

EHR in Action

March 2011

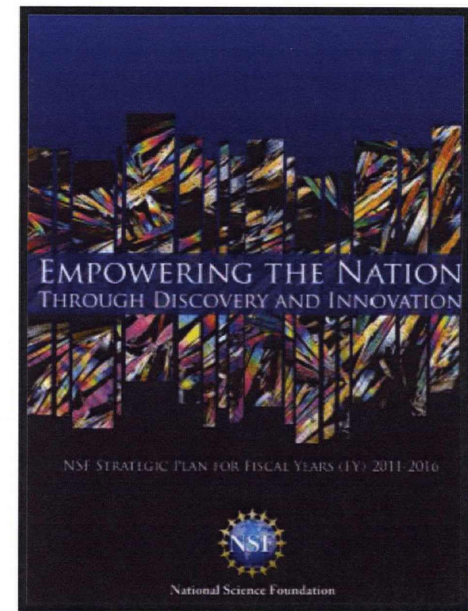
Volume One:
The Louis Stokes Alliances for
Minority Participation (LSAMP)
Bridge to the Doctorate Participants



Women in STEM

BROADENING PARTICIPATION

NSF focuses on broadening participation of groups, institutions, and geographic regions underrepresented in STEM disciplines, working with academic and private sector partners to make certain that STEM education and workforce preparation, infrastructure, and research opportunities are broadly available to ensure that the technical workforce and scientists and engineers have the skills and opportunities needed to flourish in a global knowledge community.



Source: *NSF Strategic Plan: FY 2011-2016*, p. 16

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Jaquice Hughes

University of Alabama at Birmingham



Alabama

Louis Stokes Alliance for Minority Participation



Providing academic and financial support programs designed to significantly increase the quality and quantity of underrepresented minority students completing baccalaureate degrees in science, technology, engineering and mathematics (STEM) fields.

Ms. Jaquice Hughes is a doctoral candidate in the Department of Civil, Construction, and Environmental Engineering at the University of Alabama at Birmingham. During her first year of graduate studies, she was inducted into Chi Epsilon, the National Civil Engineering Honor Society. She has maintained a 4.0 grade point average during her two years of the program. Ms. Hughes has had the opportunity to visit Egypt as part of a joint program with her department. While in Egypt, Ms. Hughes studied international engineering practices and had the opportunity to compare the advantages and disadvantages of these practices to those in the U.S. Ms. Hughes recently began her dissertation research with the Birmingham Water Works Board (BWVB), 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 BWVB suggestions to optimize their water quality and the duration of their piping system. Ms. Hughes has recently been accepted to present her research at a national conference to experts in her field. Ms. Hughes has proven to be resourceful and 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.



Candace Watson

University of Alabama at Birmingham



Alabama

Louis Stokes Alliance for Minority Participation



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Ms. Candace Watson is a doctoral candidate in civil engineering at the University of Alabama at Birmingham (UAB), 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. Ms. Watson was selected to participate in a study abroad program in Cairo, Egypt, where she studied sustainable engineering techniques to improve the energy performance of Cairo's built infrastructure. She has authored and presented papers at 14 professional conferences, both nationally and globally, traveling to Xi'an, Shaanxi, China in 2010. A recipient of both the UAB 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, Ms. Watson received the Leadership in Energy and Environmental Design accreditation from the United States Green Building Council. 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.



Stephanie Watson, Ph.D.

University of Alabama at Birmingham



Alabama

Louis Stokes Alliance for Minority Participation



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Dr. Stephanie Watson earned a Ph.D. in civil engineering at the University of Alabama at Birmingham (UAB) in August 2010. After receiving a bachelor of science in civil engineering from Lawrence Technological University in Michigan, she was awarded a Bridge to the Doctorate Fellowship 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 Dr. Watson to collaborate with numerous emergency managers across the U.S. 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. 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.



Nadine Rodriguez

California State University, Los Angeles

California State University Louis Stokes
Alliance for Minority Participation

Ms. Nadine R. Martinez Rodriguez is a second-year Ph.D. student in the Department of Molecular, Cellular, and Developmental Biology (MCDB) at the University of California, Santa Barbara (UCSB). 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, Ms. Rodriguez 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. Ms. Rodriguez was a recipient of an NSF LSAMP Bridge to the Doctorate Fellowship through the California State University (CSU) Alliance from September 2007 through August 2009 while completing her master of science in biology (with a specialty in innate immunology) at CSU, Los Angeles. Her degree was officially awarded in September 2009. In addition to her Ph.D. program, Ms. Rodriguez is a participant in the UCSB Certificate in College and University Teaching . 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 Ph.D. is to become a university professor with her own research lab where she can mentor students of diverse backgrounds.

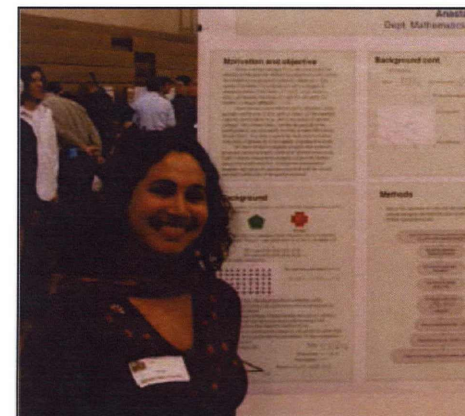


Anastasia Chavez

San Francisco State University

California State University Louis Stokes
Alliance for Minority Participation

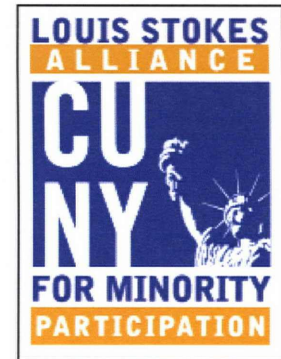
Ms. Anastasia Chavez began her mathematical adventure at Santa Rosa Junior College, where she was inspired by her calculus teacher to pursue a bachelor's degree in mathematics. After transferring to San Francisco State University (SFSU) in 2003, she was awarded the Undergraduate Mentoring in Quantitative Environmental Biology (UMB) scholarship. Through UMB, 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 bachelor of science in applied mathematics from SFSU in spring, 2006. That spring, Ms. Chavez was accepted to the master's program at SFSU and was awarded the LSAMP Bridge to the Doctorate Fellowship. Ms. Chavez 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. Ms. Chavez'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 2010 SACNAS National Conference and was awarded best oral presenter in mathematics. Ms. Chavez's joint paper with Dr. Beck, "Bernoulli-Dedekind Sums," has been accepted for publication in *Acta Arithmetica*. Ms. Chavez will begin the doctoral program in mathematics at the University of California, Berkeley this fall, funded by the prestigious University of California, Berkeley Chancellor's Fellowship.



Adina Boyce

City University of New York

Ms. Adina Boyce is a second-year transportation engineering graduate student pursuing a Ph.D. at the University of California, Davis. She holds both bachelor and master of engineering degrees in civil engineering from the City College of New York. Since becoming an LSAMP scholar in 2005 and a Bridge to the Doctorate Fellow in 2008, Ms. Boyce's 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, the 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 system 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.

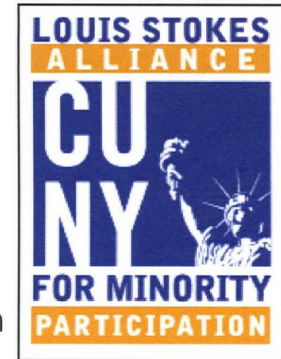


Natalia Dastas

Brooklyn College

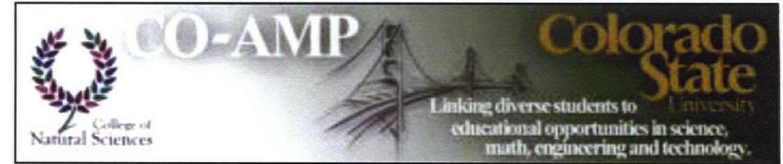
Ms. Natalia Dastas is a second-year master of arts student at Brooklyn College (CUNY) pursuing a graduate degree in geology. She has been in the Bridge to the Doctorate program since January 2010. Ms. Dastas concluded her undergraduate studies at Brooklyn College in fall 2009, completing a bachelor of science in geology and a bachelor of arts in earth science education. Ms. Dastas plans to continue her study of geology at the doctoral level and is 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 Ms. Dastas to build on her laboratory skills, sharpen her general knowledge within geology and the sciences, and network with other professionals. In the summer of 2010, Ms. Dastas 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 every day and I would like to be a part of that."

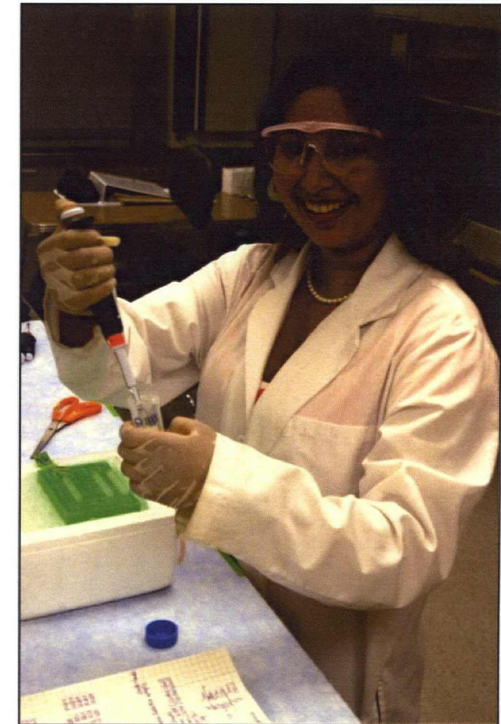


Vanessa Enriquez

Colorado State University

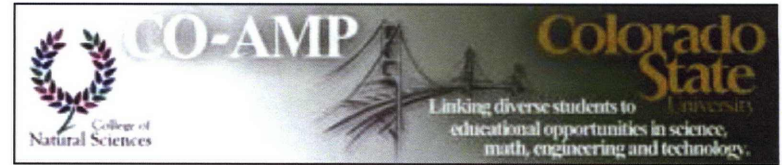


Ms. Vanessa Enriquez is a Ph.D. candidate in the Cell & Molecular Biology program at Colorado State University. Ms. Enriquez is researching ovarian cancer biology, the fifth most deadly cancer among women in the U.S. primarily due to the lack of early diagnostic markers; vague symptoms resulting in a late diagnosis; and persistence of dormant, drug-resistant cancer cells. Ms. Enriquez 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, Ms. Enriquez 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. Ms. Enriquez’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. An abstract describing Ms. Enriquez’s research was recently accepted for the 44th Annual Meeting of the Society for the Study of Reproduction.

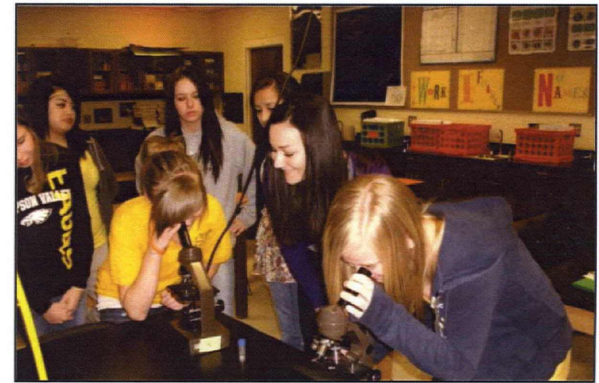


Krystle Frahm

Colorado State University



Ms. 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. Ms. Frahm 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 involving the development of a microchip able to detect neurotransmitter release while viewing neuron migration using fluorescent microscopy. Ms. Frahm has worked collaboratively in Dr. Gregor Majdic's laboratory in Ljubijana, Slovenina, and published her results in *Slovenian Veterinary Research*, 47:182. She has also published in *Pharmacology, Biochemistry and Behavior*, 97(3), 416-22. Ms. Frahm 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 [the] available graduate pool to support areas of research with prospect of success/impact within health services," and the FASEB MARC travel award for her platform presentation at the 2010 Society for the Study of Reproduction Annual Meeting.

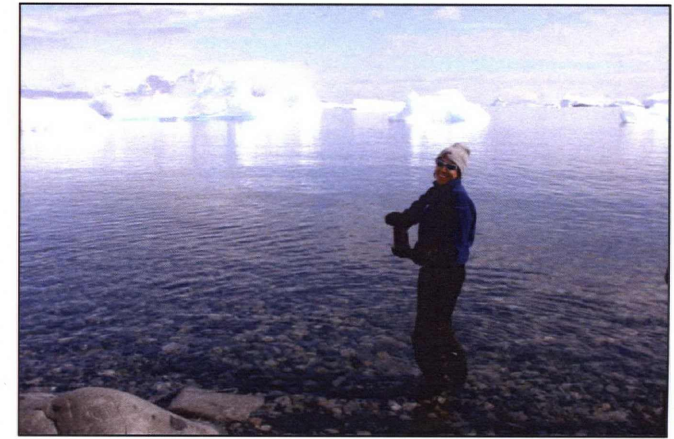


Karyna Rosario, Ph.D.

University of South Florida

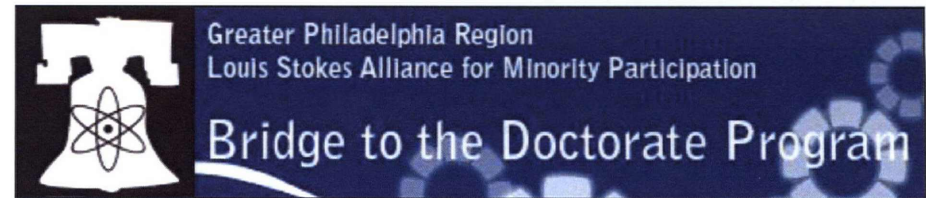
Dr. Karyna Rosario received her Ph.D. in biological oceanography (virology) from the University of South Florida (USF) College of Marine Science in December 2010. Monitoring viruses circulating in the human population and the environment is critical for protecting public and ecosystem health. Through 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 doctoral education, Dr. Rosario received many honors and awards, publishing five first author peer-reviewed articles and co-authoring another publication. Some of her awards include: the NSF Florida-Georgia LSAMP Bridge to the Doctorate Fellowship; the Alfred p. Sloan Minority Ph.D. scholarship; two USF College of Marine Science Endowed fellowships; the USF Successful Latina Student Award; the Distinguished Graduate Student Award from USF; and an Honorary Mention selection, Robert D. Watkins Graduate Research Fellowship from the American Society for Microbiology. Dr. Rosario also had the opportunity to conduct research internationally through NSF-funded programs, including the International Polar Year Research Opportunities in Antarctica for Minorities in 2007, and the East Asia and Pacific Summer Institutes 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.



Quincy Brown, Ph.D.

Drexel University



Dr. Quincy Brown is an Assistant Professor in the Department of Computer Science at Bowie State University. Dr. Brown received her bachelor of science in electrical engineering, *cum laude*, in December 1995 from North Carolina A&T State University. As an award recipient of an NSF Bridge to the Doctorate Fellowship through the Greater Philadelphia Region LSAMP, Dr. Brown earned a master of science in computer science in June 2007 from Drexel University. With additional support from the NSF GK-12 Fellowship program, she completed her doctoral study and was awarded a Ph.D. in computer science from Drexel University in August 2009. Dr. Brown was also a recipient of the Computing

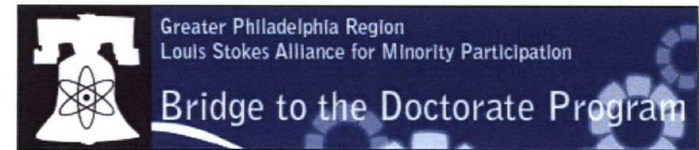


Innovation Postdoctoral Fellowship funded through the NSF. She completed her postdoctoral work at the University of Maryland, College Park in the iSchool under the mentorship of Dr. Allison Druin, and joined the Human Computer Interaction Lab to continue her research with mobile devices and learning. Dr. Brown's primary research has focused on the integration of technology and education, particularly on multi-user environments (MUVE) in educational contexts, which has the potential to allow educators to tailor their lessons to an individual's learning pattern. Her research incorporates concepts of Girl Games, U.S./Singapore Math Curriculum pedagogical differences, MUVE technology, and Sharable Content Object Reference Model learning objects. Dr. Brown has published and presented her research both nationally and internationally, most notably in Herrsching am Ammersee, Germany, at the Institute of Electrical and Electronics Engineers Symposium on Visual Languages and Human-Centric Computing, for her work on "The Design of a Mobile Intelligent Tutoring System." She has worked in the defense industry for the Raytheon Company (formerly Texas Instruments), in the telecommunications industry for NEC Incorporated and Nokia Mobile Phones for nine years collectively, 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 user interfaces for various industries.

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. Dr. Williams-Bey realized in her sophomore year in high school that she had an affinity for biology and that this would be the path that would lead her to success in medicine and/or research. She entered the Community College of Philadelphia and became an LSAMP academic scholar earning honors until transferring to Cheyney University of Pennsylvania in 2001. During this period, Dr. Williams-Bey was working part-time and participated in the astronomy club, the Student National Medical Association, and 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, earning a bachelor's degree in biology as an LSAMP Scholar, and was accepted to Drexel University as a Bridge to the Doctorate Fellow in biology. Dr. Williams-Bey was awarded a Ph.D. in biological sciences at Drexel University in June 2010. Dr. 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. Williams-Bey has been the recipient of many awards and is currently a postdoctoral associate at the National Institute of Allergy and Infectious Diseases and an Intramural Research Training Award recipient at the National Institutes of Health.



Itzel Godinez

University of Illinois at Chicago

Ms. Itzel Godinez 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. Ms. Godinez'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 Program. As part of this 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 systems. Ms. Godinez 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 American Geophysical Union Joint Assembly in Mexico in 2007. Ms. Godinez 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 Ph.D. students. Ms. Godinez will complete her Ph.D. studies in 2011.

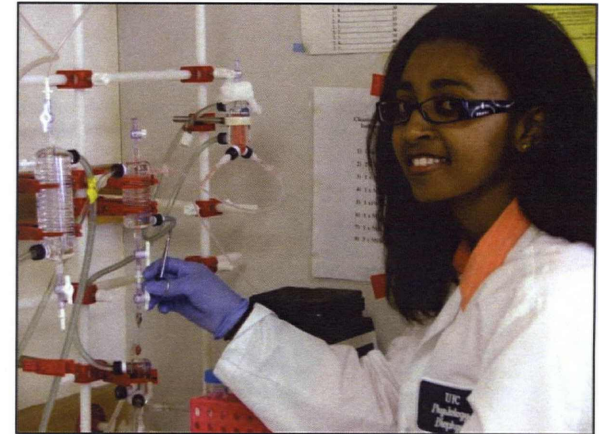


Tanganyika Wilder

University of Illinois at Chicago



Ms. Tanganyika Wilder is a doctoral candidate 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. Ms. Wilder'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; and altered myofilament targeting with differential PKCdelta activation: oxidative stress and altered targeting of PKCdelta to sites on Tnl. In 2009 Ms. Wilder was invited to address the Center for Cardiovascular Research community on the effect of reactive oxygen species and src activation as it relates to altered myofilament phosphorylation contractility. Ms. Wilder 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 the expression of slow skeletal Tnl in mouse hearts confers metabolic protection to ischemia is under review. Ms. Wilder has received numerous awards and honors. Specifically, she was an NSF Bridge to the Doctorate Fellow from 2007 to 2009, during which time she received the NSF Bridge to the Doctorate Award for Outstanding Achievement. In 2009, Ms. Wilder was an 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, Ms. Wilder accepted a cardiovascular training grant award in UIC's Department of Physiology and Biophysics.



Erika Brown

Jackson State University



Ms. Erika Brown is currently a Ph.D. candidate in environmental science at Jackson State University (JSU) under the mentorship of Presidential Scholar Dr. Paul Tchounwou, and is expected to graduate in May 2011. Her research focuses on the cellular and molecular mechanisms involved in the toxicity of environmental contaminants such as arsenic trioxide on biological organisms, particularly in human liver carcinoma cells. To date, this research has produced three publications in refereed journals (*Metal Ions in Biology and Medicine* and *Journal of Biochemical and Molecular Toxicology*). Over the course of her graduate studies, Ms. Brown has given 19 presentations of her research, including the presentation of a paper at the 10th Annual International Symposium of Metal Ions in Biology and Medicine, Bastia, Corsica, France. Ms. Brown was an NSF Bridge to the Doctorate Fellow at JSU and received her master of science in environmental science in 2006. During her fellowship, Ms. Brown 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.



Tomekia Simeon, Ph.D.

Jackson State University



Louis Stokes
Mississippi Alliance
for Minority Participation

Celebrating 16 Years of Increasing Minority Degrees
in Science, Technology, Engineering and Mathematics

Dr. Tomekia Simeon, an alumnus of the LSMAMP, received her Ph.D. 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, Dr. Simeon 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 (*Journal of Physical Chemistry and International Journal of Quantum Chemistry*) and her mission is the same at NU (she has one publication submitted and another that will be submitted shortly). Dr. Simeon is passionate about encouraging and motivating K-12 students and underrepresented populations to pursue careers and professions in STEM disciplines. Her volunteer outreach activities at NU include Science in the Classroom, which engages third 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 experience. 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, the 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 and Beijing, China. Overall, her tenure as an 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 Naval Research in Washington, D.C. with the 1985 Noble Laureate in Chemistry, Dr. Jerome Karle.



Monica Sylvain, Ph.D.

Louisiana State University

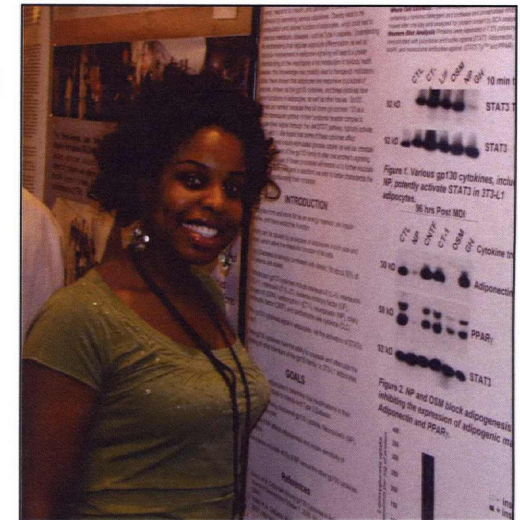
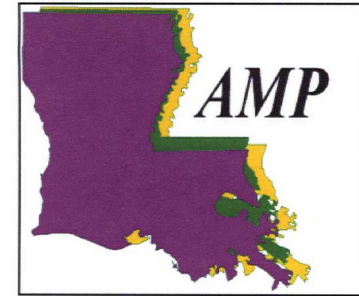
Dr. Monica R. Sylvain is an ardent chemist and educator. Dr. Sylvain entered undergraduate studies at Howard University with a full academic scholarship. Over the course of her undergraduate years, she interned at Rohm and Haas, Incorporated, and performed independent research at the Omaha Public Power 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. Dr. Sylvain completed her bachelor of science, *magna cum laude*, in chemical engineering in 1990 and began her technical career as a process engineer by accepting a position with American Cyanamid 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, Louisiana. In 2002, she brought her high school science students to the Department of Chemistry at Louisiana State University (LSU) 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, Dr. Sylvain managed a multi-million dollar NSF Math and Physical Sciences grant, the Louisiana Science, Technology, Engineering and Mathematics Research Scholars Program, for Vice Chancellor Isiah M. Warner at LSU. In fall 2005, she began graduate studies in analytical chemistry at LSU. 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 ^1H 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 her educational career, Dr. White also supervised and mentored several undergraduate students and one high school student. During her graduate tenure, she received several awards including the NSF Bridge to the Doctorate Fellowship, the NSF Graduate Research Fellowship, the United Negro College Fund/Merck and Company Graduate Science Research Dissertation Fellowship, and the Analytical Chemistry Outstanding Oral Speaker Award. Dr. Sylvain received her Ph.D. 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 the General Chemistry Lecture and General Chemistry Laboratory for chemistry majors to begin fall 2011. These curricular enhancements will use metacognition and inquiry-guided instruction to increase meaningful learning in a first-year chemistry course.



Ursula White, Ph.D.

Louisiana State University

Dr. Ursula A. White is a cellular and molecular biologist with a passion for research. Dr. White began her undergraduate career in the fall of 2000 at Louisiana State University (LSU), where she majored in biological and graduated with her bachelor of science in 2004. She entered the graduate program at LSU 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. 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 Type 2 diabetes (T2D), which is 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 adipocyte regulation and the first author of one book chapter on this subject. Her work is providing in-depth analysis of Signal Transducer and Activator of Transcription (STAT) proteins. Her novel studies have demonstrated that pyruvate dehydrogenase kinase, a known regulator of glycolysis, 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 pathogenesis of metabolic disease. Dr. White is the recipient of many awards. These include the NSF Bridge to the Doctorate Fellowship at LSU; a poster presentation award stipend at the WAESO/MGE@MSA conference; a travel scholarship from the Keystone Symposia to attend the Molecular Control of Adipogenesis and Obesity Meeting in Banff, Canada; and the McDaniel Travel Award Scholarship from the LSU Department of Biological Sciences. She is currently pursuing postdoctoral studies in obesity-related research.



Brandi Cron

University of New Mexico

NEW MEXICO AMP
ALLIANCE FOR MINORITY PARTICIPATION

Ms. Brandi Cron, a Bridge to the Doctorate participant at the University of New Mexico, is a master of science candidate in earth and planetary sciences. Ms. Cron has applied recent advances in autonomous environmental sensors and molecular genetics to understand similarities in the extreme geochemical environments and unusual microbial communities in springs of the arid Southwest and hydrothermal vents of the mid-ocean ridges. With her advisor and other colleagues, Ms. Cron has identified novel organisms and provided geochemical constraints on metabolic processes. From her landlocked tribal home of Gallup, New Mexico, she traveled to Bristol University in England to examine biomarkers, and journeyed to the Lost City Hydrothermal Field in the mid-Atlantic on Scripps' Roger Revelle, a global-class research vessel, to obtain samples using a remotely operated vehicle. She spent a summer at the Smithsonian National Museum working on phylogenetic databases. Ms. Cron's work has been presented at a number of national conferences, including the annual meetings of the American Geophysical Union and the Geological Society of America, and is being prepared for journal submission. She has served as co-author on two other publications. Her proposal for continued study was awarded an NSF Graduate Research Fellowship, which she will use as she begins her Ph.D. work in the Department of Geology and Geosciences at the University of Minnesota in fall 2011.



Wanda Lewis

North Carolina Central University

NC-LSAMP

NORTH CAROLINA LOUIS STOKES
ALLIANCE FOR MINORITY PARTICIPATION

Ms. Wanda Lewis first participated in the NCLSAMP project at North Carolina Central University (NCCU) 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 (NCSU), and involved the determination of procyanidins, contained in muscadine seeds, extracted from various ethanol solutions. Ms. Lewis is currently a Ph.D. candidate in the Department of Food Sciences at NCCU. She recently co-authored a paper with her research mentors Dr. Boyd (NCSU) and Dr. Sandra DeLauder (NCCU) 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.



A'ja Moore

North Carolina Central University

NC-LSAMP

NORTH CAROLINA LOUIS STOKES
ALLIANCE FOR MINORITY PARTICIPATION

Ms. A'ja V. Moore began her participation in the LSAMP program in fall 2004, and participated in a variety of research projects. She was a participant in the REACH Program through the North Carolina Department of Natural Resources in the Radiation Safety Group, and presented her project to Secretary William Ross of the North Carolina Department of Environment and Natural Resources in December of 2004. After graduating from North Carolina Central University (NCCU) in 2004, Ms. Moore was a student contractor through the EPA where she worked on a variety of research



projects ranging from bioavailability of heavy metals to pesticide identification and analysis. She returned to NCCU in January 2006 as a Bridge to the Doctorate Fellow to pursue a master's degree in analytical chemistry. During her tenure at NCCU as a Fellow, she made several research presentations including professional presentations through the EPA. Her thesis research project focused on the correlation of water quality parameters in Durham, North Carolina, with precipitation, land use, and temporal variations. Ms. Moore is currently pursuing a Ph.D. in the Energy and Environmental Sciences program at North Carolina A&T State University where she is a recipient of a U.S. Department of Agriculture Fellowship. Ms. Moore and her research mentor are currently developing several manuscripts from her thesis project.

Candice Morrison

North Carolina Central University

NC-LSAMP

NORTH CAROLINA LOUIS STOKES
ALLIANCE FOR MINORITY PARTICIPATION

Ms. Candice Morrison began her participation in the LSAMP program in fall 2004 as a second degree student. Following receipt of her bachelor of science in environmental science (with a concentration in chemistry), Ms. Morrison worked as a student contractor at the EPA and participated in research at North Carolina Central University through the Environmental Risk and Impact in Disadvantaged Communities and Communities of Color, 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 EPA 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 Ph.D. Scholarship through the Department of Soil, Water, and Environmental Science. She has participated in multiple research projects at the Tucson International Airport Area Superfund site focusing on the removal of chlorinated contaminants, specifically trichloroethylene, 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).



Tomica Blocker Oklahoma State University

OKLAHOMA *Louis Stokes Alliance for Minority Participation*

Developing Worldly Scholars



Ms. Tomica Blocker is a doctoral candidate in the Department of Zoology at Oklahoma State University (OSU). Her research focuses on the effects of anthropogenic stressors on animal behavior, including ecotoxicological, neuroendocrinological, and ethological effects. Specifically, Ms. Blocker 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, Ms. Blocker received an NSF 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. Ms. Blocker will be conducting research and continuing with Ph.D. requirements as a GRFP Fellow beginning fall 2011. Ms. Blocker graduated *magna cum laude* from Langston University, an Historically Black University, with a bachelor's degree in biology. During this time, Ms. Blocker 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 underrepresented minority undergraduate students majoring in STEM fields in preparation for their graduate careers. Ms. Blocker has been instrumental in founding the Black Graduate Student Association at OSU and is serving as a student recruiter, mentor, teaching assistant, and guest speaker to undergraduate classes.



Cara Watts

Oklahoma State University

OKLAHOMA *Louis Stokes Alliance for Minority Participation*

Developing Worldly Scholars



Ms. Cara Cowan Watts, a Ph.D. candidate in biosystems engineering at Oklahoma State University, is completing her dissertation research, entitled *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. Ms. Watts 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 U.S. 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. Ms. Watts was elected to the National Congress of American Indians 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. Ms. Watts 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. Ms. Watts 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, Ms. Watts has been selected to serve on Indian Health Services and Health and Human Services advisory boards for issues related to minority health.

Azlin Biaggi-Labiosa, Ph.D.

University of Puerto Rico, Rio Piedras

THE PUERTO RICO
LOUIS STOKES ALLIANCE
FOR MINORITY PARTICIPATION

As a Ph.D. candidate in chemical physics at the University of Puerto Rico, Rio Piedras, 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 size of the nanoparticles. 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 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. 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 been working in the Sensors and Electronics Branch at NASA Glenn Research Center in Cleveland, Ohio, 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 been 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 students from underrepresented minorities and tutoring high school students.



Denisse Soto-Aquino, University of Puerto Rico, Mayagüez

THE PUERTO RICO
LOUIS STOKES ALLIANCE
FOR MINORITY PARTICIPATION

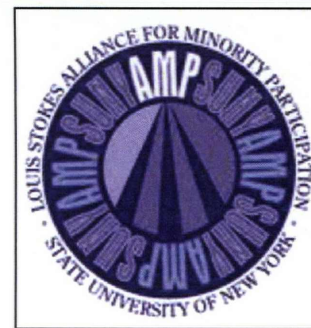


Ms. Denisse Soto-Aquino is a doctoral candidate in chemical engineering at the University of Puerto Rico at Mayagüez. She started the Ph.D. program in 2007 under the mentorship of Dr. Carlos Rinaldi. As part of her thesis project, she is studying the magnetorheological properties of ferrofluids under shear and magnetic field by brownian dynamics simulations. Ferrofluids are suspensions of magnetic particles that respond to external magnetic fields by changing their viscosity without losing their fluidity, the so-called magnetoviscous effect. Ms. Soto-Aquino's results have excellent agreement with the equation provided by M.A. 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 . Ms. Soto-Aquino has presented her results at the 11th International Conference on Electrorheological Fluids and Magnetorheological Suspensions in Dresden, Germany in August 2008; the 12th International Conference on Magnetic Fluids in Sendai, Japan in August 2010; as well as many other scientific conferences on the U.S. Mainland. Ms. Soto-Aquino currently has three publications in the following peer-reviewed journals: *Research Letters in Physics*, *Physical Review* and *Journal of Magnetism and Magnetic Materials*. Ms. Soto-Aquino is an active participant in the Nanoscale Science and Engineering Center program at the University of Wisconsin-Madison. Furthermore, in her interest to the continued development of science, Ms. Soto-Aquino has collaborated towards the development of a computational simulation center in the Department of Chemical Engineering which is expected to open in August 2011. Ms. Soto-Aquino is recognized as one of the top10 Ph.D. candidates in her department.

Ivonne Ferrer

The State University of New York at Buffalo

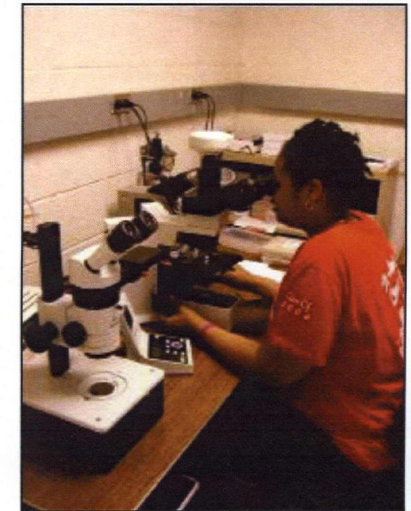
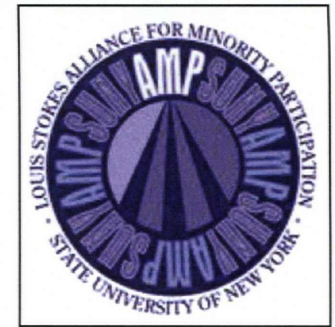
Ms. Ivonne M. Ferrer is a Ph.D. candidate in the Department of Chemistry at the State University of New York at Buffalo (UB). Ms. Ferrer was an NSF Bridge to the Doctorate Fellow from 2007 to 2009 under the the mentoring of Dr. Luis Colón. Her research involves the synthesis and study of metal oxides (i.e., hafnia and ironia) monolithic structures with hierarchical porous architecture. These materials have shown unique properties for chromatographic applications and electrokinetic pumping characteristics for methanol-based fuel cell applications. Results have been submitted for publication to an American Chemical Society journal. Currently Ms. Ferrer 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. Ms. Ferrer has presented her work at multiple regional and national scientific meetings such as the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, and the American Chemical Society. In addition to her research, Ms. Ferrer has served as a teaching assistant for an advanced analytical course at UB, and has been actively involved motivating students from underrepresented groups to seek research opportunities. She has been a mentor to students in the UB Chemistry Department's Research Experience for Undergraduates Program and provided workshops at her alma mater, the University of Puerto Rico at Cayey, on the Next Generation of Micro and Nano Technology. Ms. Ferrer also enjoys giving back to the community by being a volunteer for National Chemistry Week at the Buffalo Science Museum, and 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. 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, D.C.: American Chemical Society.



Shayri Greenwood

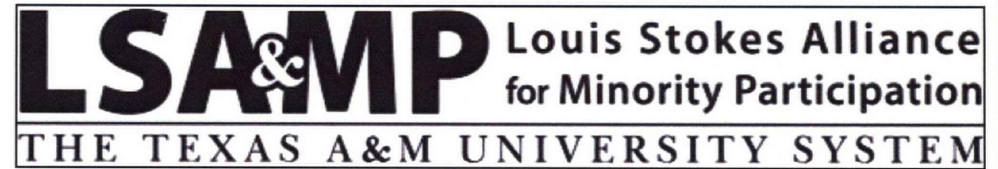
Stony Brook University

Ms. Shayri Greenwood was a State University of New York LSAMP Bridge to the Doctorate (BD) student at Stony Brook University from 2006 to 2008. After that, she was awarded the prestigious New York State W. Burghardt Turner Fellowship for Underrepresented Graduate Students. She completed her master's degree in biopsychology and will be completing her doctorate this summer. Her experience as a BD Fellow quickly convinced Ms. Greenwood to pursue 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. She is also investigating whether moderate seizures affect learning and memory in rats. She will begin a postdoctoral appointment next fall working in Dr. Wilma Friedman's laboratory at Rutgers University working to understand the biochemical mechanisms of neurotrophin signaling pathways and their role in regulating neuronal cell death. Dr. Friedman's laboratory uses an animal model of seizure disorders to understand the delicate balance between neuronal survival and death following injury. Dr. Anderson characterizes Ms. Greenwood as follows: "[Ms. Greenwood] 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: "Prolonged generalized seizures, but not moderate seizures, produce memory deficits" in *Abstract Submitted for the 19th N.E.U.R.O.N Conference (2010)*; "Short duration seizures produce cell loss correlated with seizure behavior" in *2010 Neuroscience Meeting Planner (2010)*; and "Moderate seizures activate programmed cell death pathways" in *Neuroscience Meeting Planner (2009)*. An excellent researcher and teacher already, Ms. Greenwood has made it a top priority to encourage other underrepresented minority (URM) students to pursue STEM. She has presented Success in Science Empowerment workshops to URM and low-income students, helped recruiting efforts for URM STEM graduate students, and mentored URM undergraduate students presenting their research at STEM conferences.

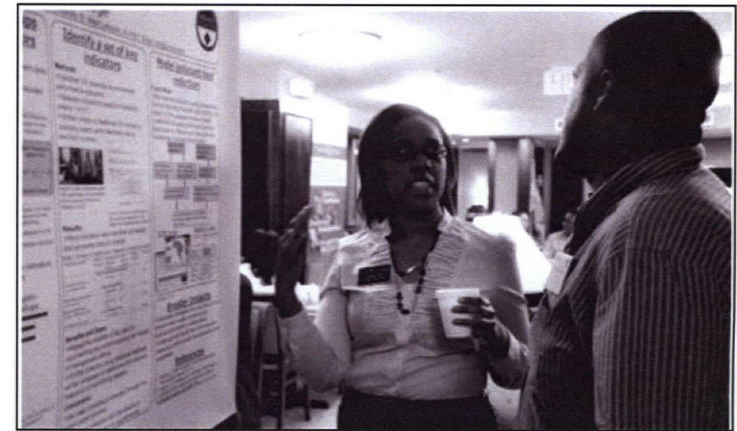


Lindsay Birt

Texas A&M University

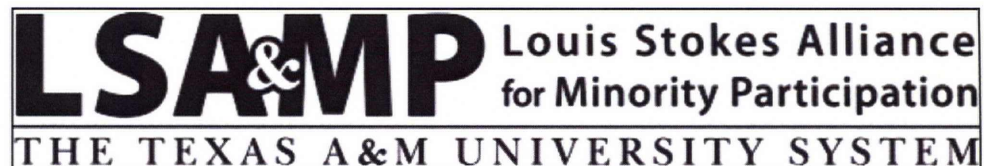


Ms. Lindsay Birt, a Ph.D. candidate in agricultural and biological engineering at Purdue University, specializes in quantifying the impacts of best management practices and developing a management framework to track the effectiveness of watershed efforts. She received her bachelor of science and master of science in biological and agricultural engineering from Texas A&M University. There, Ms. Birt 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. Ms. Birt currently has two publications and recently presented at the American Society of Agricultural and Biological Engineers National Conference and the Indiana American Fisheries Society/Indiana Lake Management Society Joint Conference. Ms. Birt's honors and awards include the NSF LSAMP Bridge to the Doctorate Fellowship, the Purdue Doctoral Fellowship, the Myron A. Pugacz Fellowship, the Minorities Striving and Pursuing Higher Degrees of Success in Earth System Science Fellowship, and Purdue University's AGEP Scholarship. Ms. Birt served as the graduate student advisor to two EPA-P3 funded student design projects, and has volunteered as the National Society's Black Engineers 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.



Erica Bruce, Ph.D.

Texas A&M University



Dr. Erica Bruce is an Assistant Professor in the Department of Environmental Science at Baylor University. She received her bachelor of science, master of science, and Ph.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 the time and cost involved with extensive experimentation, build quantitative structure-activity relationship models to predict toxic endpoints, and elucidate toxic mechanisms of actions. With over 12 publications and nine currently pending, Dr. Bruce has a host of honors, awards, and professional affiliations, including the NSF LSAMP Bridge to the Doctorate Fellowship, the Society of Women Engineers, and the National Institutes of Health, Scientific Advisory Board, Centers for Children's Environmental Health and Disease Prevention.



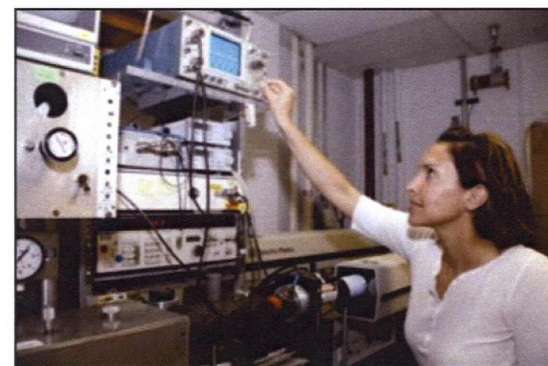
Jessica Houston, Ph.D.

Texas A&M University

Submitted by New Mexico AMP

LSAMP Louis Stokes Alliance
for Minority Participation
THE TEXAS A&M UNIVERSITY SYSTEM

Dr. Jessica Perea Houston is an Assistant Professor of Chemical Engineering at New Mexico State University (NMSU). She joined the faculty at NMSU in fall 2009. She attended NMSU as an undergraduate student and received her bachelor of science in chemical engineering in 2000. Dr. Houston enrolled in the Texas A&M University chemical engineering graduate program and completed her Ph.D. in 2005. During graduate school she performed diagnostic imaging studies to human subjects with collaborators from the University of Texas M. D. Anderson Cancer Center at Baylor College of Medicine. Her work led to the first human clinical trials conducted as a research associate at Baylor College of Medicine. Dr. Houston began a Director's Postdoctoral Fellowship at Los Alamos National Laboratory in May 2006, and worked for the National Flow Cytometry Resource. As a postdoctoral fellow Dr. Houston studied and developed frequency domain flow cytometry techniques for fluorescence lifetime applications. She carried out research towards the separation of autofluorescence signals from dim exogenous fluorophores, the measurement of surface enhanced Raman scattering in cytometry, and finally laid the groundwork for the advancement of phase-sensitive flow cytometry techniques. In 2009 Dr. Houston accepted an assistant professor position at her alma mater and began as a faculty member in the Department of Chemical Engineering. She is currently expanding a research program in bioengineering. Dr. Houston's primary research is the characterization of optically-excitabile materials that interact with single cells for measurement based on a fluidic platform. During her short career she has generated several peer-reviewed articles, contributed to book chapters, and published numerous proceedings papers (over 20 in total). She has given over 60 presentations and invited talks, is mentoring three master of science students and one Ph.D. student, and has two majorly funded (>\$200K) research programs (National Institutes of Health, National Institute of Biomedical Imaging and Bioengineering R15 research grant; NSF Instrument Development for Biological Research grant). Dr. Houston has won several awards for presentations and was most recently a recipient of a Sony Young Faculty Scholarship Award.

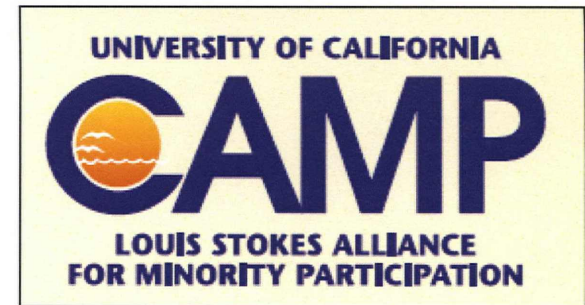


Kimberly Rosales, Ph.D.

University of California, Irvine

Dr. Kimberly Romero Rosales completed her Ph.D. in biological sciences at the University of California, Irvine (UCI) in 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, UCI School of Biological Sciences, and the NIH Ruth L.

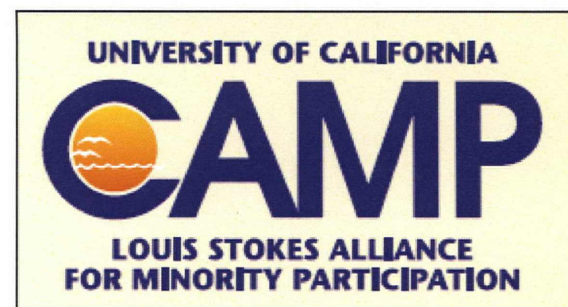
Kirschstein Minority Predoctoral Fellowship. Her work as an undergraduate research mentor has inspired and motivated students to pursue graduate education. Dr. Rosales earned a bachelor of science in biological sciences from UCI, where she conducted research in the laboratory of Dr. Bruce Blumberg, Department 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 *Molecular Biology of the Cell* (April 22, 2009).



Melanie Zauscher

University of California, San Diego

Ms. Melanie D. Zauscher is a doctoral candidate in mechanical engineering at the University of California, San Diego (UCSD), anticipating her Ph.D. in 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 at Boulder, measuring stable isotopes of greenhouse gases, and studied marine chemistry at the Scripps Institution of Oceanography, La Jolla, California, 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, where she taught local residents how to make biodiesel. In recognition of her green energy work, Ms. 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, and at the 29th Annual Conference of the American Association for Aerosol Research, 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.



Sonnet Davis

University of Maryland, Baltimore County



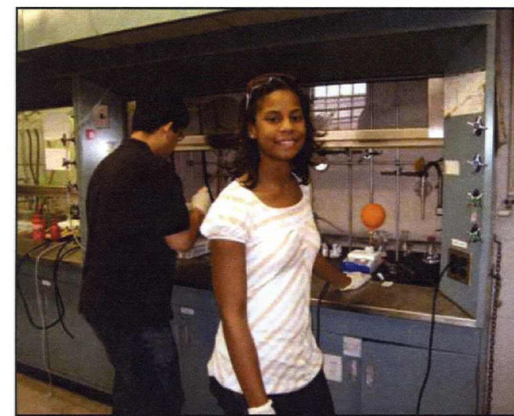
Ms. Sonnet S. Davis is a Ph.D. candidate in chemistry at the University of Maryland, Baltimore County (UMBC). The focus of her Ph.D. research is the development of approaches based on electrospray ionization and Fourier transform ion cyclotron resonance mass spectrometry for the investigation of structure/function relationships in large RNA molecules involved in viral systems. In humans, DNA contains the genetic instructions used in our development and functioning. In the case of viruses, RNA assumes this role. For these reasons, one of the viral targets consists of the 5'-untranslated region (5'-UTR) of human immunodeficiency virus type 1 (HIV-1), which mediates very critical steps of the virus lifecycle, including reverse transcription, splicing, translation, dimerization, and packaging. This non-coding sequence has been proposed to assume alternative conformations that possibly function as a riboswitch regulating the different genomic and mRNA activities performed by the viral RNA. Considering that NC has been shown to facilitate the isomerization (structural change) of the dimerization initiation signal of HIV-1, Ms. Davis has tested the hypothesis that this viral protein may function as a riboswitch actuator between the putative conformers through direct chaperone activity with specific regions of the 5'-UTR. This work has led to numerous invitations to present scientific posters at local and national conferences, including the Annual Meeting of the Biophysical Society, A Look Ahead X: Futures in Biomedical Sciences, the UMB/UMBC Graduate Research Conference, the Wyeth-UMBC Life Sciences Summit, several American Society of Mass Spectrometry conferences, as well as an oral presentation at the 56th American Society of Mass Spectrometry Conference. Ms. Davis and two colleague co-first authors have a manuscript in preparation entitled "Investigation of structure and dynamics of HIV-1 5'-UTR by ESI-FTICR." She has served as a graduate teaching assistant in the Department of Chemistry and Biochemistry at UMBC and as an undergraduate teaching assistant in the Department of Chemistry and Biochemistry at Oakwood University. Ms. Davis earned her bachelor of science in biochemistry at Oakwood University in 2005. She successfully defended her dissertation entitled "ESI-FTICR Investigation of HIV-1 5'-UTR Polymorphism" in March 2011, and her Ph.D. in chemistry will be conferred by UMBC in 2011. She is an active member of the Graduate Student Association at UMBC, and she has served as a Senator since 2009. Also, Ms. Davis has participated in PROMISE: Maryland's Alliance for Graduate Education and the Professoriate where she served as a peer mentor to other graduate students participating in the program since 2009. Among the honors and awards she has received are a 2004 MARC Faculty/Student Travel Award at Oakwood University, a 2005-2007 Bridge to the Doctorate Fellowship at UMBC, and a Meyerhoff Graduate Fellowship at UMBC.

Jacqueline Smith

University of Maryland, College Park



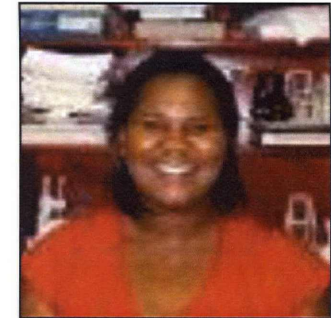
Ms. Jacqueline A.I. Smith is a Ph.D. candidate in organic chemistry working in the research group of Herman Sintim, Department of Chemistry and Biochemistry at the University of Maryland, College Park (UMCP). Her dissertation, which will be completed in spring 2011, has made her an expert in organic synthesis and introduced her to the field of chemical biology. Her research involved the synthesis and biological activity of a library of 24 diverse C1-analogs of a universal signaling molecule known as Autoinducer-2 (AI-2). She has tested these analogs on several bacterial strains including *V. harveyi*, *E. coli*, *S. typhimurium*, and *p. aeruginosa*. She has evaluated the effect of these analogs mainly through the use of bioluminescence, b-galactosidase production, and pyocanin production assays as well as others. Once Ms. Smith has successfully completed a postdoctoral position, she plans to pursue an academic career at a research university. As a research professor, she hopes to develop a program that uses chemical biology to solve health issues that are often overlooked such as cardiovascular health, diabetes, and blood diseases. As protein targets of these illnesses are discovered, she will use small molecules and other tools to develop



innovative treatments for these diseases. Also as a professor, Ms. Smith looks forward to teaching organic and general chemistry in a way that makes students recognize that chemistry is a vital part of living systems. She also hopes to teach in a way that will allow all students to be able to understand the principles of chemistry so that they can move on to become successful doctors, engineers, professors, or scientists. Ms. Smith has co-authored four published articles. She has given poster presentations of her research at the 2010 Frontiers at the Chemistry-Biology Interface Symposium, Johns Hopkins University; and the 2010 Bioorganic Gordon Research Conference, Proctor Academy. In addition, she has made oral presentations of her research at the 2009 NOBCChE National Conference, the Spring 2010 ACS National Conference, and the 2010 UMD NOBCChE Annual Seminar. Ms. Smith earned her bachelor of science in chemistry at the University of Maryland, Baltimore County (UMBC) in 2006, and her Ph.D. in chemistry at UMCP is expected in 2011. She has been a member of the American Chemical Society, Organic Chemistry Division since 2002, and a member and officer of the UMD Student Chapter of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers since 2007. Jacqueline has been selected for numerous honors and awards including the following: Anne Wylie Dissertation Fellowship (2010); Winston Gandy Graduate Research Award (2010); Department of Education GAANN Fellowship (2009); College of Computer, Mathematics, and Physical Sciences STAND Mentor of the Year (2008); NSF Bridge to the Doctorate Fellowship at UMCP (2006-2008); American Chemical Society Scholars (2002-2006); and UMBC Meyerhoff Scholarship (2001-2006).

Katisha Smith, Ph.D.

University of Maryland, Baltimore County



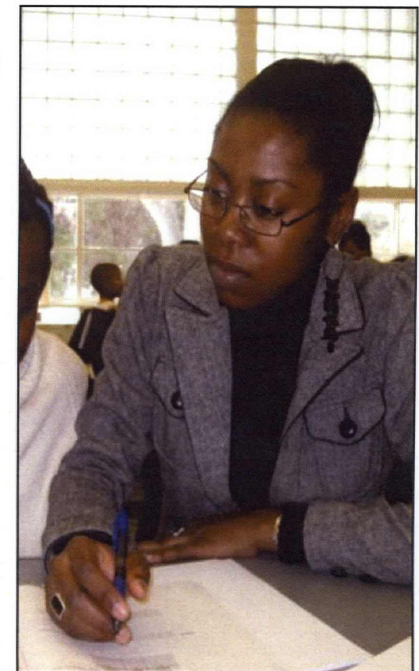
Dr. Katisha D. Smith is a Senior Aerospace Engineer in the area of Thermal/Fluids Analysis at QinetiQ North America. During her graduate studies in mechanical engineering at the University of Maryland, Baltimore County (UMBC), her research focus was in bioheat transfer. For her doctoral work, she studied non-invasive therapeutic hypothermia using a cooling pad placed on the back of the torso. Using numerical techniques, she predicted the temperatures in the brain and the spinal cord during the cooling protocol. Then, she performed *in vivo* animal experiments to test the treatment in a biological setting and used the experimental data to validate the theoretical models. She published two papers from her research in *Medical and Biological Engineering and Computing*, and a paper was recently accepted for publication in the *Journal of Engineering in Medicine*. She has presented her research at several conferences and symposia, including the UMBC Graduate Research Conference, 2007; the New England Science Symposium, 2009; the ASME Summer Bioengineering Conference, 2009; and the ASME Summer Bioengineering Conference, 2010. Dr. Smith's education and training was enriched by her experiences serving as a graduate teaching assistant to five faculty members in the Department of Mechanical Engineering at UMBC for seven undergraduate courses. Dr. Smith's earned her bachelor of science in mechanical engineering at North Carolina Agricultural and Technical State University (NC A&T) in December 2004, her Post-Baccalaureate Certificate in Computational Thermal/Fluid Dynamics at UMBC in December 2004, her master of science in mechanical engineering at UMBC in August 2007, and her Ph.D. in mechanical engineering at UMBC in December 2010. She was active in the Graduate Student Association at UMBC, serving as Senator, Vice-President, and President. She studied abroad as an undergraduate at the Kwame Nkrumah University of Science and Technology in 2003. Throughout her undergraduate and graduate careers, she has been selected for numerous honors and awards, including the following: 2000-2004 Valedictorian/Salutatorian Scholarship, NC A&T; 2002-2004 McNair Scholar, NC A&T; 2003 Pi Tau Sigma Mechanical Engineering Honor Society, NC A&T; 2003 Tau Beta Pi Engineering Honor Society, NC A&T; 2004 Golden Key International Honour Society, NC A&T; 2005-2007 Bridge to the Doctorate Fellowship, UMBC; 2007-2008 Meyerhoff Graduate Fellowship, UMBC.

Kourtney Fulton

Howard University



As a Ph.D. candidate in mathematics at Howard University, Ms. Kourtney J. Fulton is working under the direction of Dr. Neil Hindman in the area of topological algebra. They have examined the Stone-Cech compactifications of various semigroups. Ms. Fulton and Dr. Hindman have investigated the existence of homomorphisms from the compactifications of the semigroups to their corresponding set of nonprincipal ultra filters. Ms. Fulton has been actively engaged in the field of mathematics and attended several national and regional conferences. Not only is Ms. Fulton a full-time graduate student, but she is also full-time owner of a successful small business that serves over 60 clients. During her matriculation, she founded 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. Ms. Fulton works tirelessly to make advances in the area of topological algebra and educates others en route to earning her doctorate in mathematics.

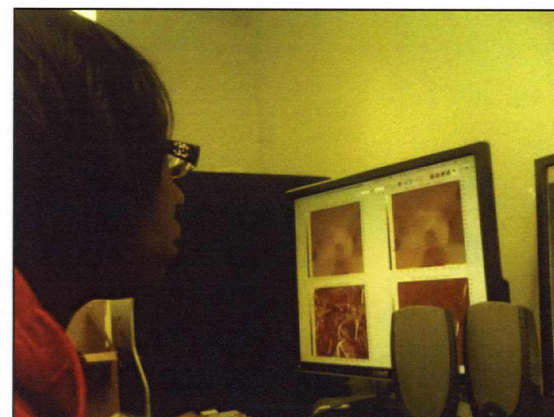


Rhonda McCoy

Howard University



Ms. 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 of 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 to the free and complex spectra, the molecule's 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. Ms. McCoy 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, Ms. McCoy has presented her research at the American Chemical Society in Washington, D.C., and Pittsburg, Pennsylvania. Ms. McCoy was supported by the Bridge to the Doctorate Program from 2008 – 2010. In the fall of 2010, she received an AGEP Fellowship that will allow her to successfully complete her doctoral studies.

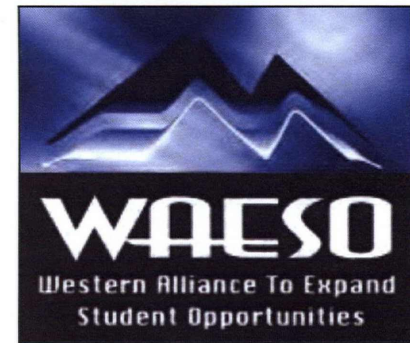


Ariel Arndt, Ph.D.

Arizona State University

Dr. Ariel L. Arndt received her Ph.D. in microbiology at Arizona State University after having been an 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 because this group of viruses routinely circulate in both populations and cross-species transfer can occur. There is a need for antiviral therapeutics and vaccine development against the viruses. Dr. Arndt'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 that 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*. Dr. Arndt 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.



Terannie Vazquez, Ph.D.

Arizona State University

Dr. Terannie Vazquez graduated with a Ph.D. in chemistry and biochemistry from Arizona State University after having been an 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 biosensors, 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 were 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 a 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.

