
TRANSACTIONS

National Institute of Science

Spring 2018, Volume 54



WHY DID YOU CHOOSE



TO ATTEND



A HBCU?

TRANSACTIONS

National Institute of Science

TABLE OF CONTENTS

Spring 2018, Volume 54

- 3 **From the Editor's Desk**
Carolyn Cousin, Ph.D.
Anita Taylor, B.S.

- 6 **NIS Officers & Regional Directors**

HIGHLIGHTS OF 75TH JOINT MEETING

- 9 **NIS Memorial Lecture**
Leona Harris, Ph.D.

- 11 **BXK Lecture & Dinner**
Kimberly Bell, Ph.D.

- 13 **Awards Luncheon**
Ronald Mason, Jr., J.D.

STUDENT PRESENTATION AWARD WINNERS AND ABSTRACTS

- 16 **Graduate Oral Session**
19 **Undergraduate Oral Session**

- 26 **Graduate Poster Session**
27 **Undergraduate Poster**

REPORTS

- 34 **NIS President Report**
Freddie Dixon, Ph.D.
37 **Executive Secretary Report**
Oswald Tekyi-Mensah, Ph.D.

45 STUDENT CORNER

- 52 **ANNOUNCEMENTS**
STUDENT PRESENTATIONS
INFORMATION
NIS REGIONAL DIRECTORS
CONTACT INFO

ACKNOWLEDGEMENTS

The National Institute of Science and Beta Kappa Chi Scientific Honor Society would like to extend their sincere appreciation to all whose time and efforts have contributed to the implementation and success of the 2018 75th Joint Annual Meeting.

From the Editor's desk.....

This year marks seventy-four years since the National Institute of Science (NIS) and the Beta Kappa Chi Scientific Honor Society (BKX), two independent African-American scientific organizations, met and decided to jointly provide a national scientific forum for African-American scientists and students to come together and exchange scientific information. A venue of this caliber was greatly needed for this was a time when African-American scientists, and professionals, though engaged in major institutional, industrial and governmental research programs, were excluded from membership in most scientific organizations and meetings. Both organizations agreed that a forum would not only serve as an exchange of scientific research data for professionals, but should include students studying science and mathematics. The forum would also present activities and events to promote greater student interest and access to careers in the science and mathematics disciplines. Through participation in these activities, hopefully, students would obtain invaluable tools to further cultivate their success as students and, ultimately, as future professionals. NIS and BKX met in March 2017 to celebrate 74 years (1943-2017) of joint meetings. The venue for this 74th meeting was Baton Rouge, LA and was hosted by Southern University. Mrs. Deadra James Mackie did a fantastic job chairing the Local Planning Committee and was able to get considerable funding from her University, Southern at Baton Rouge, as well as other benevolent sources. The NIS/BKX Joint Annual Meeting had been supported over the past fifteen years through a T36/NIGMS/NIH Grant. Awarded to the NIS, this grant provided partial travel awards to all eligible students who want to attend the meeting. One need not be a member of the NIS or the BKX to be awarded travel funds. This grant has enabled the NIS over fourteen years to partially fund travel expenses for at least 250 students annually. In 2010, the grant funded 402 students to attend the annual meeting: a two-fold increase in one year. More than ninety percent of the funding for this meeting has been through support by the NIGMS/NIH (the T36 grant). The T36 grant, minimal seed money from the NIS and BKX organizations, and small donations from individuals have been the sole source of funding or other resources for the joint meeting. Even without this funding, Mrs. Mackie and the Planning Committee, along with the seed money from NIS and BKX were able to present this meeting in the elegant and glory that is Louisiana. The Meeting had a Louisiana flavor and made us well aware of uniqueness and charm of this beautiful state that has the fascinating Red Stick (Baton Rouge) as its capitol. This meeting, this national forum, with all of its history and pride still continues to strive to fill the gap of low minority representation in the American scientific community which inevitably will lead to a much richer American Society. As we come together and exchange scientific information, we could be no more proud of the legacy that this forum has allowed African-American scientists, and professionals who are engaged in major institutional, industrial and governmental research programs to exchange our scientific data. Also, this forum has presented activities and events to promote greater student interest and access to careers in the STEM disciplines (sciences, technology, engineering and mathematics). Through participation in these activities, hopefully, students would obtain invaluable

tools to further cultivate their success as students and, ultimately, as future STEM professionals. With the knowledge that the key to student participation and success is strong faculty support, both organizations (NIS and BKX) forged a bond of support with HBCU faculty across the USA by having them commit to: 1) providing meaningful mentorships and; 2) providing significant laboratory research opportunities, on campus and in outside laboratories, for their students. The members of the NIS and BKX will continue to pledge that our students will always be the primary focus of the joint meeting and will continue to be recognized for their efforts and hard work as this forum continues.

Editor, Dr. Carolyn Cousin

Co-Editor, Anita Taylor

National Institute of Science

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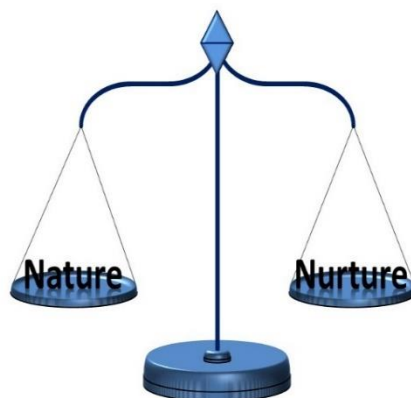
75TH NIS/BKX



Joint Annual Meeting

HIGHLIGHTS

NATURE OR NURTURE: INFLUENCES OF HEREDITY AND ENVIRONMENT



WHAT MAKES US WHO WE ARE?



March 21 - 24, 2018

HOSTED BY THE **UNIVERSITY OF THE DISTRICT OF COLUMBIA**
THE COLONY SOUTH HOTEL, 7401 SURREATTS ROAD, CLINTON, MARYLAND

2018 75TH NIS/BKX Joint Annual Meeting UDC, Van Ness Campus Washington, DC



NIS MEMORIAL LECTURE AND LUNCHEON



Leona Harris, Ph.D.
Division Chair
Associate Professor of Mathematics
Division of Sciences and Mathematics
University of the District of Columbia

Dr. Leona Harris is the Chair of the Division Sciences and Mathematics and Associate Professor of Mathematics at the University of the District of Columbia, Washington, DC. Dr. Harris earned her B.S degree in mathematics from Spelman College, Atlanta, Georgia where she participated in the Scholars in Mathematics at Spelman Program and graduate magna cum laude. A stellar student, she was awarded a National Physical Science Consortium Fellowship to pursue graduate studies in Applied Mathematics from North Carolina State University, Raleigh, North Carolina wherein she obtained her M.S. and Ph.D. degrees. Upon completion of graduate school, Dr. Harris pursued and completed a postdoctoral fellowship in the National Health and Environmental Effects Research Laboratory at the Environmental Protection Agency in Research Triangle Park, North Carolina.

A native New Yorker, she was born in the Bronx and was raised in Queens. A very inquisitive and gifted student, her love of and natural inclination toward all things “mathematic” occurred at an early age. In junior high, she tutored an adult family

friend, who returned to school after many years, with her college math studies. Her tutoring not only helped the family friend succeed in her math studies, but also helped her friend overcome her lack of confidence. From this experience, Dr. Harris knew that she wanted a career teaching mathematics. An outstanding student, Dr. Harris's last two years of high school was completed at a college preparatory boarding school in Richmond, Virginia on an "A Better Chance" Scholarship for scholarly inner-city youth.

Through the years her focus has been on increasing diversity in higher education, specifically, minority students and women in the sciences by working with various recruitment and retention efforts and programs. In addition to her division chair and teaching positions at the University of the District of Columbia Dr. Harris was Co-Founder of the Infinite Possibilities Conference; Co-Chair and Member of the Park City Mathematics Institute's Diversity Committee; Mathematics Coordinator and Instructor for the Educational Opportunity Fund Summer Program; and Instructor for the Enhancing Diversity in Graduate Education Summer Program.

**BKX SCIENTIFIC HONOR SOCIETY 95th ANNIVERSARY
LECTURE AND DINNER**



Kimberly Bell, Ph.D.
Assistant Professor and
Program Coordinator
Department of Psychology
University of the District of
Columbia



Dr. Kimberly Bell, is an Assistant Professor of Neuropsychology and Program Coordinator for the Psychology Program at the University of the District of Columbia in Washington, DC. Dr. Bell earned her B.A. in Psychology at Southern Illinois University, Carbondale, Illinois and her M.S and Ph.D. degrees from Howard University in Washington, DC. Following graduate school, she was a post-doctoral Fellow at Howard University Hospital from 2013-2014.

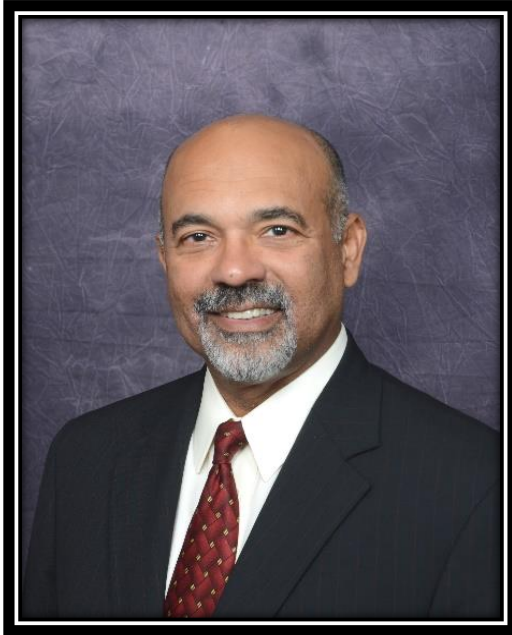
In addition to teaching, Dr. Bell is a researcher in the area of neuropsychology. Dr. Bell researches health disparities, specifically substance use/misuse, anxiety and perseverative cognitions, nocturnal heart rate variability and immune system activity. She has recently published a manuscript on autonomic nervous system activity, inflammation, and sleep disorders in persons with post-traumatic stress syndrome.

Dr. Bell is currently researching the effects of perceived racism on nocturnal cardiac patterns and sleep and how they relate to cardiovascular disease in African-Americans. The publication of this research resulted in her receiving an NIH Diversity Supplement grant and National Science Foundation grant to investigate the effects and impact of racism's on health in African-Americans.

Her other research project is a pilot study that examines how utilizing breathing based mediation to study electroencephalographic patterns and decrease sympathetic nervous system in African-Americans as an intervention prior to sleep onset to improve nocturnal heart rate variability, sleep quality and reduction of inflammatory processes that lead to adverse health issues and outcomes.

Born in Evanston, Illinois, she and her siblings are first generation American with family from Jamaica and the United Kingdom. Dr. Bell is a member of several organizations including the National Institute of Science, American Psychological Association, Association of Black Psychologists, and Society for Psychophysiological Research and has received awards including Teacher of the year.

AWARDS LUNCHEON PROGRAM



Ronald Mason, Jr., J.D.
President
University of the District of Columbia
Washington, D.C.

Ronald Mason, Jr., J.D., is the ninth president of the University of the District of Columbia (UDC), the only public university in the Nation’s Capital and the only exclusively urban land-grant institution in the United States. With a nationally-ranked Law School, Community College and outstanding STEM-related programs in Green Technology, Engineering, Computer Science, Homeland Security, and Speech Pathology, Mason leads an emerging institution committed to providing affordable, quality and innovative learning opportunities that prepare students for the practical demands of the workplace.

Prior to his appointment at UDC in 2015, Mr. Mason served a five-year term as the chief executive officer of the Southern University and A&M College System, and he spent 10 years as president of Jackson State University. Before his appointments at Southern University and A&M College, he served 18 successful years in various leadership positions such as general counsel, vice president for finance and operations to senior vice president of the university. Mr. Mason was also the founder and executive director of the National Center for the Urban Community at Tulane and Xavier Universities.

A native of New Orleans, President Mason received his B.A. and J.D. degrees from Columbia University, New York. He also attended the Harvard Institute of Educational Management, Cambridge, Massachusetts. With over 30 years involved in higher education, community development and the legal, he has brought about growth and positive change at every institution he has worked and in every position he has served. Mr. Mason has received many awards and acknowledgements for his rigorous and distinguished career. A few of these honors are the Mayor's Medal of Honor from his home of New Orleans; the Martin Luther King Lifetime Achievement Award from four universities; Dillard, Loyola, Tulane and Xavier; and he was one of five recipients to receive the Columbia University 2008 John Jay Distinguished Alumni Award.

A devoted husband and father of three children, he remains actively engaged in numerous public service and professional activities outside of his presidency at UDC. Currently he is a member on the White House board of advisors for Historically Black Colleges and Universities and on the board of directors of the Thurgood Marshall College Fund. He also serves on the boards of the American University of Nigeria and the International Foundation for Education and Self Help.



75th NIS/BKX
Joint Annual Meeting



ORAL
PRESENTATIONS
AWARD
WINNERS

2018

GRADUATE ORAL PRESENTATIONS

1st PRIZE

GSO8

DIFFERENTIAL METHYLATION OF NF-KB AND JAK-STAT PATHWAY GENES DURING COPD EXACERBATIONS

Gagandeep Kaur¹, John Caskey², Vladimir Chouljenko² and Sanjay Batra¹. ¹Laboratory of Pulmonary Immuno-toxicology, Department of Environmental Toxicology, Southern University and A&M College, Baton Rouge, LA-70813; ²Division of BIOMMED, LSU School of Veterinary Medicine, Baton Rouge, LA-70803.

DNA methylation is the most extensively studied epigenetic modification in diseased states including cancer. Exposure to environmental factors influence the DNA methylation signatures thus activating/ silencing various genes/pathways and there-by affecting disease phenotype. Chronic Obstructive Pulmonary Disease (COPD) is one such disease condition which is invariably caused by environmental exposure to first- or second-hand smoke. Recurrent bacterial and viral infections add to the severity of disease and are linked with COPD exacerbations. We hypothesized that cigarette smoke exposure can significantly regulate DNA methylation signatures on human immune system genes. To test our hypothesis, we used in vitro study model which mimicked the conditions of COPD exacerbations. We used bacterial lipopolysaccharide found in the cell membrane of gram negative bacteria to challenge the cells pre-exposed to cigarette smoke to mimic the conditions of bacterial exacerbations in vitro. Human alveolar type II

epithelial cells (A549) were challenged with cigarette smoke extract (CSE from Murty Pharmaceuticals; 24 hours) followed by stimulation with lipopolysaccharide (LPS from *Pseudomonas aeruginosa*) and the isolated DNA was processed for bisulphite conversion to deaminate unmethylated cytosine. Whole-exome sequencing of bisulphite-converted DNA identified differential methylation at exonic variants of cytoskeletal and inflammatory genes. We observed regulation of NF-κB and JAK-STAT pathway genes in the set of cells which mimic COPD exacerbation model as compared to controls. Targeted amplification using methylation specific-PCR (MS-PCR) revealed a significant decrease in the methylation at NF-κB and IKK CpG sites in our exacerbation mimicking study group as compared to CSE-challenged cells. Currently we are targeting specific genes from STAT3 pathway to determine their methylation status using MS-PCR. Further studies will help in understanding the role of epigenetic modifications during COPD exacerbations which may lead to the development of better therapeutic intervention strategies.

[This work was supported by Young Clinical Scientist Award from the Flight Attendant Medical Research Institute (FAMRI- 123253 _YCSA_Faculty); NIH R15 (7 R15 ES023151 02); Southern University Foundation Grant (COSCO016); and LBRN Startup Grant (2P20GM103424-14 -Subaward No. 100011) to SB].

2nd PRIZE**GSO4**

**TRANSCRIPTS ENCODING HUMAN SIGLEC
HOMOLOGS IN *BIOMPHALARIA
GLABRATA* SNAILS ARE REGULATED IN
RESPONSE TO *SCHISTOSOMA
MANSONI* INFECTION: A MODEL SYSTEM
TO STUDY EVASION OF INNATE IMMUNITY
IN CANCER**

Olayemi Grace Akinyele, Carolyn Cousin, Freddie Dixon and Matty Knight. University of the District of Columbia, 4200 Connecticut Avenue, NW, Washington, District of Columbia 20008.

Transcripts encoding human siglec homologs in *Biomphalaria glabrata* snails are regulated in response to *Schistosoma mansoni* infection: a model system to study evasion of innate immunity in cancer. Siglecs are sialic acid-binding, immunoglobulin-like lectins that attach to glycans on the cell surface. They are important in immune cell signaling and are part of an organism's innate immune system. This evasive mechanism typical of cancer cells is also similar to the molecular mimicry observed when the miracidia of *Schistosoma mansoni* infect susceptible freshwater snail, *Biomphalaria glabrata* snails. When infection occurs in snails, stress proteins are elevated and this deploys an immune response that upregulates the expression of variable immunoglobulin like lectin (siglec homologs) expression. The developing miracidia (sporocysts) are able to evade lysis by disguising themselves as glycan structures that are similar to those found on the immune cell surface of their host, that binds to the snail host siglecs, effectively providing effective mimicry from attack from the snail host innate defense system (IDS). This escape tactic utilized by schistosomes to escape recognition and destruction in the snail host is remarkably

similar to cancer cells that disguise themselves from the body's innate immune system, and are, therefore, capable of surviving in a hostile environment. To determine the mechanism(s) that involve snail siglec homologs in aiding, like cancer cells, escape the innate immune response, we hypothesized that blocking siglecs homologs by RNA interference (RNAi) will prevent schistosomiasis in snails which mirrors the effect of blocking siglecs on some types of cancer cells. To test this hypothesis, we identified several human siglec homologs by interrogating the *Biomphalaria glabrata* genome. Human siglec homologs, such as a nuclear receptor, peroxidase, and C1q were identified in *B. glabrata* and the temporal regulation of their expression examined by real time qPCR. Results showed after early infection of susceptible *Biomphalaria glabrata* susceptible snail stock BB02 that the nuclear receptor siglec homolog was upregulated following parasite infection. Double-stranded RNA will be synthesized by *in vitro* transcription to knock-down the corresponding siglec transcript by transfection of newly infected snails. Blocking transmission of schistosomiasis by this approach will offer proof of principle that the same process can be used to interfere with cancer since they utilize same evasion pathway as *Schistosoma mansoni* infected snails. Both schistosomes and cancer camouflage themselves by using siglec ligands to bind host siglecs, to prevent recognition and destruction by the host immune system.

[This research is supported by NSF/HBCU-UP grants 1622811 and 1531014].

3rd PRIZE**GS05****USE OF THE *BIOMPHALARIA GLABRATA*,
SCHISTOSOMA MANSONI HOST-
PATHOGEN MODEL SYSTEM AS
SURROGATE TO STUDY METASTATIC
CANCER AS A PARASITIC DISEASE**

Swara Yadav, Carolyn Cousin, Freddie Dixon and Matty Knight. University of the District of Columbia, 4200 Connecticut Avenue NW, Washington DC, 20008.

Schistosoma mansoni is a parasitic helminth that causes the chronic debilitating disease schistosomiasis in over 75 countries of the tropics and sub-tropics. The development of the parasite requires two hosts to complete its life cycle. Human beings are the definitive host for the development of adult parasites that by sexual reproduction produce eggs that are released from human excreta into freshwater where they hatch to release the larval miracidia that are infectious to the fresh water snail, *Biomphalaria glabrata*. Miracidia infect snails by penetrating the soft body part, the head foot, and migrate to the hepatopancreas, where by asexual reproduction produce the larval cercariae that are infectious to the human host. Once in the human host, after skin penetration, cercariae lose their tail, transform into schistosomula and develop into adult worms. Mature adults can survive many years in the vasculature and avoid immune attack in what is a hostile environment. Like schistosomes, cancer develops without immune attack in the afflicted host. Also, like cancer, schistosomes mimic the behavior of metastatic cancer by migrating to specific tissues. The reason for this tropism remains unknown but the parasite also shares another hallmark of cancer in that there is no superinfection in schistosomiasis. Once infected by the parasite, there is no secondary infection, a condition that has been called concomitant immunity - a term borrowed from

the tumor biology field. Because of these similarities between the biology of cancer and schistosomiasis, we hypothesized that metastatic cancer is a parasitic disease, therefore, molecular determinants that under-score metastatic cancer will also play a role in the biology of parasitism in the early infected snail host. To test this hypothesis, we examined the expression of snail homologs of cancer related transcripts, such as E-cadherin, to determine how this transcript is regulated in a snail that is either resistant or susceptible to infection. The ability to track signaling networks that control expression of cancer transcripts in a snail responding to the parasite provides a convenient surrogate model system to identify novel pathways that can be blocked to treat both cancer and schistosomiasis. E-cadherin is a conserved trans-membrane adherent protein that is highly expressed in normal cells. The expression of this protein is, however, downregulated in metastasis cancer. Down regulation of E-cadherin causes cells to lose their adhering capacity, thereby becoming free. This contact-inhibition allows the extracellular matrix to detach and transitions into mesenchymal cells that are motile. As cells gain motility, they enter the blood-stream and into other tissues- a hallmark of metastatic cancer. Hence the down regulation of E-cadherin protein is an important factor to induce Epithelial to Mesenchymal Transition (EMT). Results showed that early after parasite infection, the expression of the transcript encoding E-Cadherin is sharply down regulated within 30 minutes post-infection. Transcription regulation at different time points (0, 30min, 1hr, 2hr, 5hr) also showed that the E-cadherin transcript was upregulated at 2hr post parasite infection. Double-stranded RNA is being synthesized for the E-Cadherin transcript and will be used to block the expression of the gene by RNAi technology to determine the effect of suppressing this gene on parasite development in the snail host.

[This research is supported by NSF/HBCU-UP grants 1622811 and 1531014].

UNDERGRADUATE ORAL PRESENTATIONS

BIOLOGY

1st PRIZE

BIO11

CREATINE KINASE AS A BIOMARKER IN MEDAKA FISH EXPOSED TO LOW-DOSE RADIATION

Rashida Townsend, Jessica Abercrombie, Dr. Larry Lowe. Biology, Chemistry and Environmental Health Science Department, Benedict College, 1600 Harden Street, Columbia SC, 29204.

The purpose of this experiment is to investigate the use of creatine kinase (CK) isoforms as biomarkers in Medaka fish exposed to low dose-radiation. The isoenzyme patterns from supernatants recovered from whole homogenized Medaka fish and human control serum were determined using the Helena SPIFE 3000 Electrophoresis and Quick Gel Scan 2000 system and software. The results from this preliminary investigation show the fraction percent in human control serum of CKMM (creatine kinase muscle-specific) was 66.6%, CKMB (creatine kinase muscle - and brain - specific) was 15.4%, and CKBB (creatine kinase brain - specific) was 18.0%. The CKMM to CKBB ratio was 3.7 to 1. The CKMM in the whole control Medaka fish extract was 92.7% and above (+) the normal range of CKMM in the human control serum. The CKMB in the whole control Medaka fish was 6.8% and below (-) the normal range of CKMB in the human control serum. The CKBB in the whole control Medaka fish was 0.5% and below (-) the normal range of the CKBB in the human control serum. The whole control Medaka fish CKMM to CKBB ratio was 185.4 to 1. The total protein concentration in the

Medaka control fish was 22.12 mg/ml. In conclusion, the CK isoenzyme profiles and percentages in low-dose radiation exposed Medaka fish is still under current investigation.

[This research is funded by a grant from the U.S. Department of Energy, Savannah River Site No. 0000272352].

2nd PRIZE

BIO12

POLYACRYLAMIDE GEL ELECTROPHORESIS (PAGE) – “A MOLECULAR TOOL FOR THE SEPARATION OF PROTEINS”

Kayla McNeil and Larry L. Lowe. Biology, Chemistry, and Environmental Health Science Department, Benedict College, 1600 Harden Street, Columbia, SC 29204.

Powerful electrophoresis techniques have been developed to separate macromolecules on the basis of charge, length, conformation, and molecular weight. Proteins can be resolved by electrophoresis in a semi-solid matrix (polyacrylamide) strictly on the basis of molecular weight and charge. The motivation for conducting this research is to conduct an assessment of polyacrylamide gel electrophoresis (PAGE) as a tool used in biochemistry, forensics, genetics, molecular biology and biotechnology to separate biological macromolecules, usually proteins or nucleic acids, according to their mobility. Continuous, discontinuous and gradient gels were prepared and assembled according to the conditions outlined in the Materials and Methods section of this presentation. Following electrophoresis, the glass plates were disassembled and the gel was stained for 2 hours in Coomassie Blue protein stain and destain with several changes of methanol-acetic acid solution. The gel was photographed for image analysis. The results show typical protein band profiles expected for

continuous, discontinuous and gradient gel electrophoresis. These results are significant to future work by establishing results expected for other diagnostic protein separation gel systems such as isoelectric focusing and 2-dimensional gel electrophoresis.

[This research was funded by a research grant from the U. S. Department of Energy Grant No. 0000272352 and the South Carolina LS Alliance for Minority participation (SC LS-AMP) NSF Award No. 1305050].

3rd PRIZE

BIO14

AN ASSESSMENT OF BUTTERFLY DIVERSITY AT THE LONG ISLAND SOLAR FARM AT BROOKHAVEN NATIONAL LABORATORY

Trevor McIntosh¹, Julie Kapuvári², Claire Y. O’Kane² and Alexander Whittle³, Tim Green⁴.

¹Department of Biology, Southern University at New Orleans, New Orleans, LA 70126; ²College of Agriculture and Life Sciences, Cornell University, Ithaca NY 14850; ³Department of Ecology and Evolution, Stony Brook University, Stony Brook, NY 11794; ⁴Environmental Protection Division, Brookhaven National Laboratory, Upton NY 11793.

Pollinators have typically been associated with bees, but there are many other animals that contribute to this crucial ecosystem service, such as lepidopterans (butterflies and moths). Our research at Brookhaven National Laboratory focused particularly on butterflies. In the face of global butterfly decline in recent decades, conservation of butterfly habitat is becoming even more critical. The Long Island Solar Farm located at Brookhaven National Laboratory features a variety of wildflower

species that attract butterflies. We believed that we would find a greater variety of butterflies if we found the more flower abundant areas. Our team conducted surveys on the species abundance of all butterflies found within the boundaries of “Solar Farm 1” and determined which wildflower species are most favorable. To obtain our data, we walked through the site for approximately one hour every day in the late morning, identifying the butterfly species and the wildflower species on which they were observed, using a 100m transect line technique. With data on butterfly diversity, we were able to analyze the important role that “Solar Farm 1” plays as a sanctuary for these important pollinator species. For instance, we found that there was a large population of “dusky winged” butterflies that were particularly found on a native flower known as “Blue Vervain”. Extensive lepidopteran surveys at BNL have not been performed since 2005, thus our data will update and expand the database, and most importantly inform the solar farm administration how to best approach vegetation management to best support butterflies and other pollinators. While performing our daily surveys, we learned how to create a protocol for collecting vast amounts of data in the field and how to accurately identify both wildflowers and butterflies using credible field guide books. In turn, there is hope for continued research for pollinators in general. If there were to be more studies done at Brookhaven National Laboratory, then we would hope that more areas of the Solar Farm would be surveyed to provide more results to analyze.

**UNDERGRADUATE
CHEMISTRY/COMPUTER
SCIENCE/MATH/PHYSICS/
ENGINEERING/ENVIRONMENTAL
SCIENCE**

1st PRIZE

CCMPE5

**ELECTROLYTES FOR LITHIUM-AIR
BATTERIES: EXPERIMENTAL AND
COMPUTATIONAL STUDIES**

Renee Bynum¹ and Tiffany Holmes². ¹Laurence Berkley National Laboratories, ²Fort Valley State University.

The goal of the research is to carry out integrated experimental and computational studies to develop liquid organic electrolytes for lithium-air batteries. Lithium-air batteries have five to ten times more energy density compared to lithium-ion batteries. Lithium-ion batteries are currently used in a variety of electronic devices and also as the energy source for electric vehicles, EVs. Lithium-air batteries has the potential to significantly increase the range of EVs e.g. from 200 miles per charge to 1000 miles per charge. Boron containing triglyme electrolytes have been developed which shows high room temperature ionic conductivity and furthermore the ionic conductivity is stable over a large salt content range. The electrolyte is composed of a triglyme boron and bis(trifluoromethane) sulfonimide lithium salt. Experimental results suggest that perhaps in the boron containing system the lithium is further away from the anion permitting faster movement or increased mobility. To test this theory several polymer based electrolyte structures were made using DFT based software and analyzed for distance between molecules and /or atoms, total energy, binding energy,

electron density, and atomic charges. The computational results support the experimental observations and thus the investigation will pave the way to more successful electrolyte structures for lithium air batteries which will soon be in great demand due to a growing electric transport market.

2nd PRIZE

CCMPE8

**THE EFFECTS OF MICROGRAVITY
ENVIRONMENT ON SELF-ASSEMBLY
OF AMPHIPHILIC POLYMER**

Chaz Tyler, Yi Zhen, Joe Omojola.
Southern University of New Orleans,
New Orleans, Louisiana.

This research studies the effects of microgravity environment on self-assembly of amphiphilic polymer. Amphiphilic polymer poly(ethylene-glycol)-block poly(ϵ -caprolactone) (PEG-b-PCL) was selected as our polymer of interest because of its unique self-assembled structure and popular applications in biomedical engineering. Experimentation necessitates a microgravity environment as a scientific variable in treatment groups during research. The simulated microgravity environment was created by varying the rotational speed of a bio-reactor. Self-assembly behavior of PEG-b-PCL was measured by the value of the electrical resistance of polymer solution. The influence of microgravity environment on polymer solution was studied under various polymer concentrations, salt concentrations, pH values, and temperature. Statistical analysis methods were applied to the experimental data. Analysis of Variance (ANOVA) identified that micro-gravity environment has a significant effect on self-assembled structure of PEG-b-PCL when polymer concentrations and temperature of

polymer solution were varied. Linear regression analysis quantified the relationships among polymer resistance and polymer concentrations, salt concentrations, pH values, temperature, and the rotational speed of bioreactor. It was found that rotational speed was strongly linearly correlated to self-assembly behavior of amphiphilic polymer under various polymer concentrations, pH values, and temperature. Overall, microgravity environment did not show a significant effect on electrical resistance of polymer solution under various salt concentrations. However, the self-assembly of PEG-b- PCL showed susceptibility to microgravity environment when changing polymer concentrations, pH values, and temperature of the polymer solution.

3rd PRIZE

CCMPE9

EFFECTIVENESS OF TRIPLET TECHNICAL INDICATORS CONFIRMATION

Samael J. Dor, Joe Omojola, Rachid Belmasour. Southern University at New Orleans, New Orleans, Louisiana.

Technical Analysis and Technical Indicators are critical to anyone who has interest in analyzing the stock market. Technical Indicators are series of data points that are derived by applying a formula to the price data of a security. Technical indicators are effective in the stock market because they can be used to predict the likelihood of future price movements. They are used as signals to make a critical decision on a stock. The purpose of this research was to determine which Technical Indicator method was more effective at generating a profit. The stocks for this research were chosen based on how long they have been in the market (minimum 5 years required) and their

volume. Data was collected on all 15 stocks for 5 years (2012-2016) on a 2-day chart recording the entry dates/prices and exit dates/prices. Stochastics (14.5.3), Exponential Moving Average Convergence Divergence (MACD 7.20.9) and 2/5 Exponential Moving Average crossover were used. The condition for entry in the stock is that all three indicators must agree on the crossover. The rule for exiting a stock using stochastic is when the stochastic line rises above the 80 level then crosses downward. The same entry dates and prices from the 2/5 EMA, Stochastics 14.5.3, and EMACD 7.20.9 were retained while EMACD 7.20.9 was used to record the exit dates and prices. The gain/loss and percent gain/loss for those two methods were calculated. After performing the t-test, it was discovered that the gains were statistically significant. More data was collected on the 2-day chart using four different methods: 9/15 cross over, MACD (8.17.9) crossover, Stochastic (30.10.15) and Buy-and-Hold. For the Buy-and-Hold method, entry and exit prices were taken at the beginning and end of the five-year period. The Null hypothesis for all the methods except for MACD (8.17.9) were rejected, which means that the profit realized was statistically significant.

**UNDERGRADUATE
PSYCHOLOGY/SOCIAL
SCIENCE/SCIENCE EDUCATION**

1st PRIZE

PSE9

**ANTIMICROBIAL EFFICACY OF DIFFERENT
ROSELLE HIBISCUS EXTRACTS AGAINST
ESCHERICHIA COLI**

Irene Lewis¹, Jasmond Tucker² and Janana J. Snowden³. ¹College of Agriculture and Family and Consumer Science, Southern University and A&M College, Baton Rouge, LA, USA; ²Department of Biology, Southern University and A&M College, Baton Rouge, LA, US; ³Southern University Agricultural Research and Extension Center, Baton Rouge, LA, USA.

The emergence of foodborne pathogens has become a main concern to human health. Herbal products such as the Roselle hibiscus may be used as antimicrobial agents, providing alternate sources for combatting the increase of foodborne pathogens seen today. Therefore, we investigated the antimicrobial activity of South African and Jamaican varieties of roselle hibiscus. Phenolics of the hibiscus calyces were extracted utilizing various concentrations of methanol. Cup-plate assays were carried out using tetracycline as the standard. Plates were incubated for a period of 24 hours before assessing. Growth inhibition was revealed by the presence of inhibition zones, which indicated an absence of microbial growth. Results indicated that both the Jamaican and South African varieties possess antimicrobial properties and have potential as antimicrobial agents. However, the cup-plate agar diffusion method revealed that the extracts of the South African variety possessed a larger zone of inhibition when compared to the Jamaican variety.

2nd PRIZE

PSE8

**THE EFFECT OF MOOD AND NARCISSISM
ON CREATIVITY AMONGST AFRICAN
AMERICAN COLLEGE STUDENTS**

Wes Washington. Southern University and A&M College, Department of Psychology, Social Work and Sociology, Baton Rouge, Louisiana.

Psychopathological states such as narcissism and bi-polar disorder have been associated with mood and creativity. The purpose of this study was to determine the roles that mood and narcissism have on creativity. Participants were male and female undergraduate students in the Psychology Department at a particular H.B.C.U. Participants were separated into two groups by random assignment consisting of a control group and an experimental group. Once separated, one group watched a video that tried to induce a positive mood while the other group watched a video that tried to induce a negative mood. The participant's mood and narcissistic levels were assessed after watching the particular videos. Participants were then asked to complete a creativity exercise afterwards that consisted of four different exercises that were timed. There was a significant interaction between gender, mood, and creativity. Results showed that when women were in negative moods, they were more creative than men in negative moods. Factorial analysis revealed other main effects and interactions between mood, narcissism, and creativity as well. There was a statistically significant interaction between classification, mood, narcissism and creativity. There were also significant interactions between organizations, mood, narcissism, and creativity; as well as between narcissism, mood, and creativity. Results confirm differences depending on narcissism, mood, G.P.A. and creativity.

3rd PRIZE**PSE1****ECOLOGICAL STUDIES: VARIATIONS IN HABITAT AND CLUTCH SIZES OF BOX TURTLES IN THE NE UNITED STATES**

Octavia Allen¹, Murty Kambhampati¹, Russell L. Burke², Timothy Green³. ¹Southern University at New Orleans, New Orleans, LA; ²Hofstra University, Hempstead, NY; ³Brookhaven National Laboratory, Upton, NY.

The Eastern Box Turtle (*Terrapene carolina carolina*) (EBT) is a popular charismatic species that has been the subject of multiple previous experiments. Clutch size (number of eggs per clutch) is a critical characteristic of reproductive fitness easily measured in EBT. Despite considerable research on EBT reproduction, it is unclear what factors cause variation in clutch size. Previous studies have shown a trend in an increase in clutch such in relation to higher latitudes. It was predicted the mean clutch size at Brookhaven National Laboratory will be above the trend line and there will be a positive correlation between its carapace length and clutch size. I also compared the Brookhaven National Laboratory (BNL) gravid turtles' carapace length to its average clutch size.

From 2013-2017, EBTs were tracked at BNL using radio telemetry and data were collected using a digital infrared temperature gun, Kestrel weather station, and handheld Garmin GPS. Eight female *T. carolina* were tracked twice/day, while another 11 EBT, male and female, were

tracked twice/week. Adult female EBTs were radiographed to determine their gravidity status and clutch size. Out of 104 radiographs taken over 4 years, 32 EBT were gravid. Clutch size ranged from 3-7, annual average clutch size varied from 4.3 (2017) to 6.5 (2015), the overall average was 5.4 ± 0.78 eggs/clutch. It was hypothesized that the EBT will prefer to inhabit conditions with high humidity and available nutrition. There is no significant evidence to suggest that precipitation, humidity, or temperature and the microhabitat directly affect the gravidity status and clutch size of EBT. The microhabitats of the EBT tracked via radio telemetry in the 2017 summer were observed, recorded, and analyzed in relation to the temperature and humidity taken. At higher latitudes, there tends to be larger clutch sizes in box turtles resulting in a slight positive correlation. Also, larger or longer turtles have the ability to hold more eggs. Temperature and clutch size have a negative correlation suggesting that there isn't much of an impact on the clutch sizes due to temperature. We found no significant relationship between environmental factors and the gravidity, carapace length, and clutch size of box turtles and accepted our null hypotheses. Future research could focus on the factors that help determine clutch sizes, so there will be a better idea as to what is the cause of the clutch size variations in the northeastern United States.

75th NIS/BKX
Joint Annual Meeting



POSTER
PRESENTATIONS
AWARD
WINNERS

2018

GRADUATE POSTER PRESENTATIONS WINNERS

1ST PRIZE

GSP1

HDACs REGULATE CIGARETTE SMOKE INDUCED AUTOPHAGY GENES

Prathyusha Bagam¹ and Sanjay Batra¹.

Laboratory of Pulmonary Immuno-toxicology,
Department of Environmental Toxicology,
Southern University and A&M College, Baton
Rouge, LA-70813.

Chronic obstructive pulmonary disease (COPD) is one of the leading nonreversible fatal ailment. Cigarette smoke (CS) is the major risk factor which exposes lungs to high concentration of free radicals and bioactive chemicals. Oxidative stress results in DNA damage, degradation of proteins, and cell death resulting in acute lung injury (ALI). The tissue injury in COPD is irreversible with no available therapy helpful in regressing this damage. This necessitates further understanding and investigation into the mechanism of cellular damage due to CS. Earlier studies have demonstrated a functional role of autophagy in COPD. Expression and activation of autophagy related genes is regulated by Fork head box class O (FOXO) transcription factors, FOXO1 and FOXO3. We hypothesize important role of histone deacetylases (HDACs) in CS-mediated regulation of FOXO1 and FOXO3. Using immune-blotting and immunofluorescence techniques we observed CS-mediated increase in the expression and activation of FOXO1 and FOXO3 in A549 cells. Interestingly, pre-treatment with HDAC inhibitor benzyl-isothiocyanate (BITC) significantly abrogated CS-induced expression of FOXO1, FOXO3 and ATGs.

However, pre-treatment with theophylline (an HDAC inducer), rescued CS-mediated down-regulation of HDAC6 and further increased ATG5 expression. Overall, we demonstrate that regulating HDACs can be a possible therapeutic intervention strategy for the management of COPD. Our future studies focus on determining regulation of molecular inter-actions between autophagy proteins and the role of HDACs during CS-exposure in A549 cells.

[This work was supported by Young Clinical Scientist Award from the Flight Attendant Medical Research Institute (FAMRI-123253_YCSA_Faculty); NIH R15 (7 R15 ES023151 02); Southern University Foundation Grant (COSCO016); and LBRN Startup Grant (2P20GM103424-14 –Sub Award No. 100011) to SB].

2ND PRIZE

GSP2

INHIBITION OF THE WNT/JNK PATHWAY IN 3D CULTURES OF PROSTATE CANCER CELLS BY RESVERATROL

Demario Vallier¹, Javonte Bratcher¹, Konstantin Kousoulas², Eduardo Martinez-Ceballos¹, Xiaoping Yi^{1*}

1. Department of Biological Sciences and Chemistry, Southern University and A&M College, Baton Rouge, LA 70813

2. Division of Biotechnology and Molecular Medicine and Department of Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA 70803

Prostate cancer is the most common cancer among American men. Although new treatments for prostate cancer continue to be investigated, no definitive cure has been found yet for the advanced aggressive stages. Resveratrol (RES) is a component of Asian traditional medicine used to treat cardiovascular diseases. Its potential use in chemoprevention and chemotherapy for various cancer forms relies on its effects on cell growth, apoptosis, and cancer metastasis. As RES appears to have many anti-tumor effects on different cancer cell types, the molecular basis of these effects needs to be extensively studied using a cell culture model that best resembles the tumor environment in the body. We hypothesized that RES may be effective in inducing apoptosis by inhibiting/ acting on some cell signaling pathways in 3D cultures of prostate cancer cells. Our results indicated that RES has an effect on cells by decreasing cell viability from 70% in untreated cells to about 20% in treated cells. The late apoptosis rate was increased from 1% in untreated cell to 33% in treated cell with RES. Since RES induced cell apoptosis and decreased live cell numbers in prostate cancer cell lines, the expression of some tumor-associated and apoptosis genes was investigated. The semi-quantitative RT PCR results indicated that the expression of JNK1 and JNK2 in 3D cultures of prostate cancer cells was decreased significantly after cells were treated with RES. The expression of β -Catenin and E-cadherin were also decreased in PCa cells treated with RES. All those genes act as an intracellular signal transducer in the Wnt/JNK signaling pathway. So decreased expression of those genes should suppress cancer stem cells, tumor cell migration, invasiveness, and metastasis in prostate cancer cells. The expression of Hoxa1 was also decreased in PCa cells treated with RES. The further investigation of the molecular mechanism of RES action in prostate cancer cells is in progress.

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244 William James Hall, Elton C. Harrison Drive, Baton Rouge, LA 70813.

UNDERGRADUATE POSTER PRESENTATIONS

BIOLOGY

1st PRIZE

PSUG7

POPULATION GROWTH OF PHILODINA SP. (ROTIFERA) SUBJECTED TO THREE TEMPERATURE REGIMES

Demarcus Turner, Dwight Bland, Rondell Holden. Norfolk State University, Norfolk, Virginia.

This study aims to investigate the population growth of a rotifer, *Philodina* sp. (Rotifera). A population of *Philodina* has been observed to initially grow and then plateau in a bird bath and flower pot in Suffolk, Virginia. Animal population growth generally follows this trend. We hypothesized that the population growth of these rotifers would be dependent on the temperature of their environment. Does the *Philodina* population follow a similar growth pattern under experimental conditions? Initial results indicate that the growth of the population is regulated by the temperature of their environment. A *Philodina* population was subjected to three temperatures (5°C, 22°C, and 30°C) and showed a trend of growth. Rotifers tested at 5°C illustrated no population growth while subjects tested at 22°C and 30°C were observed as the optimum temperatures because of their steady growth rate.

2nd PRIZE**PSUG21****COMPARISON OF THE MOLECULAR CONTENT OF CANCER-DERIVED EXOSOMES FROM ESTROGEN RECEPTOR-NEGATIVE, ANDROGEN RECEPTOR-POSITIVE BREAST CANCER CELLS**

Aliyah Patterson, Brandy Huderson. University of the District of Columbia, Washington, DC.

Breast cancer is the second leading cause of cancer-related deaths in America. There have been much advancement in breast cancer treatments; however, there are still many gaps in our understanding of cancer progression. Recently, studies have focused on mechanisms of cell-to-cell communication as plausible explanation for cancer progression. One such mechanism is microvesicles known as exosomes. Exosomes are nanosized vesicles released from many cell types in the body. Originally thought to be involved in cellular waste disposal, it is now known that exosomes play an intricate role in cell communication. Published results have shown that exosomes can transmit genetic information through transference of molecular signals (i.e. RNA, protein). Previous results from our lab showed that cross incubation of estrogen receptor-negative (ER-)/androgen receptor-positive (AR+) MDA-MB 453 and MDA-MB 231 with reciprocal exosomes resulted in altered gene expression for AR target genes as well as Wnt7b. the purpose of this experiment was to assess the effects of AR-signaling modulating drugs on exosomal content. ER-/AR+ MDA-MB 453, MDA-MB 23, and ER+/AR- MCF 7 cells were treated with AR agonist or antagonist, and exosome cultured media collected. Prostate cancer cell line C42B were incubated with resulting exosome-enriched media and they effect on AR signaling assessed via AR target gene expression. We further analyzed exosomal content via Gas chromatography-mass spectro-

metry (GC-MS). Incubation of C42B cells with treated exosomes from ER-/AR+ cells resulted in a pattern of expression of target genes similar to cells directly treated. Treatment of C42B cells with exosomes collected from MCF 7 cells treated with AR antagonist flutamide resulted in increased expression of target genes while all other treatments showed no difference in gene expression. In conclusion, exosomes not only have the ability to affect recipient cell behavior, but here we show can also confer treatments as well.

3rd PRIZE**PSUG8****MICROPATTERNING FOR TRACTION MEASUREMENTS**

Jordan Dreher¹, Antoinette Barrow-Jordan², Han Xu³, Michael L. Smith³. ¹Norfolk State University, Norfolk, VA; ²McKinley Middle School, Boston, MA; ³Boston University, Boston, MA.

Micro-patterning traction microscopy is a technique using micro-patterned fluorescent proteins to image cell traction forces (CTF). The target of this experiment was to investigate vascular smooth muscle cell (SMC) behavior on different stiffness level gels, which will provide insight to vascular pathology. A 13.6kPa and a 30kPa gel micro-patterned with fluorescent fibronectin (FN) was created and imaged under a microscope for 2 hours. The images were analyzed using MATLAB and the forces were calculated and compared to previous data obtained on a 6.7kPa gel. The P value for the sum of traction was 0.024 for the 13.6kPa and 6.7kPa gels, implying significantly different behaviors on SMC on these two stiffness gels. The cells' force on the 13.6kPa gel was more fluctuating compared to the cells on the 6.7kPa gel, but there was not a significant difference in contractility.

UNDERGRADUATE POSTERS PSYCHOLOGY/SOCIAL SCIENCE/SCIENCE EDUCATION

1ST PRIZE

PSUG36

PERCEIVED RACISM IN ACADEMIA AND NEGATIVE RESPONSES TO RACIST EVENTS PREDICT HEART RATE VARIABILITY IN AFRICAN-AMERICANS

Tya Kelly and Kimberly A. Bell, Ph.D. University of the District of Columbia, Washington, DC.

Perceived racism is the subjective and objective experience of prejudice or discrimination. These experiences can elicit both emotional and behavioral responses that could adversely affect health. African-Americans experience frequent exposure to discrimination, including micro-aggressions in public spaces and including the workplace and academic settings. Experiencing discrimination is associated with higher reported stress and poorer reported health including risk for cardiovascular disease, depression and poor sleep quality. Experiences of discrimination could impact sleep directly through a variety of mechanisms, such as perseverative cognitions including perceived racism. This study evaluated the completion of self-report measures of perceived racism, anxiety, sleep quality, and heart rate variability, an index of cardiovascular health, in African-American males and females of the Washington, DC metropolitan area. Results of this study show that perceived racism in academic environments and negative responses to those events predict parasympathetic nervous system activity during sleep, $F(2,53) = 3.460$, $p = .035$, $R^2 = .118$. Results approached statistical significance for wake periods. Findings suggest exposure to racism and negative emotional responses to those events

may serve as an unconscious stressor that persists into sleep periods and impact overall health.

[This research is supported by NSF/HBCU grants 1622811 and 1531014].

2ND PRIZE

PSUG10

H.O.P.E. (HELPING, OBSERVING, PROTECTING, AND EDUCATING OUR COMMUNITY): PROMOTING CONDOM USAGE AND HIV AWARENESS

Arrione Hawkins. Fisk University and Meharry Medical College HBCU Wellness Program. Nashville, TN.

The ultimate goal of this project was to educate young adults in the African-American community of North Nashville on HIV/AIDS infection/disease. The project also reinforced the importance of condom use as a means of protecting individuals from sexually transmitted diseases. This intervention was conducted in two parts. One part of the intervention was directed toward female participants, so that they could express their thoughts on HIV and clearly relay whether they felt there was a stigma within the African-American community with the use of different condom brands. The second was specifically targeted to males, so that they could express themselves regarding the same information in a less confrontational setting. Both events brought forth positive feedback in the separate gender groups, because the gender separation allowed the participants to be more comfortable. Presentations about HIV/AIDS were given by health professionals. Interactive games were used to demonstrate the rapid spread of the disease. Free HIV testing was provided by the

local health department. The project was evaluated by pre and post surveys. Approximately fifty people were in attendance. The data from the surveys revealed an increase in knowledge regarding HIV infection and participants became more aware of the importance of condom use.

3rd PRIZE

PSUG10

EDUCATIONAL INTERVENTIONS TO ADDRESS PRE-CONCEPTION HEALTH

Jiah Toms. Fisk University, Nashville, TN.

The purpose of this intervention was to educate African-American females 18 to 35 years of age who live in the North Nashville, Tennessee area on the importance of pre-conception health. Through this intervention, participants learned the importance of making healthy lifestyle choices such as stress management, and engaging in a proper diet and routine exercise. Participants were given a pre-test/survey upon arrival. In addition to an educational information Session, a Scholarly Soiree was held to provide information on pre-conception health, birth control, healthy eating and the importance of exercise. Additionally, females were pampered with facials, makeovers and garment fittings. Prior to participants exiting the Soiree, they were given a post-test. Throughout the Soiree, participants became knowledgeable of the rates and causes of infant mortality. They also learned about community resources regarding prenatal health in the Nashville, Tennessee area. This study confirmed the correlation between the education of African-American females and the reduction of infant mortality.

UNDERGRADUATE POSTERS CHEMISTRY/COMPUTER SCIENCE/MATH/PHYSICS/ ENGINEERING/ENVIRONMENTAL SCIENCE

1st PRIZE

PSUG9

DESIGN OF GEOSYNTHETIC REINFORCED SOIL STRUCTURES BASED ON RELIABILITY AND NUMERICAL METHODS

Ji Shin, Sandae Tait, Lei Wang. Civil Engineering Department, University of the District of Columbia, Washington, DC.

The use of geotextiles has gained popularity and has been increasingly used in structures such as roads, dams, levees, reservoirs, landfills, mines, erosion control, aqua-culture, and agriculture. Geosynthetic reinforced soil structures are widely used for earth retention and stabilization in many geotechnical and transportation applications. In the traditional design of geosynthetic reinforced soil structures, factor of safety is used to address the uncertainties. However, this approach cannot systematically consider the uncertainties and usually result in over-conservativeness and inconsistency in the design practice. In this paper, a reliability-based design framework of geosynthetic reinforced soil structures is developed using the reliability and numerical methods. The geosynthetic reinforced soil structures are modeled using finite element method. In the finite element method, the soil behavior is modelled using the Mohr-Coulomb soil model and a strength reduction method is used to determine the

factor of safety value for a given geosynthetic reinforced soil structure. Then moment methods are combined with the finite element methods to obtain the distribution factor of safety based on the sampling of uncertain input parameters. The probability of failure is then obtained for design of geosynthetic reinforced soil structure based on the target reliability level. A case study of a 6-meter high geosynthetic reinforced soil wall is used to illustrate the significance of the proposed framework. The reliability-based design framework provides a useful decision making tool for geotechnical design in the face of uncertainties.

[This research is supported by NSF/HBCU-UP grants 1622811 and 1531014].

2nd PRIZE

PSUG29

COMPARISON OF SARSTEDT X-WELL CONTAINERS FOR SERS ANALYSIS

Tavieon Taylor and Dr. Robin Bright.
Department of Chemistry, Fort Valley State University, Fort Valley, Georgia.

The research conducted used three different SARSTEDT x-wells: one polymer based (PCA) the other being the contemporary glass material and the last being a cover slip for determining which will yield better results at the lowest possible detection readings. The sample used for research is phenol dissolved in methanol at different ratios. Surface-enhanced Raman spectroscopy (SERS) is a surface sensitive technique that provides high Raman scattering enhancement by molecules adsorbed on rough

metal surfaces. Since Raman signals are inherently weak, we use SERS to multiply the signal and give greater detection readings. Aqueous solutions are important especially in biological fields where organic solvents can't be used. The use of glass plates will give better detection readings as compared to PCA (Phosphino-Carboxylic Acid) x-wells.

3rd PRIZE

PSUG1

PSUG1

DUAL HETEROJUNCTION OF BISMUTH VANADATE FOR ENHANCED PHOTOELECTROCHEMICAL WATER SPLITTING.

Dwight Bland¹, Elsayed M. Zahran², Marc Knecht², Leonidas G. Bachas². ¹Norfolk State University, Norfolk, VA 23504, ²Department of Chemistry, University of Miami, Coral Gables, FL 33124.

Hydrogen is a promising source of energy that is receiving much attention and the production of it is influenced by photo-electrochemical (PEC) water splitting. In this approach, the solar energy is utilized in the presence of metal oxide semiconductor to split water into oxygen and hydrogen. In this investigation, we describe the synthesis and characterization of BiVO₄ with dual heterojunction and demonstrate its enhanced photocatalytic activity for the degradation of organic dyes. BiVO₄ nanocrystals are doped with bismuth oxyhalides and palladium nanoparticles and studied as photoanode for the photo-electrochemical oxygen generation from water splitting. This will ultimately create p-n heterojunction material

that improves the charges separation, which results in enhanced photo-electrochemical water splitting. BiVO₄ has demonstrated high levels of photocatalytic activity when doped with oxyhalides but not with palladium. This increased level of photo-catalytic activity mixed with sodium sulfate and sodium hydroxide has resulted in enhanced water splitting.

NIS OFFICER'S REPORTS





President's Report

The National Institute of Science 2018

Welcome to the 75th Joint Annual Meeting of the National Institute of Science (NIS)/Beta Kappa Chi (BKX) National Scientific Honor Society. This year's meeting is sponsored by NIS and is held at the University of the District of Columbia, Washington, DC. The NIS has been working with the tirelessly to make this a meeting successful for both students and faculty. I bring you this report as president, a position I had not anticipated, but have acclimated to the position with trepidation. The Local Planning Committee and I have been working to make the meeting a success. The list of committee members can be found in the program.

Firstly, I must thank Dr. Oswald Tekyi-Mensah for a number of accomplishments listed below:

- reestablished the NIS website,
- designed and incorporated historical NIS data into the website,
- established a registration process for the meeting,
- provided up-to-date information concerning meeting registration, and
- kept in constant communication with the Local Planning Committee

Second, the Local Planning Committee has been indispensable in making this meeting a success. During the last two months, we were meeting weekly and sometimes twice weekly. Members of the Local Planning Committee included:

Kimberly Bell	Carolyn Cousin	Freddie Dixon	Kim Fenwick
Brandy Huderson	Matty Knight	Rachel Petty	Rosie Sneed
Maggie Sone	Anita Taylor	Samuel Waters	Anita Wood

Third, thank you for allowing me to serve as president of the National Institute of Science. It has been an enlightening experience. We were able to secure a small NSF Conference Grant that required participant support. A major stipulation was no funds could be used for entertainment (including food). Therefore, most of the funds were used to supply free rooms for participating students.

This 75th Joint Annual Meeting of National Institute of Science (NIS)/Beta Kappa Chi (BKX) National Scientific Honor Society has a deep-rooted theme “Nature or Nurture: Influences of Heredity and the Environment” Its intent is to address issues that affect the influences of the environment on development. We looked to the planning committee to provide thought provoking questions that elicit answers well beyond this three day session. The president participated in the planning of this meeting through conference calls and personal emails with members of both national organizations. She procured a speaker for the NIS Memorial Lecture with the assistance of Ms. Kimberly Fenwick. Additionally, with the assistance of the committee, selected the menus and planned the programs.

This has been an exciting and exhausting endeavor, peppered with several obstacles before getting to this point. We hope that you enjoy the meeting and will join us by paying the annual dues which helps to sustain our organization. Additionally, please consider starting or continuing your local student NIS chapter, because this is from where our operating expenses come.

Respectfully submitted,

Freddie M. Dixon, NIS President

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National Institute of Science
Report of the Executive Secretary
(2016-2017)

Oswald Tekyi-Mensah,
Alabama State University

The 73rd Joint Annual Meeting of the National Institute of Science (NIS) and Beta Kappa Chi (BKX) Scientific Honor Society, hosted jointly by Hampton University and Norfolk State University, was held in Hampton, Virginia, April 6-9, 2016. The activities were held at the Crowne Plaza Marina Hotel and on the campuses of Hampton University and Norfolk State University. The theme for the meeting was ***“STEM Cells and their Role in Disease Prevention and ‘The Cure’.*”**

Our sincere thanks to the host institutions for the hard work they put into the planning and implementation of events and infusing some novel ideas into making the meeting an enjoyable one. Dr. Michelle Penn-Marshall and Ms. Maureen Scott deserve our kudos for the role they played in making this happen. Our sincere gratitude to the presidents, the administrative personnel, faculty and staff of both universities, for their assistance. All officers and staff of NIS and BKX involved in the planning deserve a hearty thank you, particularly, Ms. Anita Taylor, the Program Manager of the STEM Center Grant at the University of District of Columbia, who contributed immensely.

The absence of financial support from the National Institute of Health (NIH) grant, which had supported the meeting over many years, made it necessary to keep cost at a minimum. As such, the meeting activities which involved movement between the two campuses and the hotel, food, poster boards, exhibitors, etc., had to be optimized to curtail the cost of the meeting. Planning the meeting was sometimes contentious. Despite the contentions, the parties managed to work cooperatively to pull off the annual meeting. There were a few hiccups with the rollout, notably, the management of the front desk and technical difficulties encountered during printing. The technical difficulties delayed the printing and handing out of judging materials and because many judges did not receive timely notifications, many of them did not show up to judge. Likewise, the reduced number of days in hosting the meeting has placed time constraints on those

assigned committee duties, therefore, we encountered delays in the execution of duties and generation of committee reports. The difficulties we encountered were learning experiences that fueled our resolve to improving the planning and implementation of future events.

There were five graduate oral presentations. Twenty-eight undergraduate oral presentations were scheduled, of which, ten were in biology (BIO); five in chemistry (CH); five in the category of computer science, mathematics, physics and engineering (CMPE); four in the category of Psychology, Social Science, Science Education (PSE); and lastly, four in Earth-Environmental Science (ES). Thirteen graduate posters were submitted but nine did not show. Eighty-four undergraduate posters were submitted and twenty-one presenters did not show. The breakdown are as follows: BIO (twenty-seven), CH (ten), CMPE (fourteen), ES (five), and PSE (seven).

The table below summarizes the names of awardees in their respective disciplines and affiliations:

Undergraduate Oral		Names	Affiliation
Biology	1st	Vanessa Bolar	Fort Valley State University
	2nd	Courtney Edwards	Hampton University
	3rd	Christopher Wellman	University of the District of Columbia
Chemistry	1st	Adewola Osunade	University of the District of Columbia
	2nd	David Samuel	Hampton University
	3rd	Webs Pierre	University of the District of Columbia
CMPE	1 st	Markeya Price	Fort Valley State University
	2 nd	Katiso Mabula	Hampton University
	3 rd	Mikirra Bullard	Fort Valley State University
ES	1 st	Sania Rose	University of the District of Columbia

	2 nd	Christina Williams	Hampton University
	3 rd	Damon Ricks	Norfolk State University
PSE	1 st	Arnedia Wallace	Southern University and A&M College
	2 nd	Jamal Willis	Fort Valley State University
	2 nd	Nia Williams	University of the District of Columbia
	3 rd	Kimia Marion	Fort Valley State University
Undergraduate Posters			
Biology	1 st	Robert Emeh	Alabama State University
	2 nd	Andrew Asante	Alabama State University
	3 rd	Joselyn Miller	Alabama State University
	3 rd	Keonna Hayes	Norfolk State University
Chemistry	1 st	Jasmine Cheeves	Fort Valley State University
	2 nd	Taylor Ribeiro	Norfolk State University
	3 rd	Jody Stiger II	Hampton University
CS/Eng/Math/Phy	1 st	Breyah Matthews	Hampton University
	2 nd	Andre Spears	Southern University Baton Rouge
	3 rd	Gretchen Farrows	Hampton University
Env. Sci	1 st	Matthew Carey	Norfolk State University
	2 nd	Belayneh Wondimeneh	University of the District of Columbia
	3 rd	Luke Williams	Southern University Baton Rouge

Psy/Soc Sci/Sci Ed	1 st	Shelby Clark	Fisk University
	2 nd	Taryn Nurse	Fisk University
	3 rd	Niya Wilkins	Hampton University
Graduate Oral	1 st	Michael Smith	University of the District of Columbia/Howard
	2 nd	Adonay Sissay	Louisiana State University
	3 rd	Niageria Lusk	North Carolina A&T State University
Graduate Posters (All Categories)	1st	Carrie Sanders	Alabama State University.
	2 nd	Marissa Edwards	Virginia State University
	3 rd	Elizabeth Mullins	Elizabeth City State University

Several speakers were featured at the meeting. Dr. James L. Sherley, Founder and Director of ASYMMETREX was the speaker at the Opening Plenary Session. Dr. Howard G. Adams, Founder and president of H.G. Adams & Associates, addressed the BKX Memorial Lecture and Luncheon. A novel event this year was the introduction of dining etiquette which was presided by Mrs. Vivian Wrenn David, Director of Career Counseling and Planning Center at Hampton University.

The meeting was preceded by a CRISPR cas9 workshop, held on the Hampton campus in the Frank Fountain Building, by Dr. Jan Blancato who is a professor from Georgetown University. In attendance were faculty and students selected from a pool of applicants who applied to participate.

Six workshops were also held on the campus of Norfolk State University. They were as follows:

1. **Navigating NIH/NIAID Science Training Programs** was organized by Dr. Shawn Gaillard and Ms. Raushanah Newman from the Office of Research Training and Special Programs, National Institutes of Health, Bethesda.
2. **Genealogy and Health: The Importance of a Medical Family Tree** was held by Ms. Barbara S. Harvey. Assistant Professor from the Department of Nutrition and Dietetics at the University of the District

of Columbia, Washington, DC.

3. **Nanomaterials for Technological Applications** was led by Dr. Jonathan R. Skuza, a Research Professor at the Center for Materials Research based at Norfolk State University, Norfolk, VA.
4. **Gaming and Education: The Good, the Bad, and the In-Between!** was directed by Dr. Rasha Morsi, the director at Creative Gaming and Simulation Lab (CGS) at Norfolk State University, Norfolk, VA.
5. **Life Lessons from One STEM Major to Another.** Dr. Trina Coleman, Assistant Provost of Technology, at Hampton University, Hampton, VA oversaw this workshop, and finally
6. **Navigating Entrance and Persistence in Graduate School** was led Dr. Isi Ero-Tolliver, Assistant Professor of Biology at Hampton University, Hampton, VA.

A planned dinner at the Aquarium in Norfolk exposed students to marine life. The NIS Marketplace with exhibitors was fused with the Awards Ceremony and did not feature a speaker.

The newly elected NIS officials are:

President: Michelle Penn-Marshall was elected president but she declined the position.

Vice President: Freddie Dixon, University of the District of Columbia. Dr. Dixon is currently the acting president.

Editors: Carolyn Cousin & Anita Taylor, University of the District of Columbia.

Executive Secretary: Oswald Tekyi-Mensah, Alabama State University.

Treasurer: Rosie Sneed, University of the District of Columbia.

BKX is leading the planning of this year's meeting, I serve as liaison between the BKX officers and the website developer. Because both NIS and BKX alternate in hosting the annual meeting and use the same online registration database, I assist in making the required online changes from one organization to the other. I am also responsible for handling the electronic submission of abstracts, organizing reviews of submitted

abstracts, communicating the status of abstracts with students, scheduling the presentations, monitoring the electronic sign up of judges and assigning the judges their tasks. Ms. Shervia Taylor is assisting me with the solicitation and selection of judges and the distribution and collection of judging forms and materials. Additionally, I will serve in other capacities during the meeting.

Certificates, membership cards, pins and medallions that were issued this year are indicated in the table below:

Name	Certificate	Membership Card	Pins	Medallion
Alabama State University				
1. Asante, Andrew	X	X	X	
2. Bivens, Gregory	X	X	X	
3. Bonelli, Jayson	X	X	X	
4. Bonelli, Jayson	X	X	X	
5. Calhoun, Wesley	X	X	X	
6. Greene, Shannon	X	X	X	
7. Harris, Jameshia	X	X	X	
8. Howard, Drayvon	X	X	X	
9. Kaba, Aboubacar	X	X	X	
10. Miller, Joselyn	X	X	X	
11. Miller, Mikal	X	X	X	
12. Tolliver, Tambre	X	X	X	
University of the District of Columbia				
1. Casanova, Meru	X	X		
2. West-Furlow, Mary	X	X		
3. Webs Pierre		X		
Southern University New Orleans				
1. Adams, Destiny	X	X		X
2. Alberts, Jeniece	X	X	X	
3. Atteia, Bashir		X		
4. Becnel, Charisse		X		

5. Belmasrou, Rachid		X		
6. Brock, Aljerneau		X		X
7. Cleveland, Rochaun	X	X	X	
8. Coleman, Nikita	X	X	X	
9. Dillon, Amber		X		X
10. Dobnick, Kathy	X	X	X	X
11. Elaasar, Mostafa		X		
12. Fisher, Shawanda	X	X		
13. Friloux, James	X	X	X	
14. Gordon, Janica	X	X		X
15. Harding, April		X		
16. Harris, Candace		X		X
17. Kambhampati, Murty		X		X
18. Jacob, Monique	X	X		X
19. Johnson, Carl P.		X		
20. Lumpkin, Akira	X	X	X	
21. McGill, Savannah	X	X		X
22. Morris, Ebony	X	X	X	
23. Okwan, Phyllis		X		
24. Olubadewo, Joseph		X		
25. Omojola, Joe		X		
26. Perriat, Leilani	X	X		
27. Randolph, DeNae'	X	X	X	
28. Samuel, Ebelena	X	X	X	
29. Singleton, Cynthia	X	X	X	
30. Sisay, Nebiat		X		
31. Smith, Carl	X	X		
32. Tangban, Favour	X	X		X
33. Tangban, Goodnews	X	X		X
34. Tietzel, Illya		X		
35. Turner, Lashonda		X		
36. Paine, Danyelle	X	X	X	
37. Weber, Davion		X		
38. White, Donnequa	X	X		X
39. Williams, Ayan	X	X	X	
40. Young, Brittany	X	X		X
Bechtel Corporation				
1. Everington, Ben T.	X	X	X	

Financial Statement

Balance carried forward from 2015-16:	\$172.77
2016-2017 allocation:	<u>\$750.00</u>
Total Budget	\$922.77

Expenditure (2016-17):

Stationery-----	\$ 50.58
Toners-----	\$ 72.74
Postage-----	<u>\$ 27.81</u>
Total	\$151.13

Balance: \$771.64

STUDENT CORNER



STUDENT CORNER



The first public higher education institute for African-Americans, The Institute for Colored Youth, opened its doors in 1837 to teach African-Americans job trades. Now known as Cheyney University of Pennsylvania, it is considered the first Historically Black College and University (HBCU) in the United States. In 1857, Lincoln University of Pennsylvania was the first HBCU in the U.S. to award college degrees. Since the 1900's, more than 100 public and private HBCUS were established in the U.S. By the 1930s there were 121 HBCUs across 19 states in America. Since that time, 11 of the 121 HBCUs have closed permanently. As of 2018, 101 HBCUs are still functioning: 38 offer associate degree programs; 83 offer bachelor's degree programs; 52 offer master's degree programs; and 37 offer doctoral degree programs. Although HBCUs comprise only 3% of all colleges and universities in the United States, 20% of all black students obtain their 4-year degree from a HBCU. Today, in the STEM disciplines, 22% of Black students awarded STEM degrees were granted from a HBCU.

HBCUS have always had much less financial funding resources and fewer endowments than majority institutions. Donations of funds from alumni are also less at HBCUs than at majority institutions. For the past few decades, HBCUs have experienced several issues such as inadequate state and federal government funding as well as declining enrollment. Due to the current political climate in the nation, it has been suggested that HBCUs are no longer needed in the US and that HBCUs should merge with one another to rectify the financial and enrollment issues that are presently at the forefront. To this day, it still holds true that the numbers of African-American students attending college from low income households and those who are the first in their families to attend college are far greater in number than majority, White, students.

Student surveys over the past decade have shown that African-American students who attend non-HBCUs still feel excluded from many activities and organizations on these campuses: They do not feel a sense of belonging or safety. HBCUs are more likely to offer additional mentoring, tutoring and other assistance for students who are not sufficiently prepared for college. HBCUs also offer a more supportive and nurturing environment to attract and develop the potential of African-Americans to the STEM disciplines.

A study by U.S. Department of Education in 2015 revealed that the total number of black students attending HBCUs had dropped to 8.5% of the total number attending majority degree colleges and universities. Since the 1980s majority institutions are

accepting more African-Americans into their colleges and universities. Today many HBCUs are facing their most critical financial crisis. A few HBCUs are even in danger of losing their accreditation. With declining enrollment, financial instability, and accreditation uncertainty, why are so many African-Americans still choosing to attend an HBCU? We posed the question to the STEM research students attending Southern University at New Orleans (SUNO) under the research mentorships of Dr. Murty Kambhampati, Professor of Biology, Dr. Phyllis Okwan, Assistant Professor of Mathematics, Dr. Joe Omojola, Professor of Mathematics and Physics, and Dr. Rachid Belmassour, Associate Professor of Mathematics.

Why did you choose to attend a HBCU?

SUNO NIS/BKX Chapter Student's Voices



SUNO STEM Faculty and Research Interns at the Annual Joint NIS/BKX Meeting

Octavia Allen; Class of 2018; Currently pursuing MS Biology at West Chester University Pennsylvania

I selected to attend SUNO the Fall of 2015 after securing a women's basketball scholarship there. I love STEM research, because it gives me a chance to study and explore aspects of science for the most part that are unknown and has the potential to affect society in a big way. Besides classroom projects, I've conducted ecological research at Brookhaven National Laboratory and microbial research at West Chester University of Pennsylvania. There are so many ways to get involved with STEM at SUNO. We have NIS, BKX, MSEIP and LAMP scholarships, research opportunities, volunteer opportunities, and even mentoring opportunities. SUNO is really a hidden gem, and a great school for aspiring scientists and professionals.

I've always wanted to go to graduate school, but it was through SUNO where I learned the proper way of getting there and excelling. My mentor, Dr. Kam, introduced me to research opportunities outside of local facilities and it played a huge part of opening my mind to the possibilities that are out there. It broadened my view of the world of science. Although I'm self-motivated, he challenged me to be better, dream bigger, and help others reach their dreams. Being around other scientists and gaining knowledge and skills boosted my confidence to chase my dreams with no self-doubt. I haven't had experience being a research mentor yet, but I do hope to do so in the future.

Besides my research experience at BNL and time at SUNO, my family and God has been the catalyst for my B.S. degree (Spring 2018) and now M.S. enrollment. Without God, I'm no college graduate. He has touched the hearts of the many people that have helped me get to this point, and I'm grateful. I will continue to work hard toward my goals and have faith that it will come to fruition. I just want to use what I've been blessed to gain to be of help to other people.

Dulaine Vining, Senior Biology major and Chemistry minor; Class of 2019

I am a Biology student and NIS/BKX member at Southern University at New Orleans, which is one of a few HBCUs in the New Orleans metro area. I selected an HBCU school because of who I am as a person, I believe in diversity; however, there is much diversity within the black and brown community that has yet to be explored. When we learn together we grow together; which keeps the race intact and thrives to give back to the community. In conjunction with attending a HBCU institution, SUNO has some of

SUNO NIS/BKX Chapter Student's Voices

Why did you choose to attend a HBCU?

the best and very well-educated professors who are willing to promote STEM education and prepare you. STEM research has allowed me to explore other areas of science where I can also advance. In 2014, I completed a two-year biomarker study for the management of Sepsis at Grady Memorial hospital with Emory University in Atlanta. I was CITI certified to conduct clinical research on humans and animals, including behavioral research. In addition, I was also added to a META study for NICU patients also with Emory University. My most recent study was conducted in New York for environmental studies, which would have allowed me to have a comprehensive aspect of research. Without the helpful guidance of my mentor Dr. Murty, it would have been nearly impossible for me to complete certain task. Mentors are required in STEM education, navigating this broad field of science, technology, education, and mathematics cannot be done alone. SUNO should also be commended for being an HBCU that visually sees potential in growth and ultimately graduation for every student.

Chelsea Brown; Biology Senior; Class of 2019

I choose to attend a Historically Black College because it is important to me to be a part of such a legacy in higher education. Southern University at New Orleans is an accredited college, which offers quality education, and academic programs that fit my interests. The beauty of how the supportive network comes together between students and faculty members for a common goal is motivating. I love STEM Research because it can be unpredictable. I take interest in the exploration of mechanisms that govern our planet. STEM Research gives me an opportunity to be hands-on and apply concepts I have learned in my courses. This summer I carried out research at Brookhaven National Laboratory where I researched vegetation/pollinator types inside in comparison to outside at the Long Island Solar Facility. I had an opportunity to collect and analyze data. Then I composed a paper and poster for display. I gained knowledge about proper research methods, and techniques, which are important in STEM careers.

There are many opportunities for students at SUNO, there is the Robert Noyce Stem teacher program, and academic awards such as the MSEIP-LAMP Award. We have organizations such as NIS, TriBeta, and Beta Kappa Chi Biological Honor Society. SUNO provides me with an environment which is challenging and supportive at an institution which will award me a Bachelor of Science in Biology degree. Through coursework, student resources, and dedicated staff involvement SUNO is preparing me for graduate level education, and my future career endeavors.

SUNO NIS/BKX Chapter Student's Voices

Why did you choose to attend a HBCU?

Precious Williams; Biology and Forensic Science double major; Senior; Class of 2019

I chose Southern University of New Orleans to pursue my BS degree because they are dedicated to making a person feel at home. The professors at SUNO showcase so many different scholarships and opportunities. Failure is not an option when there are multiple internships, different types of scholarships, and a variety of job opportunities posted in every elevator and on each hall in every building. Some scholarships SUNO offer are MESIP and LS-LAMP. I love STEM research because it affects every part of our lives. I had the opportunity to do research the summer of 2017 at Brookhaven National Laboratory pine barren forest. My experience at BNL was surprisingly awesome. I'm not really a big fan of being outside in the sticky dry heat; however, I learned to appreciate nature and the true meaning of field research.

Raven Williams; Junior; Double major: Biology and Mathematics; Class of 2020).

I selected SUNO, a Historically Black University, because the classes and extracurricular activities tailored to African-Americans. I love STEM research because how diverse, challenging and the different opportunities it has to offer. SUNO has provided me with plenty of opportunities such as LS-LAMP scholarships, NIS (National Institute of Science), US Ed Minority Science and Engineering Improvement Program (MSEIP), and summer research at Brookhaven National Laboratory. The teachers at SUNO are very dedicated to their students all year around. My teachers make sure to check my grades and GPA every semester. They make sure to inform about all scholarships, encourage applying to graduate or professional school. In addition, they make sure that we are more time efficient and meeting deadlines. Every time I did research, my professor or mentor was very devoted and always willing to help in the research. Each one of my mentors made sure to explain and always give us background information on our research. When you have amazing teachers or mentors in your life, it makes you want to learn more and even teach others the skills you have learned. My mentors have made me want to mentor or help in any kind of way I could with other students.



SUNO Biology and Mathematics Faculty and STEM students at the 2018 Induction Ceremony

Thank you SUNO students and faculty for your insights and contributions. May you continue to excel in the classrooms and in the research laboratories.

Meeting Announcements & Student Presentations Information

2019 Meeting Announcement

The 76th Joint Annual Meeting of BKX/NIS will be hosted by Fort Valley State University, Spring 2019, March 28-30, 2019 in Atlanta, Georgia.

About The Annual Joint Meetings

Research Areas

Biology, Chemistry, Environmental Science, Physics, Computer Science, Mathematics, Science Education, Engineering, Earth Sciences and Psychology.

Abstract Submission Information

Students who wish to be considered for Graduate Sessions A or B or the undergraduate oral or poster session must submit an abstract **electronically** at the designated website: **All NIS and BKX Faculty Sponsors will be notified, via email, of the abstract submission website address/link. In addition, the information will be posted on the NIS and BKX organization's websites.**

Guidelines for the written form, content and deadline for submission will be on the submission website.

Graduate Presentations and Awards Criteria

The Joint Meeting sponsors a Graduate Symposium (Graduate Sessions) for graduate students or young investigators with terminal degrees **within the past two years**, to present their research at the Joint Annual Meeting and an undergraduate poster session. Awards are given for the most competitive presentations.

Graduate Session

In order to participate in the Graduate Session an abstract and a manuscript must be submitted prior to making the presentation at the Joint Annual Meeting. Graduate Session manuscript (Microsoft Word) must include an introduction, materials and methods, results and discussion, illustrations, and references and e-mailed **ONLY to the designated website**. The entire manuscript should not to exceed 5 typed pages (8.5 x 11”).

The abstract and manuscript must be camera ready. The manuscript will be reviewed and evaluated by two scientists prior to the meeting. Winners in the Graduate Session will have their manuscripts published in the next “Transactions” journal after making revisions suggested by the reviewers. The manuscript will also be Graduate Oral and Poster Presentation awards will also be based on evaluation of the submitted manuscript including the abstract and oral presentation.

Undergraduate Presentations

Undergraduate Oral Session

For the **Undergraduate Oral Session**, only an abstract must be submitted by the due date. Awards will be based on the oral presentation during the meeting.

Undergraduate Poster Session

For the **Undergraduate Poster Session** only an abstract must be submitted by the due date. Awards will be based on the poster presentation during the meeting.



Loving Research, This is my Passion

It is a torch of freedom
An adventure I may not have the skills to begin
A fountain that springs de novo truths
And a joy that blooms everlasting
This is why I love research

It pulls me in all directions
To taste the challenges each venture puts forth
Not to grasp or verify a finding until the proof unfolds
Accepting the conclusion only when the entire story is told
This is why I love research

Spending the time when there is no time to spend
When frolic and play know they won't win
When no event is greater than your need to repeat
To know that the expenditures are far larger the sum of the receipts
This is why I love research

Every year my passion grows greater
Even when I stay in my lab all night,
I am still refreshed in the morning light
And to see the correct solutions gleam in my slight
There is no doubt in my mind that this is so right
This is why I love research

Carolyn Cousin



The NIS would like to hear from you.....

Write or e-mail comments, opinions or suggestions to the **Transactions**

Editor - Dr. Carolyn Cousin, ccousin@udc.edu, or

Co-Editor - Anita Taylor, anitaylor@udc.edu

If you need information on how to start a new NIS chapter in your school, please contact your Regional Director to obtain your starter kit:

Central Region - Patricia McCarroll, M.S., Fisk University,
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Eastern Region - Freddie Dixon, Ph.D., University of the District of
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South Central Region - Shervia Taylor, M.S., Southern University and A&M
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South Western Regional - Carolyn Golden, Ph.D., Huston-Tillotson
University, Austin, Texas, clgolden@htu.edu

South Eastern Region - Larry Lowe, Ph.D., Benedict College,
Columbia, South Carolina, Larry.Lowe@benedict.edu

Chapters need to maintain contact throughout the year. Let us know about the NIS Chapter activities you plan during the year. Other chapters may generate ideas from your plans for use in a unique setting.

Contact information on NIS activities

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