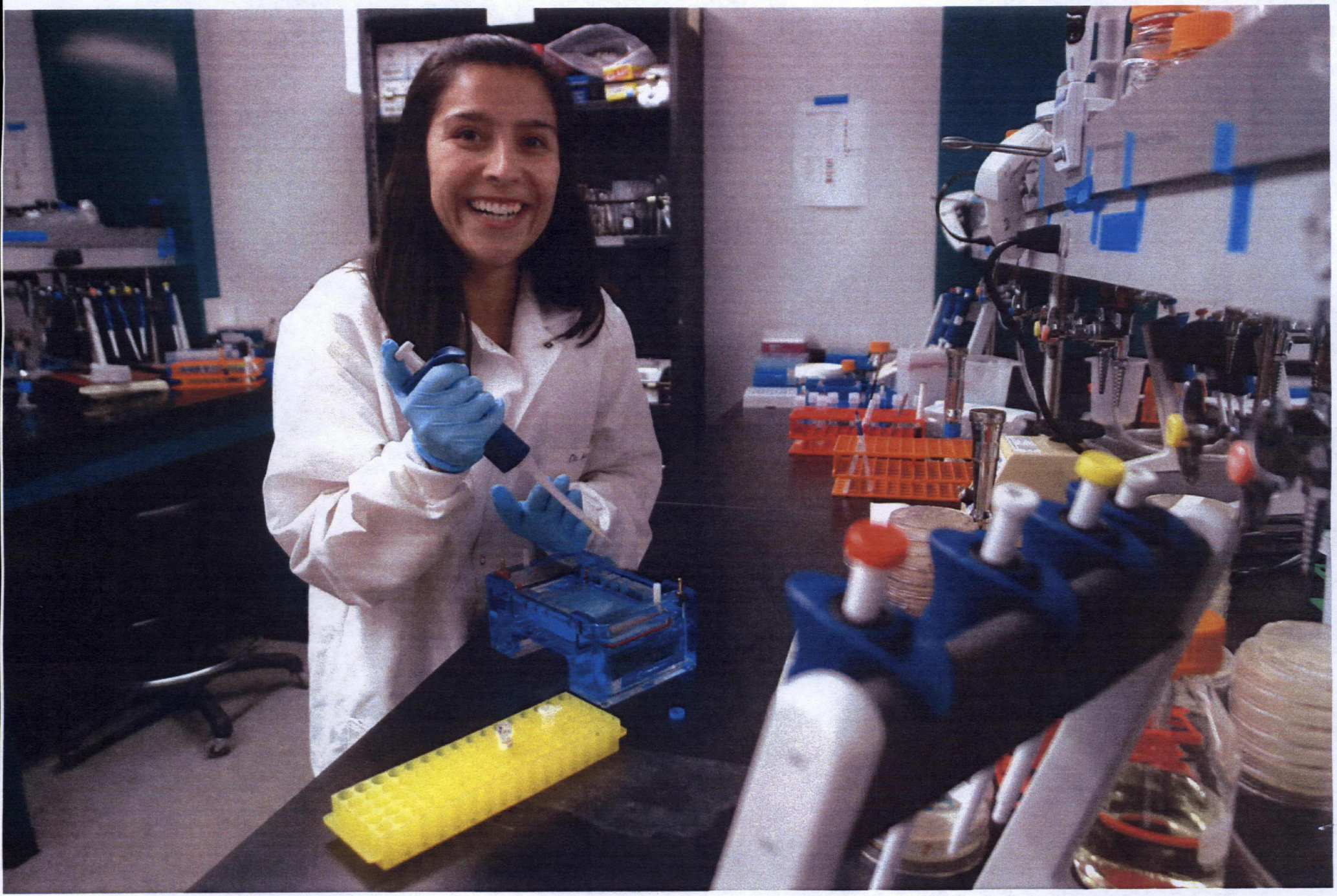
[3] Fisher, E.M. *et al.* Detailed Chemical Kinetic Mechanisms for Combustion of Oxygenated Fuels. *Proceedings of the Combustion Institute*. 2000. 28: 1579-1586

ACKNOWLEDGEMENTS

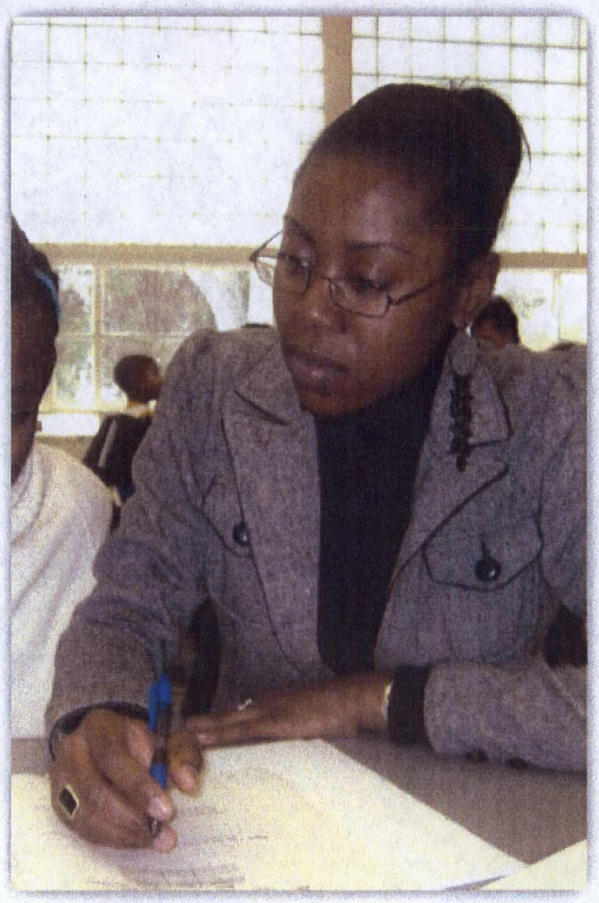
Bridge to the Doctorate CAMP Program

Piavan Petroleum

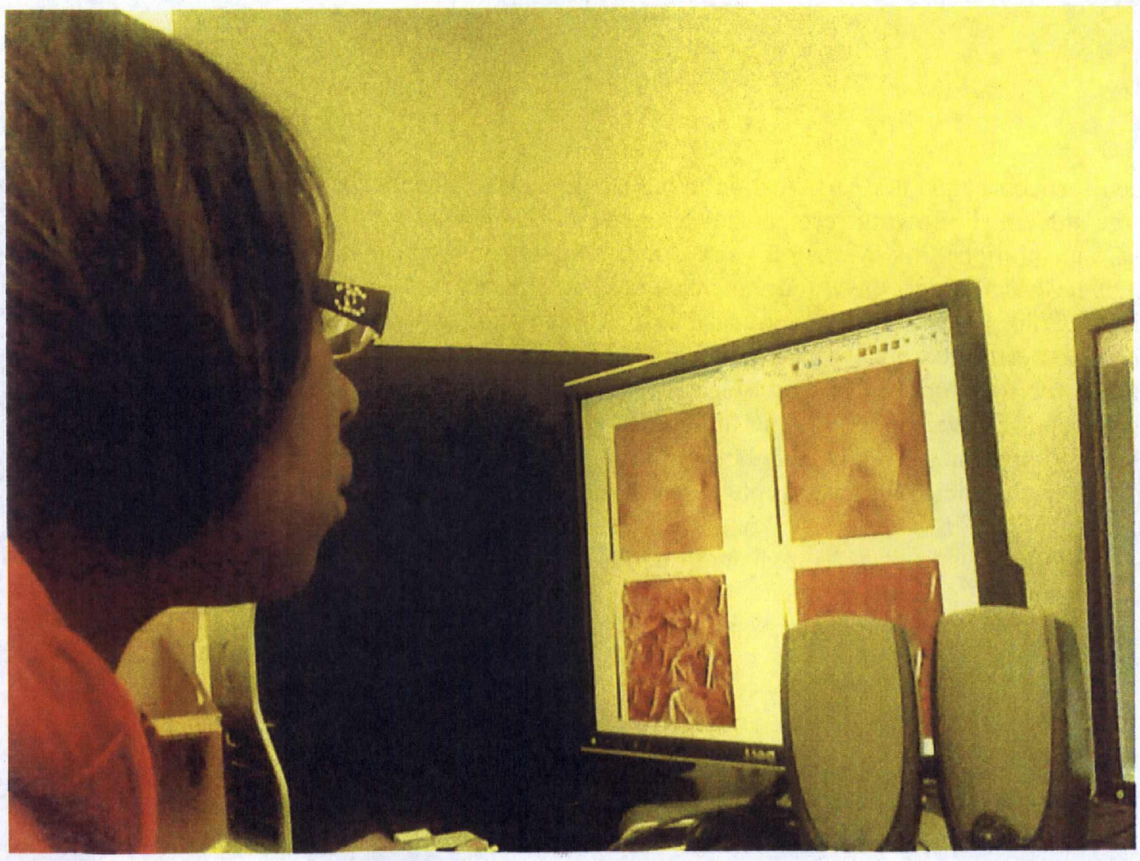
Kimberly Romero Rosales completed the Ph.D. in Biological Sciences at the University of California, Irvine, August 2010. She was an NSF Bridge to the Doctorate Fellow (2004-2006), completing her graduate work in the lab of Dr. Aimee Edinger. Her dissertation was titled "Nutrient Transporter Regulation: A Means to Starve Cancer Cells to Death." She has served as an undergraduate research mentor and teaching assistant for Biodiversity and Conservation at UCI and for Genetics at the Howard Hughes Medical Institute, Teaching Fellows Program, UCI. Dr. Rosales presented at the Keystone Symposium on Cell Death and Cellular Senescence (2008). Honors include the Dr. William F. Holcomb Fellowship, UC Irvine School of Biological Sciences and the NIH Ruth L. Kirschstein Minority Predoctoral Fellowship. Her work as an undergraduate research mentor has inspired and motivated students to pursue graduate education. Dr. Rosales earned a B.S. in Biological Sciences from UC Irvine, where she conducted research in the laboratory of Dr. Bruce Blumberg, Department of Developmental and Cell Biology. Additionally, she conducted research in genetics at the University of Utah through the Summer Research Opportunities Program. Dr. Rosales is pursuing her career goal as a research scientist. She is currently a research specialist for the Minority Science Programs in the laboratory of Dr. Luis Mota-Bravo, UCI School of Biological Sciences. She is author of seven refereed journal papers, with four as first author, including a recently submitted paper, "Pharmacologic down-regulation of nutrient transporter proteins selectively kills anabolic cells *in vitro* and *in vivo*." In 2009, another paper for which she was first author, "Rab7 Activation by Growth Factor Withdrawal Contributes to the Induction of Apoptosis," was e-published ahead of print in Mol Biol Cell (April 22, 2009).



As a Ph.D. candidate in Mathematics at Howard University, Kourtney J. Fulton has worked under the direction of Dr. Neil Hindman in the area of Topological Algebra. They have examined the Stone-Cech compactifications of various semigroups. Kourtney and Dr. Hindman have investigated the existence of homomorphisms from the compactifications of the semigroups to their corresponding set of nonprincipal ultra filters. Kourtney has been actively engaged in the field of mathematics and attended several national and regional conferences. Not only is Kourtney a full-time graduate student, but also a full-time owner of a success small business that serves over sixty clients. During her matriculation, she managed to found Fulton Tutorial Services, LLC in 2008 which provides academic assistance for individuals, groups, and organizations including the Goodwill of Greater Washington. She has balanced her studies and business while overcoming various obstacles including helping her mother defeat breast cancer, and recently recovering from her benign tumor removed in February 2011. Kourtney tirelessly works to make advances in the area of Topological Algebra and educates others in route to earning her doctorate in mathematics. Kourtney is truly a woman in the purest science, mathematics, which has greatly impacted her school, her community, and all she encounters.

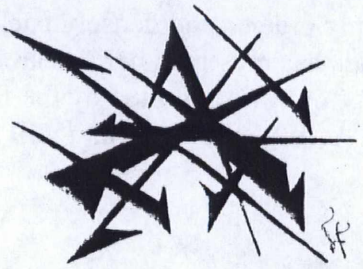


Rhonda McCoy is a doctoral candidate in the Department of Chemistry at Howard University. She is probing how 4,5-diazafluoren-9-one (DAFO), a molecule that has demonstrated the ability to intercalate DNA, prefer to interact with metal surfaces. The initial phase of her research required her to synthesize and obtain the Raman spectrum of the molecule of interest as the free and as the silver complex, and employ theoretical calculations to assign the bands observed in both spectra. Analysis of the spectra and calculations allowed her to suggest the preferred mode of interaction with silver. The molecule's suggested orientation on the surface was complimented by obtaining a pure crystal that was viable enough to obtain the x-ray structure of the silver complex. The most recent part of her research has involved analysis the Raman bands when the interested molecule was adsorbed on the surface of silver hydrosol. This surface-enhanced Raman spectrum (SERS) allows her to observe the Raman bands significantly enhanced up to 10 orders of magnitude in order. When comparing the Raman bands in SERS spectrum to the free and complex spectra the molecules interaction relative to the silver hydrosol surface can be deduced. In addition, with the recent surge towards the miniaturization of electronic devices, scientists have explored the possibility of incorporating organic molecules as components in these devices. To continue in the direction of the miniaturization of electronic devices, an array of asymmetries must be uniformly organized on metal surfaces. There is a need to characterize these monolayers assembled on metal surfaces to determine if they are ideal candidates for molecular electronic devices. Rhonda plans to examine the formation, order, and packing density of long alkyl amine Schiff bases of DAFO. The specific goal is to determine whether combining long alkyl chains with π-conjugated molecules assists with forming highly ordered and densely packed self assembled monolayers on metallic surfaces. This past school year, Rhonda has presented her research at the American Chemical Society in Washington, DC and Pittsburg, PA. Ms. McCoy was supported by the Bridge to Doctorate Program from 2008 – 2010. In the fall 2010, she received an AGEP Fellowship that will allow her to successfully complete her doctoral studies.



North Carolina Louis Stokes Alliance for Minority Participation
Nominees for Women in Science
Bridge to the Doctorate Alumni from North Carolina Central University
Nominees: Ms. Wanida Lewis, Ms. Aja Moore, Ms. Candice Morrison
Submitted by Dr. Saundra DeLauder, NCCU BD Coordinator

Ms. Wanida Lewis first participated in the NCLSAMP project at North Carolina Central University in Durham, North Carolina as a tutor/mentor in 2005, and as a Bridge to the Doctorate Fellow studying Chemistry. As a fellow, she displayed excellent interpersonal skills while mentoring undergraduate students. Her research thesis was advised by Dr. Leon Boyd in the Food Science Department at North Carolina State University, and involved the determination of procyanidins, contained in muscadine seeds, extracted from various ethanol solutions. Ms. Lewis is a currently a Ph.D. candidate in the Department of Food Sciences at North Carolina State University. She recently co-authored a paper with her research mentors Dr. Boyd (at North Carolina State University) and Dr. Saundra DeLauder (North Carolina Central University) that is under review. Upon receipt of her doctorate degree, her immediate research interests are in the use of sensory analysis in alleviating food allergens for the consumer.



Ms. Candice Morrison began her participation in the Louis Stokes Alliance for Minority in fall 2004 as a second degree student. Following receipt of the Bachelor of Science Degree in Environmental Science (Chemistry Concentration), Ms. Morrison worked as a student contractor at the USEPA and participated on research at NCCU through the Environmental Risk and Impact in Disadvantaged Communities and Communities of Color (ERICC), a project that focused on sampling and analysis in environmental justice communities. She performed her thesis research under the supervision of Dr. James Starr at the USEPA and her studies focused on Analysis of Selected Pyrethroid Pesticides. Ms. Morrison completed her studies in 2008, and received full academic funding from the University of Arizona along with an Alfred P. Sloan Foundation Minority PhD Scholarship through the Soil, Water and Environmental Science department. She has participated in multiple research projects at the Tucson International Airport Area (TIAA) Superfund site in Tucson, Arizona focusing on the removal of chlorinated contaminants, specifically trichloroethylene (TCE), in groundwater. As a Ph.D. candidate, Ms. Morrison is currently working on intermediate scale experiments concentrating on understanding how contaminant vapors in the vadose zone contribute to groundwater contamination (sub surface) or vapor intrusion (above ground).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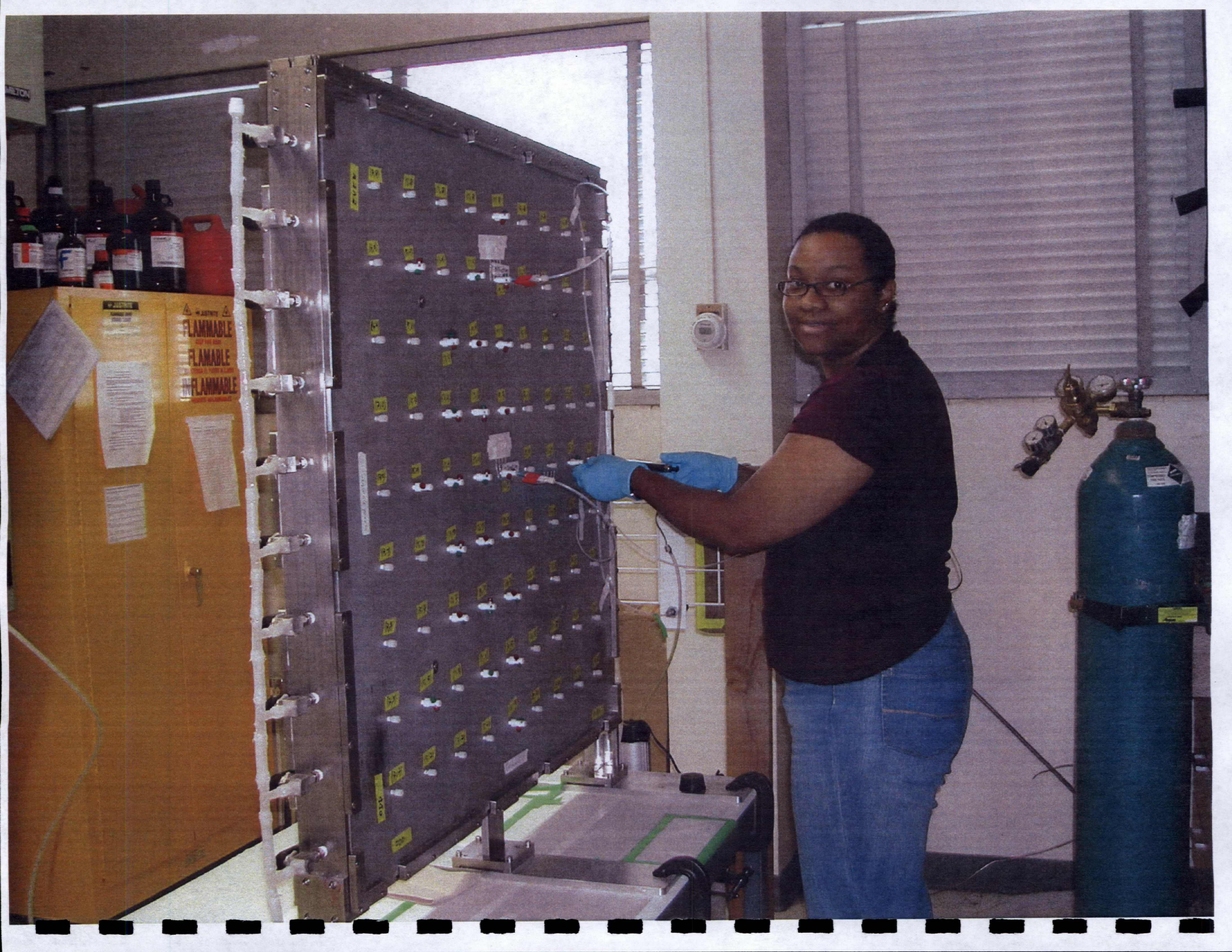
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CARA COWAN WATTS a Ph.D. candidate in **Biosystems Engineering** at **Oklahoma State University** is completing research on *Numerical Nutrient Criteria Supporting Cherokee Nation's Culturally Significant Waters*. Her research concentrates on water resources and associated infrastructure challenges/initiatives for everyone, but specifically for Tribal lands. This topic of water quality encouraged her involvement in the Cherokee Nation as an elected Tribal Council Representative and has allowed her opportunities to work with over 140,000 tribal members in Oklahoma on water resource issues affecting the Cherokee Nation. Cara serves on the Water Research Advisory Board of the Oklahoma Water Resources Research Institute and has served as a panel member to the 22nd Oklahoma Supreme Court (Tribal) Sovereignty Symposium Land, Wind and Water. In addition, she serves on the Oklahoma Advisory Council for the US Committee on Civil Rights. She has made presentations at the 28th Annual Governor's Water Conference and the 5th Annual Oklahoma Water Resources Research Institute Water Research Symposium. Cara was elected to the National Congress of American Indians (NCAI) as the Eastern Oklahoma Area Vice President on the Executive Board. She also serves on the EPA-funded technical advisory group for the Oklahoma Water Resources Board, representing the Cherokee Nation. Cara has twice been chosen as "40 under 40 Women to Watch" by the *Tulsa Business Journal* and the *Oklahoma Magazine.* Her work has led to the establishment of the Tribally-sponsored *K-12 American Indians Science and Engineering Society (AISES)* chapters throughout Oklahoma, along with serving in numerous offices on the national board for AISES. Cara is founder of the Northeastern Oklahoma Chapter of the *Society of Women Engineers,* and has secured federal funds for water related projects throughout the Cherokee Nation. In addition, Cara has been selected to serve on Indian Health Services (HIS) and Health and Human Services (HHS) advisory boards for issues related to minority health.

Tomica Blocker, is a doctoral candidate in the **Department of Zoology** at **Oklahoma State University**. Her interests include the effects of *anthropogenic stressors on animals; ecotoxicology, neuroendocrinology, and ethology*. Her research revolves around anthropogenic stressors and their effects on animal behavior. Specifically, Tomica is investigating the heavy metal methylmercury and its potential effects on affiliative and aggressive behaviors in the prairie vole (*Microtus ochrogaster).* Methylmercury is a ubiquitous contaminant that is produced by anthropogenic industrial activity, among other things. Its ability to enter the brain and affect the dopaminergic system that is so closely tied to social behaviors in animals makes it dangerous. Unnatural changes in mechanisms governing social bonds could have cascading effects that ultimately influence social mating systems, fitness, and the larger ecology of natural populations of many animals. Because similar mechanisms regulate human social attachment and behavior, this work has the potential to advance environmental policy affecting both human and non-human animals. In 2010, Tomica received a National Science Foundation **Graduate Research Fellowship Program (GRFP)** award. She was one of four OK-LSAMP scholars and one of eight OSU students to receive a 2010 GRFP Fellowship. Tomica will be conducting research and continuing with Ph.D. requirements as a GRFP Fellow beginning Fall 2011. Tomica graduated *magna cum laude* from Langston University, an Historically Black College, with a degree in Biology. Tomica has numerous presentations and participated in a Research Experience for Undergraduates (REU) in Bursa, Turkey, where she conducted research on *Honeybee forager response to differences in flower handling times and rewards.* After entering graduate school, she created a collaborative program between OSU and her alma mater where she mentors minority undergraduates from the Science, Technology, Engineering and Mathematics (STEM) fields in preparation for their graduate careers. Tomica has been instrumental in founding the Black Graduate Student Association on the OSU campus and is serving as a student recruiter, mentor, teaching assistant, and guest speaker to undergraduate classes.

Shoteria Pearson, Bennett College for Women, with her research poster *Does the Sharing of Unclean Syringes Increase the Risk of Contracting HIV and HCV?*

VIRGINIA/NORTH CAROLINA ALLIANCE for Minority Participation

Itzel Godinez (ID:) is a doctoral candidate in **Civil and Materials Engineering** at the **University of Illinois at Chicago** (UIC). She is researching the transport and retention mechanisms of titanium dioxide nanoparticles (nano-TiO_2) in unsaturated and saturated porous media systems. In order to structure a coherent risk assessment regarding the release of nano-TiO_2 into the environment, she is involved in the collection of data with respect to their deployment and transport in different environmental settings. Itzel's laboratory experiments incorporate physicochemical and geochemical conditions that resemble those of the vadose zone and most fresh-groundwater aquifers. Her project is composed of several phases: the first phase consists of saturated soil column experiments that mimic transport conditions in aquifer systems. The second phase of the project examines the effects of salinity in aquifer systems. The final phase of her project is an investigation of the transport of nano-TiO_2 through the vadose zone. In 2010, she conducted research in the International Research and Education in Engineering (IREE) Program. As part of this National Science Foundation (NSF) -funded summer research program, she studied at the Institute of Refrigeration and Cryogenics at Shanghai Jiao Tong University in China. At the conclusion of the program, she authored a literature review on open thermal energy storage (TES) systems. Itzel also collaborated in the composition of a chapter on Coastal Aquifers and Saltwater intrusion, the product of her presentation at the NATO Advanced Study Institute on Overexploitation and Contamination of Shared Groundwater Resources in Bulgaria. She served as the co-chair of a hydrology session about coastal aquifers at the AGU Joint Assembly in Mexico in 2007. Itzel has co-authored several peer-reviewed publications and has received numerous awards and honors. Specifically, she was a fellow in the NSF-funded Bridge to the Doctorate program from 2006 to 2008. In 2009, she was granted the UIC Abraham Lincoln Fellowship, a competitive funding award for PhD students. Itzel will complete her PhD studies in 2011.

Tanganyika (Tangy pron. TAN jee)Wilder (ID:) is a doctoral student in **Physiology and Biophysics** at the **University of Illinois at Chicago** (UIC). Her research investigates cardiac myofilament modifications as they alter the heart function in response to altered metabolic disturbances, specifically mechanisms involving AMP-Kinase. This work will shed light on the cross-talk between energy and contraction. Tangy's extended research has produced results presented at multiple venues and includes the elucidation of the functional characteristics of the gene that expresses alpha2-delta in skeletal muscle and the effect on trafficking calcium fluxes; cross-talk between prolactin signaling through the short and long form of its receptors activating Jak2 pathway in rodent corpus luteal cells; altered myofilament targeting with differential PKCdelta activation: oxidative stress and altered targeting of PKCdelta to sites on Tnl. In 2009 Tangy was invited to address the Center for Cardiovascular Research community on the topic of the effect of reactive oxygen species and src activation as it relates to altered myofilament phosphorylation contractility. Tangy has authored an article in the Biophysical Journal on altered myofilament targeting with differential PKCdelta activation: oxidative stress and altered targeting of PKCdelta to sites on Tnl. Another article on expression of slow skeletal Tnl in mouse hearts confers metabolic protection to ischemia is under review. Tangy has received numerous awards and honors. Specifically, she was a National Science Foundation (NSF) Bridge to the Doctorate pre-doctoral fellow from 2007 to 2009, during which time she received the NSF Bridge to the Doctorate Award for Outstanding Achievement. In 2009 Tangy was a NSF Graduate Research Fellowship Program Honorable Mention Award recipient.. From 2009-2011 she was awarded the American Physiological Society Porter Physiology Fellowship. In 2010, in lieu of this continued funding, Tangy accepted a cardiovascular training grant award in the department of Physiology and Biophysics.


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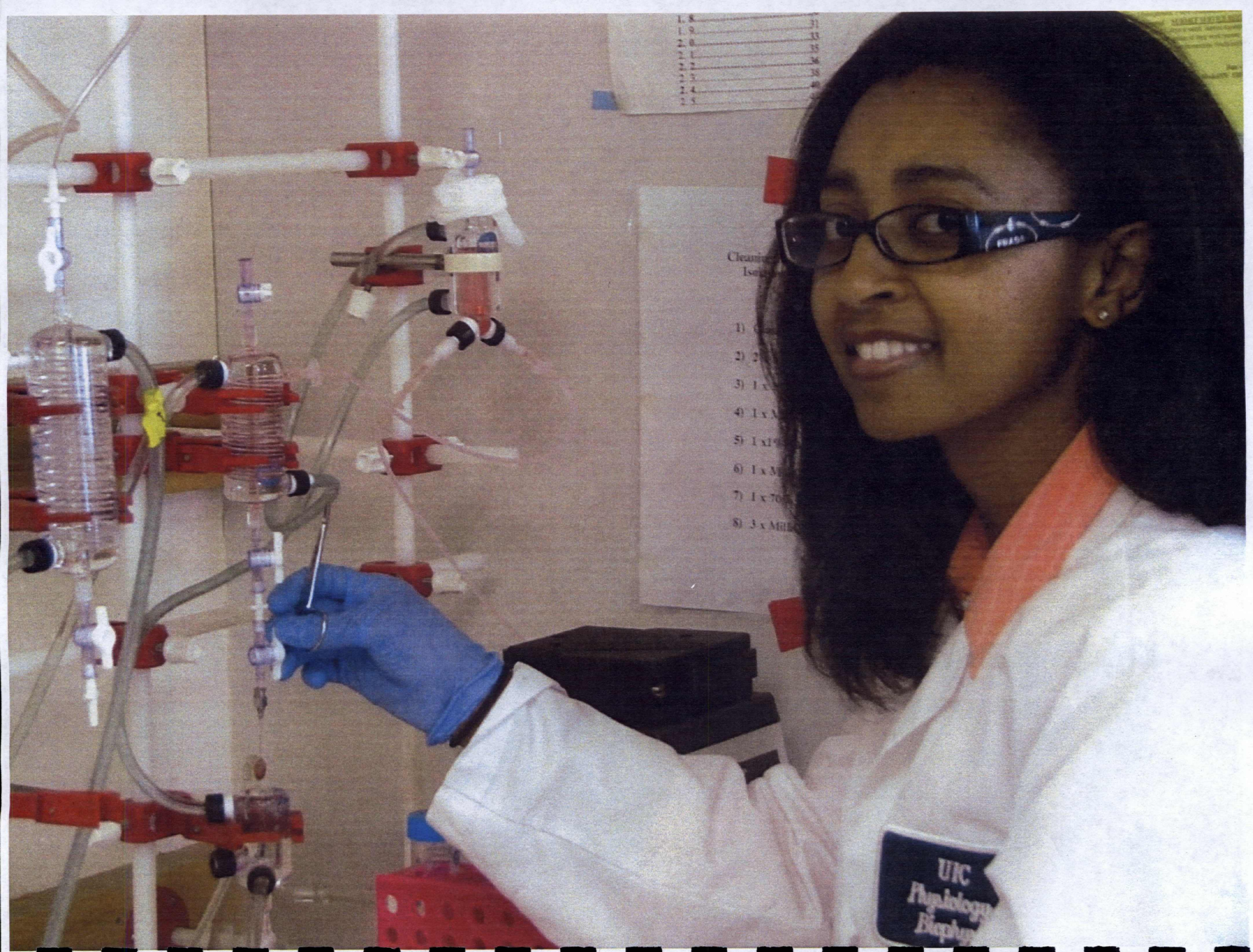

UIC
Physiology
Biophys

Michaila Latore, Virginia Polytechnic Institute and State University, accepts the award for her research,
Inhibition of E2 Viral Protein to DC_SIGN of Dendritic Cell Can Lead to Advancement in Drug Therapeutics

VIRGINIA/NORTH CAROLINA ALLIANCE for Minority Participation

Louis Stokes Louisiana Alliance for Minority Participation

Bridge to the Doctorate Program

Monica R. Sylvain, Ph.D.
Louisiana State University

Dr. Monica R. Sylvain is an ardent chemist and educator. Born in Omaha, Nebraska on April 24, 1968, Monica entered undergraduate studies at Howard University with a full academic scholarship. Over the course of her undergraduate years, she interned at Rohm and Haas, Incorporated and performed independent research at the Omaha Public Power District, Hercules, Incorporated, and Sandia National Laboratory. She received numerous honors and awards during her undergraduate career, including the Dow Chemical USA Outstanding Undergraduate Chemical Engineer Award for four consecutive years. Graduating at the top of her class, Monica completed her Bachelor of Science (Magna Cum Laude) in Chemical Engineering from Howard University in 1990.

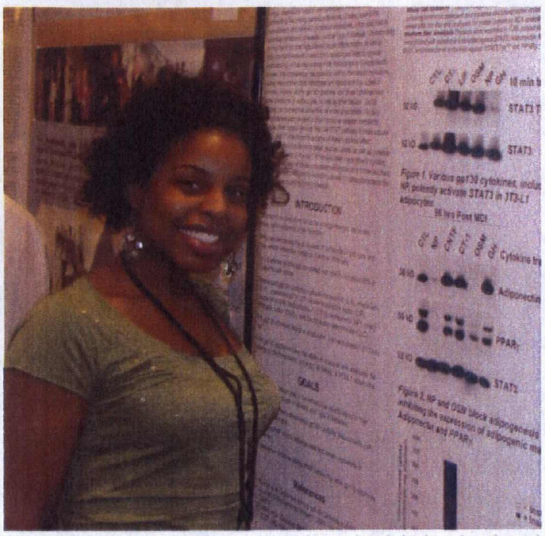
Dr. Sylvain began her technical career as a process engineer by accepting a position with American Cyanamid in Westwego, Louisiana in 1991. After eight years, she changed careers to explore her passion for education and became a certified high school Honors Chemistry and Honors Physics teacher at West St. John High School in Edgard, LA. In 2002, she brought her high school science students to the Chemistry Department at Louisiana State University for a class field trip where she met Dr. Isiah M. Warner, who later became her employer and her graduate school advisor. Before beginning graduate school, Monica managed the multi-million dollar National Science Foundation Math and Physical Sciences (NSF-MPS) grant named the Louisiana Science, Technology, Engineering and Mathematics (LA-STEM) Research Scholars Program for Vice Chancellor Isiah M. Warner in the Office for Strategic Initiatives at Louisiana State University.

In fall 2005, she began graduate studies in analytical chemistry at Louisiana State University. Her dissertation, entitled *Syntheses, Characterizations, and Applications of Molecular Micelles and Imidazolium-Based Ionic Liquids for Protein Separations in Electrophoresis*, included highly interdisciplinary studies across the biochemistry, analytical chemistry, and biotechnology disciplines. Beyond synthesizing achiral and chiral molecular micelles, she advanced characterization studies of proteins using ^{1}H and ^{13}C NMR, Elemental Analysis, Tensiometry, Differential Scanning Calorimetry, and Dynamic Light Scattering. Her synthesis and characterization of novel materials led to new insights with regards to protein-ligand interactions. Through all of this, she supervised and mentored several undergraduates and one high school student.

During her graduate tenure, she received several awards including the National Science Foundation Bridge to the Doctorate Fellowship, the National Science Foundation Graduate Research Fellowship, the United Negro College Fund/Merck and Company Graduate Science Research Dissertation Fellowship, and the Analytical Chemistry Outstanding Oral Speaker Award. Monica graduated with the degree of Doctor of Philosophy in Chemistry from Louisiana State University in December 2010. Very recently, Dr. Sylvain joined the chemistry faculty of Xavier University of Louisiana, where she is currently working on an NSF-funded project with fellow faculty to develop new curriculum for General Chemistry Lecture and General Chemistry Lab for Chemistry Majors to begin fall 2011; and these curricular enhancements will use metacognition and inquiry-guided instruction to increase meaningful learning in a first year chemistry course.

Louis Stokes Louisiana Alliance for Minority Participation

Bridge to the Doctorate Program



Ursula A. White, Ph.D.
Louisiana State University

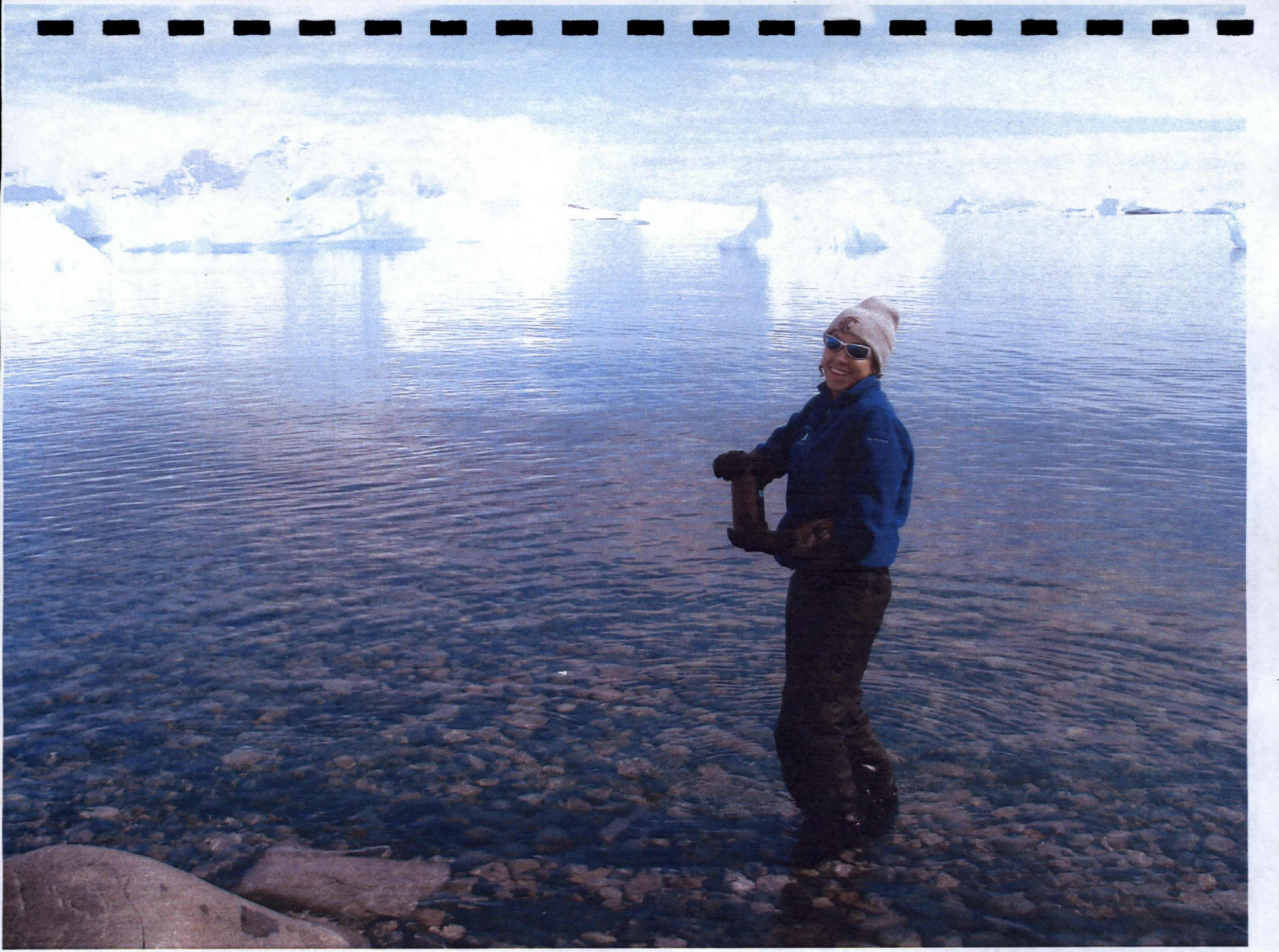
Dr. Ursula A. White is a cellular and molecular biologist with a passion for research. Ursula Antoinette White was born in October 1982, in Monroe, Louisiana, to Isaac and Sarah White. She graduated as Valedictorian from Ouachita Parish High School in 2000. Ursula began her undergraduate career in the fall of 2000 at Louisiana State University, where she majored in biological sciences. In the spring of 2004, Ursula graduated with her Bachelor of Science from Louisiana State University. She entered the graduate program at Louisiana State University in the Department of Biological Sciences in the spring of 2005 as a doctoral student under the mentoring of Dr. Jacqueline Stephens and received her Ph.D. degree in August 2009.

During her doctoral studies in biological sciences, Dr. White primarily focused on fat cells and obesity-related research. Over 20 million people in the U.S. have diabetes, mostly the Type 2 diabetes (T2D) linked to obesity, poor diet, and a lack of exercise. Her studies analyze the relationship between T2D and obesity, specifically how dysregulation of signaling in adipocytes (fat cells) can lead to metabolic disease. She is the first author of six-peer reviewed publications investigating adipoctye regulation and the first author of one book chapter on this subject. Her work is providing in depth analysis of Signal Tranducer and Activator of Transcription (STAT) proteins. Her novel studies have demonstrated that pyruvate dehydrogenase kinase, a known regulator of glycolosis, is highly induced in adipocytes by growth hormone or prolactin in a STAT5 dependent manner. This work has further demonstrated that *in vitro* and *in vivo* adipocytes are responsive to the gp130 cytokine neuropoietin, which can inhibit adipogenesis and negatively regulate insulin signaling. Collectively, Dr. White's work is leading to a deeper understanding of the role of adipocytes in the pathogensis of metabolic disease.

Dr. Ursula White is the recipient of many awards. These include the Bridge to the Doctorate Fellowship at Louisiana State University (LSU/BDP), sponsored by the National Science Foundation, a Poster presentation award stipend at WAESO/MGE@MSA conference, a Travel scholarship from Keystone Symposia to attend Molecular Control of Adipogenesis and Obesity meeting in Banff, Canada, and the McDaniel Travel Award Scholarship from the LSU Dept. of Biological Sciences. She is currently pursuing postdoctoral studies in the obesity related research.

Karyna Rosario

Dr. Karyna Rosario received her Ph.D. in **Biological Oceanography (virology)** from the **University of South Florida College of Marine Science** in December 2010. Monitoring viruses circulating in the human population and the environment is critical for protecting public and ecosystem health. Through her Ph.D. work Dr. Rosario incorporated a new molecular technique (i.e. viral metagenomics) into virus surveillance efforts (both clinical and water quality control programs) to enhance traditional virus detection methods. Although viral metagenomics was developed to describe environmental viral communities, this technique proved to be useful in public health scenarios. The application of viral metagenomics in a clinical setting led to the rapid and cost-effective detection of infectious agents that remained unidentified for more than 13 years. In addition to clinical settings, Dr. Rosario investigated viruses in reclaimed water (i.e. the reusable end-product of wastewater treatment) since the microbiological content of this alternative water supply is largely unknown. Her research revealed a wealth of viruses that were not known to be found in reclaimed water, including animal, plant, and insect viruses. The analysis also led to the identification of a novel bioindicator that may improve the detection of viral pathogens in treated effluent as well as in different environments that are impacted by wastewater contamination. During her Ph.D. program, Dr. Rosario received many honors and awards and published five first-author peer-reviewed articles and co-authored another publication. Some of her awards include: National Science Foundation (NSF) Florida-Georgia LSAMP Bridge to the Doctorate fellowship; Alfred P. Sloan Minority Ph.D. scholarship; 2 USF College of Marine Science Endowed fellowships; USF Successful Latina Student Award; Distinguished Graduate Student Award from the University of South Florida; and Honorary Mention selection, Robert D. Watkins Graduate Research Fellowship from the American Society for Microbiology. She also had the opportunity to do research internationally through NSF-funded programs, including the International Polar Year Research Opportunities in Antarctica for Minorities (IPY-ROAM) in 2007, and the East Asia and Pacific Summer Institutes (EAPSI), in New Zealand during summer 2010. In New Zealand, Dr. Rosario investigated the diversity of plant viral pathogens, particularly geminiviruses, in the South Pacific Islands of Tonga.

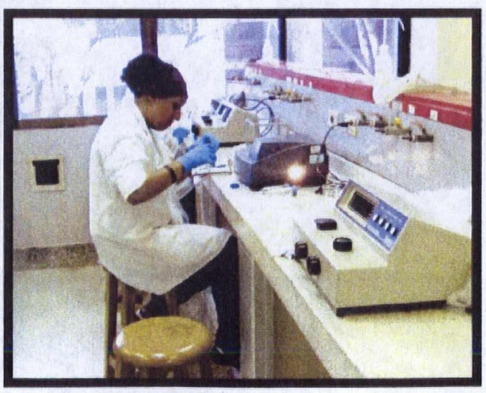


NATALIE DASTAS

Natalie Dastas is a second year M.A. student at Brooklyn College (CUNY) pursuing a graduate degree in Geology. She has been a Bridge to Doctorate program since January 2010. Natalie concluded her undergraduate studies at Brooklyn College in the fall of 2009; completing a B.S. in Geology and a B.A. in Earth Science Education. Natalie plans on continuing her study of geology to the Doctoral level and become actively involved in research. Her current area of research is within palynology. Her thesis research involves the study of various microfossils preserved within sedimentary deposits located in Arkansas. One major research goal is the identification and correlation of microfossils to the ages of the sedimentary sequences in which they are found. Results from the study could lead to a potential discovery linked to the Cretaceous-Tertiary boundary event. Conducting research has allowed Natalie to build on her skills in the lab, sharpen her general knowledge in her major and of the sciences in general, as well allowed her to network with other professionals. In the summer of 2010, Natalie completed a study abroad research program in Cartagena, Colombia. The program focused on conducting environmentally based research within communities of La Boquilla in Cartagena.

"Participating in this program has allowed me to grow as a researcher and as an individual and has helped me to adapt to my surroundings; it has also opened my eyes to the endless possibilities of research overseas. I have developed leadership and communication skills as well as added to my laboratory experience and techniques. In Geology and within any discipline of science, there is no limit to the things you can learn, new discoveries are made everyday and I would like to be a part of that."

Natalie Dastas BTD Fellow Brooklyn College of CUNY.



LOUIS STOKES ALLIANCE CUNY FOR MINORITY PARTICIPATION

BROOKLYN COLLEGE

ADINA BOYCE

LOUIS STOKES ALLIANCE CUNY FOR MINORITY PARTICIPATION

the City College of New York

UCDAVIS UNIVERSITY OF CALIFORNIA

Adina Boyce is a second year Transportation Engineering graduate student pursuing a PhD at the University of California Davis. Since becoming a LSAMP scholar in 2005 and a Bridge to Doctorate Fellow in 2008, her research has continuously focused on sustainable methods in Transportation. Through these programs, she has participated in several summer research experiences at the University of California-Berkeley, Georgia Institute of Technology and at the Universidade Federal do Ceará in Fortaleza, Brazil.

Ms. Boyce believes that renewable energy infrastructure planning is important because it has great potential to diversify transportation fuel and energy sources and to reduce greenhouse gas emissions. Most production and delivery infrastructures of this emerging system are not in place yet, which presents an opportunity for incorporating risk management directly into the strategic planning of the supply chains. Her current research focuses on the development of a biomass- based renewable energy infrastructure systems with an emphasis on its economic viability, system reliability and robustness, and environmental impacts. She hopes to develop methods for disruption management of renewable energy supply chain systems against recurrent supply/demand fluctuation and non-recurrent disasters, with an objective of achieving system security and efficiency. She holds both a BE and ME in Civil Engineering from the City College of New York-CUNY.

SUNY LSAMP Nomination for "Women in Science" : Shayri Greenwood

Shayri Greenwood was a State University of New York Louis Stokes Alliance for Minority Participation (SUNY LSAMP) Bridge to the Doctorate student at Stony Brook University from 2006 to 2008. After that she won the prestigious New York State W. Burghardt Turner Fellowship for Underrepresented Graduate Students. She completed her Masters in Biopsychology and will be completing her doctorate in this summer. Greenwood was unsure initially whether to pursue a Ph.D. or Md/Ph.D. but because of her excellent undergraduate research she was nominated for the SUNY LSAMP Bridge to the Doctorate (BD) fellowship by her current faculty mentor, Dr. Brenda Anderson. Her experience as a BD student quickly convinced her to purse a Ph.D. in Biopsychology. The initial impetus for her research was a desire to help find a cure for epilepsy because of her brother's severe illness. Her dissertation is focused on understanding the activation of cell death pathways following moderate seizures using the Kainic acid model of temporal lobe epilepsy and she is also investigating whether moderate seizures effects learning and memory in rats. She will be pursuing a Post- Doctorate next fall working in Dr. Wilma Friedman's lab at Rutgers University. Dr. Friedman's lab is interested in understanding the biochemical mechanisms of neurotrophin signaling pathways and their role in regulating neuronal cell death. The Friedman lab uses an animal model of seizure disorders to understand the delicate balance between neuronal survival and death following injury. Dr. Brenda Anderson characterizes Shayri as follows: "Shayri is an amazing student. She has made tremendous growth as a student, and her dedication is exceptional. Her project has been challenging at every stage, and yet she steadily makes progress, and has collected very interesting data." Her publications include:

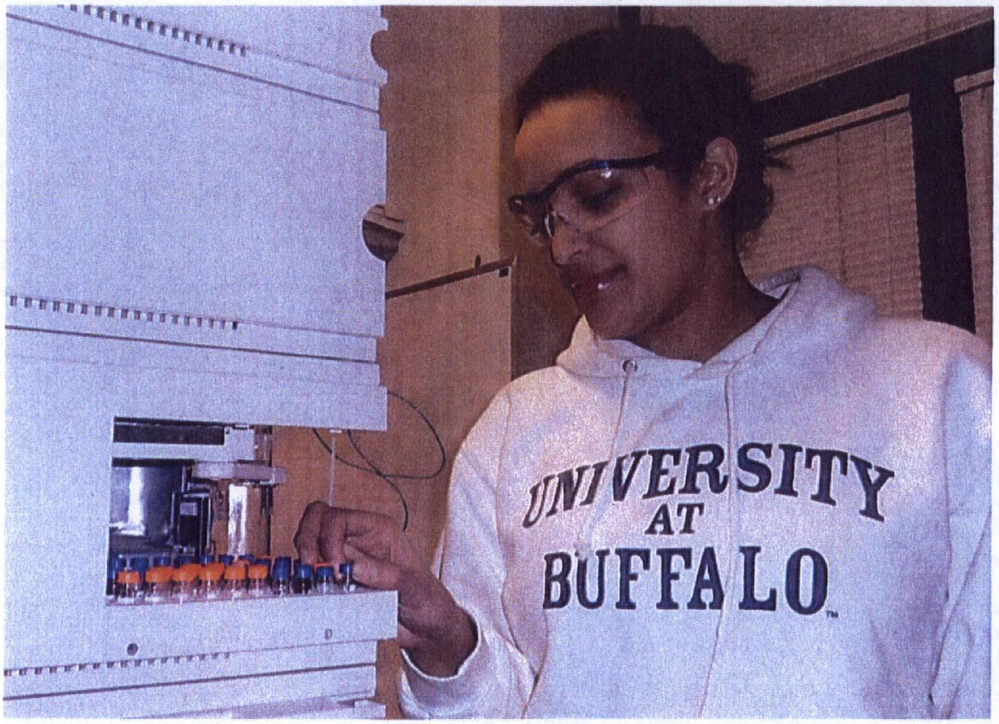
1. Casabianca, A., Bezsonova, A.,**Greenwood, S.**, and Anderson, B.J. (2010). Prolonged generalized seizures, but not moderate seizures, produce memory deficits. *Abstract submitted for the 19th N.E.U.R.O.N Conference.*
2. **Greenwood, S.,** Mitchell, N,. Bezsonova, A., Casabianca, A. and Anderson, B.J. (2010). Short duration seizures produce cell loss correlated with seizure behavior, Program No.464.21 *2010 Neuroscience Meeting Planner*. San Diego, CA: Society for Neuroscience, 2010. Online.
3. **Greenwood, S.,** J Ryan, M. and Anderson, B.J. (2009). Moderate seizures activate programmed cell Death pathways, Program No. 735.2 *2009, Neuroscience Meeting Planner*. Chicago, IL: Society for Neuroscience, 2009. Online.

Not only an excellent researcher and teacher already, she has made it a top priority to encourage other underrepresented minority students. She has presented Success in Science Empowerment workshops to underrepresented and low income students, helped recruiting efforts for underrepresented minority STEM graduate students and mentored minority undergraduates presenting their research at STEM conferences.

Shayri at the microscope analyzing brain sections

SUNY LSAMP Nomination for "Women In Science": Ivonne Ferrer

Ivonne M. Ferrer is a Ph.D. candidate in the Department of Chemistry at the University at Buffalo (UB). Ms. Ferrer was a State University of New York Louis Stokes Alliance for Minority Participation (SUNY LSAMP) Bridge to the Doctorate fellow from 2007 to 2009 under the mentoring of Dr. Luis Colon. Her research involves the synthesis and study of metal oxides (i.e., hafnia and zirconia) monolithic structures with hierarchical porous architecture. These materials have shown unique properties for chromatographic applications and electrokinetic pumping (EK) characteristics for methanol-based fuel cell applications. Results have been submitted for publication to an American Chemical Society Journal. Currently Ivonne is examining the surface characteristics of the monolithic structures in an effort to elucidate the origin of the electroosmotic flow when using the metal oxide to pump neat methanol as the fluid. A patent is pending on the innovative application of the methanol oxide monoliths synthesized in her research group. Ivonne has presented her work in multiple regional and national scientific meetings such as *The Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy*, as well as the *American Chemical Society*. In addition to her research, Ivonne has served as a teaching assistant (TA) for *Advanced Analytical* at UB. She has been involved in promoting Chemistry and motivating students from underrepresented groups to seek research opportunities. She has been a mentor to students in the UB Chemistry Dept.'s Research Experience for Undergraduates (REU) Program and provided workshops at her alma mater, the University of Puerto Rico at Cayey, on the Next Generation of Micro & Nano Technology. She also enjoys giving back to the community being a volunteer for National Chemistry Week at the Buffalo Science Museum and for the Science Fun Night at the Buffalo Native American Magnet School, where she has the opportunity to reach out to kids with interests in science. Ivonne started her graduate studies at UB as a National Science Foundation Bridge to the Doctorate fellow (2007-2009). She is a co-author in the book chapter: Vujcic, S.; Ferrer, I.M.; Rivera, J.G.; Li L.; Colón, L.A., (2011). New Approaches to Monolithic Columns, in *Interfaces and Interphases in Analytical Chemistry*, R. Helburn and M. F. Vitha, (Eds.), ACS Symposium Series, 1062, (pp. 123-139). Washington, DC: American Chemical Society.



Ivonne Ferrer running samples in her lab

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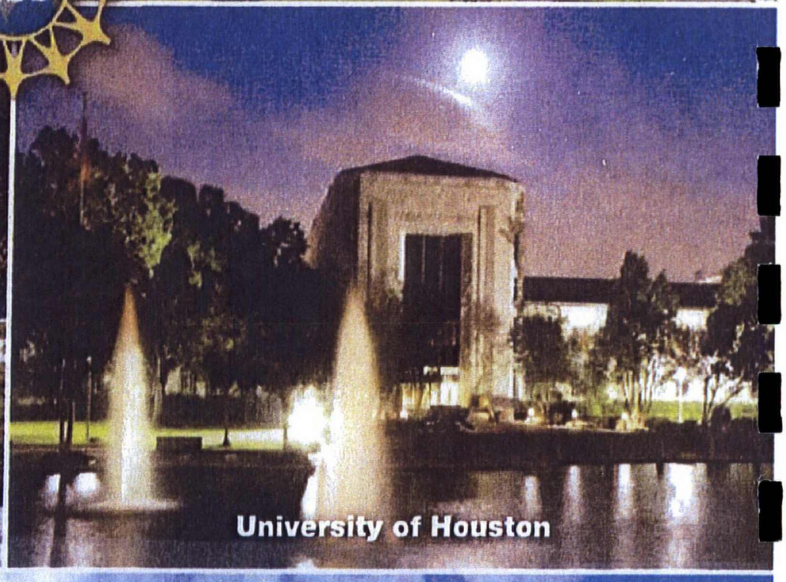
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