

---

Spring 2016, Vol. 52

# TRANSACTIONS

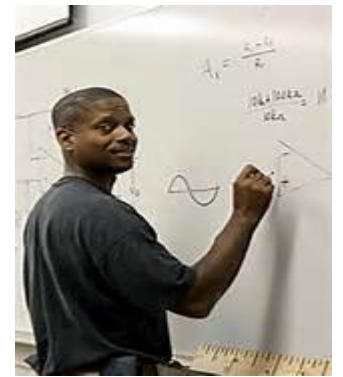
---

NATIONAL INSTITUTE OF SCIENCE

## Launching Alliances

## Through

# S T E M



..health apps...video consultations...medical diagnosis and monitoring via smartphones  
...robotic surgery...computer predicted pandemics and disease outbreaks...

NIH...NSF...GOOGLE...APPLE...CDC...NASA...NAE...HRI...ASHE...IBM...  
AstraZeneca...HP...IRI...

[www.nationalinstituteofscience.org](http://www.nationalinstituteofscience.org)



---

# TRANSACTIONS

National Institute of Science

## TABLE OF CONTENTS

Spring 2016, Vol. 52

---

**2 From the Editor's Desk**

Carolyn Cousin, PhD  
Anita Taylor

**5 NIS Officers & Regional Directors**

**Highlights 72<sup>nd</sup> Joint Meeting**

**7 NIS Memorial Lecture**

Agnes A. Day, PhD

**8 Renowned Scientific Lecturer**

George Mbata, PhD

**9 Distinguished Lecturer**

Rafael Luna, PhD

**10 Beta Kappa Chi Lecture**

Marcus B. Jones, PhD

**11 Summa Lecture & Awards Banquet**

Guest Speaker: Isiah Warner, PhD

**Student Presentations Award  
Winners and Abstracts**

**14 Graduate Oral Session**

**18 Undergraduate Oral Session**

**27 Graduate Poster Session**

**31 Undergraduate Poster Session**

**34 Special Event**

**The Stewpot Kitchen**

**NIS Organization News**

**36 Meet the New Officers**

**Reports**

**30 NIS President Report**

Ruby Broadway, PhD

**40 Executive Secretary Report**

Oswald Tekyi-Mensah

**47 Student's Corner**

**54 Staring a NIS Chapter**

**58 Announcements**

**60 Contact Information**

**Acknowledgements**

*The National Institute of Science and Beta Kappa Chi Scientific Honor Society would like to take this opportunity to extend their sincere appreciation to the many volunteers whose time and efforts have contributed toward bringing the 72nd Joint Annual Meeting to fruition.*

---

## *From the Editor's desk.....*

---

The National Institute of Science has a history of recording the activities and outcomes of the Joint Meeting between the National Institute of Science and Beta Kappa Chi Scientific Honor organizations. Needing archival accountings of our meetings was the initiator for the inception of the Transactions. The NIS's current status as the meeting's archival source was largely due to the outstanding work of three former editors: Drs. Maxwell Bempong, Jean Grant and Nithya Raghavan. Each had his/her own style and ideas that have made this meeting's journal a full and accurate accounting of the meetings activities, themes and the editors' thoughts and projections. Dr. Bempong realized that recording the meeting abstracts was most important even for an organization with few funds. Even though the Transactions provided the previous year's meeting abstracts, they gave documentation of the history and the pride that assured those of us in these two organizations today, that excellent science was being conducted at the attending institutions and outstanding presentations were made.

When Dr. Jean Grant took over the helm in 1998, she added features that corresponded to the new flavor of the organization. The glitzy cover, the additions to the meeting such as the student poster presentation, the Town Hall meetings, the distinguished lectures and refereed journal articles that were published as a privilege of having submitted a never-before published article that had been presented in Graduate Session A at the Joint Meeting. The idea of Graduate Session A came from Dr. Grant. Her hard work and hands-on contributions transformed the journal into a state-of-the-art publication with new and interesting articles. In some journal editions, the meeting's theme set the tone for invited articles from scientific authorities on the topic that provided the most current information on that theme and its relevancy to current knowledge of the subject.

In 2003, Dr. Nithya Raghavan became the editor and remained in that position until 2015. The meeting was growing in size and scope and she related accurately and excitingly on all of its innovative expansions. The new Marketplace, the Hot zone, the Summa lecture, the Chat and Chew were all explained and detailed in the Transactions. "From the Editor's desk, Dr. Raghavan's special corner of the Transactions gave summaries and accountings of the meeting's activities with accolades for those who were the originators, the designers, the implementers of the new activities for the Joint Meeting. Accolades were given to all contributors, but none to herself who played such a major role in the meeting as a designer, a director and the implementer of the evaluation process that assured both student presenters and mentors of each presentation having been given the fairest and most thorough assessment possible. There were no complaints because all attendees knew that the process was fair. She never added her name among the long list in the Transactions of those who were praised for their talents and contributions. Her talents were many and her contributions were great. In addition to serving as director of the evaluation process, she did a multitude of jobs

---

## *From the **Editor's** desk.....*

---

as editor, e.g., investigating, compiling, writing, proofing, rewriting and working with the publisher. Additionally, she served as the Joint Meeting webmaster and made certain that correspondences were disseminated with accuracy and speed. She answered question after question in order to assure that the logistics, protocols. Whatever the visitors to the meeting webpage queried, an answer was always provided.

Dr. Nithya Raghavan, thank you for your many years of service to the National Institute of Science. We write this first segment of, *From the **Editor's** desk.....* “, after your retirement. We step forward, the two of us with apprehension, that we who have four feet will not be able to fill your two shoes. We dedicate this Spring 2016, Vol . 52 edition to you.

*Dr. Nithya Raghavan,*

*Thank you so much for all that you did during your many years of service.*

---

# National Institute of Science

([www.nationalinstituteofscience.org](http://www.nationalinstituteofscience.org))

# TRANSACTIONS

Spring 2016, Vol. 52

---

## Editor

Carolyn Cousin, PhD  
University of the District of Columbia  
Washington, DC

## Editor

Anita Taylor  
University of the District of Columbia  
Washington, DC

## Correspondence

[ccousin@udc.edu](mailto:ccousin@udc.edu)

## THE NATIONAL INSTITUTE OF SCIENCE

Founded 1943

4200 Connecticut Ave. Washington, DC 20008

The National Institute of Science

**E-mail: [www.nationalinstituteofscience.org](http://www.nationalinstituteofscience.org) / 202-274-5874**

**202-274-6486**

Printed in the USA

---

# NATIONAL INSTITUTE OF SCIENCE OFFICERS

---

<b>President and Archivist:</b>	<b>Ruby Broadway, PhD</b> Dillard University, New Orleans, Louisiana
<b>Vice President:</b>	<b>Freddie M. Dixon, PhD</b> University of the District of Columbia Washington, DC
<b>Executive Secretary</b>	<b>Oswald Tekyi-Mensah, PhD</b> Alabama State University, Montgomery, Alabama
<b>Treasurer:</b>	<b>Rosie Sneed, PhD</b> University of the District of Columbia, Washington, DC
<b>Editors, NIS Transactions</b>	<b>Carolyn Cousin, PhD</b> <b>Anita Taylor</b> University of the District of Columbia, Washington, DC

## REGIONAL DIRECTORS

### **Central Region**

Ms. Patricia McCarroll, MS  
Fisk University, Nashville, Tennessee

### **Eastern Region**

Freddie Dixon, PhD  
University of the District of Columbia, Washington, DC

### **South Central Region**

Shervia Taylor, MS  
Southern University at Baton Rouge, Baton Rouge, Louisiana

### **South Eastern Region**

Claude Lamb, PhD  
North Carolina A&T University, Greensboro, North Carolina

### **South Western Region**

OPEN

---

# HIGHLIGHTS OF THE

# 72<sup>ND</sup> BKX/NIS



*Joint Annual Meeting*

***ESTABLISHING BIOLOGICAL OPTIONS  
AND LAUNCHING ALLIANCES (EBOLA)  
TO ADDRESS EMERGING DISEASES  
THROUGH STEM***

**MARCH 11-14, 2015**

Hosted by

**JACKSON STATE UNIVERSITY**

JACKSON, MISSISSIPPI





## National Institute of Science Memorial Lecturer



**Agnes A. Day**, Microbiologist, was born on July 20, 1952 in Plains, Georgia to Annie Lee Laster and David Laster. The youngest of thirteen children, Day was raised by her third-grade teacher, reverend Mrs. Rose Marie Byron. Day's interest in science began when she

and her older brother would walk through the woods catching insects and animals. After graduating from Mainland Sr. High School, Day attended Bethune-Cookman College in Florida where she received her BS degree in biology. Day then attended Howard University, graduating with her PhD degree in microbiology in 1984.

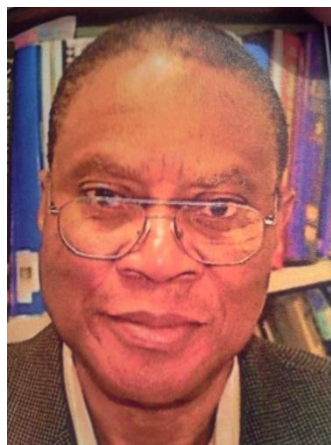
After obtaining her graduate degree, Day became a research fellow in the Bone Research Branch at the National Institute of Dental Research, part of the National Institutes of Health (NIH). She left in 1988 to join the faculty at Howard University as an assistant professor. Since 1992, Day has served as a tenured associate professor of microbiology in the College of medicine at Howard University. She also has held the position of chairman of the department of microbiology. In addition to instructing students in medicine, dentistry, pharmacy, and coordinating graduate courses, Day is known for her research on drug-resistant fungi and breast cancer health disparities. She has received over \$2.5 million in research funds from government and private sources. She serves as a Scientific Reviewer for research grants submitted to the National Institutes of Health, The National Science Foundation and the Department of Defense Cancer Research Initiatives. Day is in demand as a science expert, having been interviewed as part of a Public Broadcasting Service (PBS) special and The Brio's *Black History* series. In addition, she has served on numerous panels as a scientific expert in microbiology and breast cancer research.

In 1995, Day was awarded the outstanding Research Award by the Howard University College of Medicine. She also received the College's Kaiser-Permanente

Outstanding Teaching Award, and has mentored over forty students. Day is a member of the American Association for Cancer research and sits on its Minorities in Cancer Research and Women in Cancer research committees. She is also a member of the American Society for Microbiology where she is a member of the Committee on Microbiological Issues which impact Minorities (CMIIM). She received the William A. Hinton Award for outstanding research mentoring from this organization in 2011. She also served as a consultant for the American Association for Advancement of Science's Black Churches-Black Colleges Program.



## Renowned Scientific Lecturer



**George N. Mbata** holds a PhD in Entomology, specializing in crop protection entomology, from the University of Ibadan, Nigeria. He has a solid background and training in integrated pest management (IOM), Pesticides Safety, Pest Risk Assessment, research methods, Project Planning and Evaluation, and monitoring of pest populations and assessment of losses and damages resulting from pest infestations. Dr. Mbata held full-time employment in a West African country (Nigeria), and is currently working in the United States as a professor of Entomology at Fort valley State University, GA. He has over 30 years of field and laboratory experience as a research and professional entomologist. Dr. Mbata is currently a member of the West African Regional Consortium managing USAID Feed-the-future Postharvest project.

Dr. Mbata possesses a wealth of knowledge on developmental issues of food security and poverty alleviation, natural resources and environmental management, and capacity building in developing countries. His works have extended efforts aimed at the reduction of post-harvest crop losses, which is responsible for much of the hunger in Sub-Sahara Africa. His association with various government and non-governmental organizations, national research institutes, international developmental agencies and other relevant stakeholders, has equipped him with the necessary tools to understand and analyze the

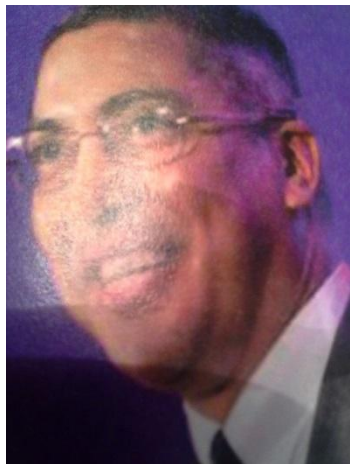
coordinated and implemented several research projects in the area of pest management with modified atmospheres, natural enemy release, and quality assessment of produce.

Dr. Mbata has an excellent knowledge of international agencies responsible for funding research in agriculture, establishing and monitoring phytosanitary standards of crops and harvested commodities.

He has published over 70 papers and technical reports in popular entomology journals, contributed book chapters, and presented papers at professional conferences and workshops. He serves as an advisor on Crop Protection to International Foundation of Science, Stockholm, Sweden. He reviews manuscripts for many entomology journals including Journal of Economic Entomology, Environmental Entomology, and Biological Control. He also serves on both NSF and USDA proposal review panels.



## Distinguished Guest Lecturer

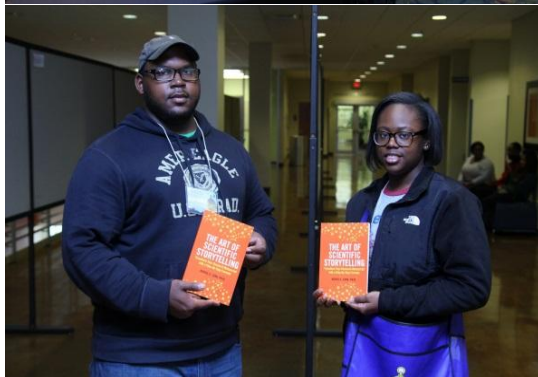
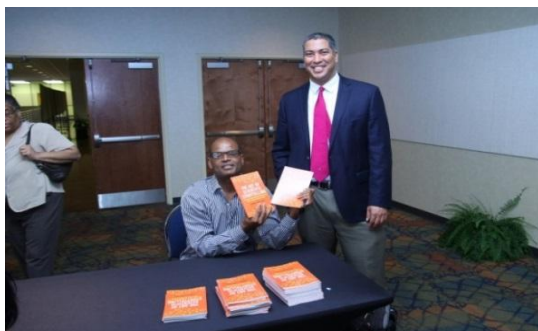


**Dr. Rafael Luna** received a BS in Biological Sciences from Southern University. During his junior year at Southern, he was one of six individuals selected from nationwide competition to participate in the inaugural Minority Biomedical Research Training Program at

the National Institutes of Health, which ignited a passion for biomedical research. During his senior year at Southern, he was named as a Howard Hughes Medical Institute Scholar through Louisiana State University (LSU). He began going molecular biology research at LSU in the laboratory of professor Konstantin Gus Kousoulas. Dr. Luna thoroughly enjoyed his research experience at LSU, as he subsequently earned his doctorate in Biological Sciences.

Dr. Luna performed his post doctorate research at Harvard Medical School in the laboratory of a National Academy of Science member, Professor Gerhard Wagner, who is a world-renowned pioneer in utilizing NMR spectroscopy for biochemistry. Dr. Luna continues to perform research with Professor Wagner, as he currently holds the position of Instructor in the Department of Biological Chemistry and Molecular Pharmacology at Harvard medical School.

In addition to doing biomedical research, Dr. Luna is the author of the book, *The Art of Scientific Storytelling*, and the CEO of Luna Scientific Storytelling LLC. He is a dynamic speaker and has taught his Scientific Storytelling method throughout the US and Europe, e.g. Harvard Medical School, Harvard University, Massachusetts Institute of Technology, Children's Hospital-Boston, Brigham & Women's Hospital, Boston University medical School, University of Bergen (Norway), Saarland University (Germany), University of Graz (Austria) and many more. Dr. Luna was recently named as a 2015 Keystone Symposia Fellow on Molecular and Cellular Biology. Dr. Luna also believes in giving back to the community by serving as a little league coach for 9 years in inner-city Boston and was recently elected as the President of Mission Hill Little League.





## Beta Kappa Chi Scientific Honor Society Lecturer & Black and White Soiree



**Dr. Marcus Bryan Jones** received his BS in Biological Sciences with a concentration in microbiology from Southern University and A&M College in Baton Rouge, Louisiana in 2000. He earned his PhD in Microbiology in 2005 from the Sackler Institute at the New York University School of Medicine studying in the laboratory of Dr. Martin J. Blaser. Dr. Jones completed his post-doctoral training at The Institute for Genomic research (TIGR), now known as the J. Craig Venter Institute (JCVI) and from 2005-2006 in the National Institute of Allergy and Infectious Diseases (NIAID) sponsored Pathogen Functional Genomics Resource Center (PFGRC). He was promoted from a staff scientist to an Assistant Professor in the Infectious Disease and Genomic medicine groups at the JCVI in 2012. His research interests involve characterizing mechanisms of antibiotic resistance, host-pathogen interactions and the role of the microbiome in health and disease. Dr. Jones has extensive experience in

microbial genomics, bacterial pathogenesis and metagenomics. He has led and supported several genomic/metagenomic and transcriptomic efforts at JCVI, including transcriptomic/metagenomic analysis of a malaria infection model cohort from Mali, characterization antibiotic resistance in *Staphylococcus aureus* and *S. epidermidis* and served as gene expression core leader for the NIAID sponsored Systems Biology for Enteropathogens program.

Dr. Jones currently leads efforts investigating the gut-brain axis in collaboration with Dr. Kafui Dzirasa at the Duke Institute for Brain sciences. Together, Drs. Jones and Dzirasa correlate oscillations in the murine gut microbiome and brain gene expression with predictive neurophysiological measurements for stress susceptibility and resilience. Furthermore, Dr. Jones supports an NIDCR funded award to characterize the impact of the oral micro-biome in caries development and periodontal disease, and is in the final stage of securing an award from the Defense Threat Reduction Agency (DTRA) to characterize infection persistence determinants and antibiotic resistance in *Burkholderia sp.*

Dr. Jones was a recipient of the United Negro College Fund (UNCF)/Merck Graduate Science Research Dissertation Fellowship, the David and Lucille Packard Foundation Graduate Fellowship, the Aspen Health Forum Fellowship and the Keystone Symposia award.



## Summa and Awards Brunch Lecturer



**Dr. Isiah Warner** received his BS degree in Chemistry from Southern University and A & M College in Baton Rouge, Louisiana in 1968 and earned his PhD in Analytical Chemistry in 1977, from the University of Washington in Seattle, Washington.

Dr. Warner is Vice Chancellor for Strategic Initiatives, Philip W. West Professor of Chemistry, and a Boyd Professor of the Louisiana State University system. He has more than 300 refereed publications in a variety of journals relevant to the general areas of analytical and materials chemistry. His particular

expertise is in the area of fluorescence spectroscopy, where his research has focused for more than 35 years. More recently, his research has focused in the area of ionic liquid chemistry applied to solid phase materials for applications in materials chemistry and nanomaterials. Research interests include the development and application of improved methodologies (chemical, mathematical, and instrumental) for studies of complex chemical systems including environmental chemistry, using tools such as fluorescence spectroscopy, separation science, and nanomaterials, automated methods of analysis, and chemistry in organized media.

Dr. Warner has also conducted educational research that focuses on mechanisms for maintaining and enhancing student education in science, technology, engineering, and mathematics (STEM), with a particular focus on encouraging these students to pursue terminal degrees. He is involved in many projects that focus on diversity in STEM education.

Dr. Warner has recently been honored with the 2014 Oesper Award and the 2013 American Chemical Society (ACS) Ward in Analytical Chemistry.







---

# 72th NIS/BKX

## *Joint Annual Meeting*

# ORAL PRESENTATIONS SESSION



# ORAL AWARD WINNERS

## GRADUATE ORAL PRESENTATIONS

### Graduate Session

#### 1st Place

#### **GSO119 - Construction of the HOXA1 Gene Regulatory Network using Gene Expression Data**

**Dominique Townsend** and Eduardo Martinez-Ceballos. Southern University A&M College.

Hoxa1 is a transcription factor known to regulate embryonic patterning, development, cell proliferation and/or differentiation. Hoxa1 encodes a protein that binds specifically to genomic DNA in the promoter of target genes and regulates their mRNA expression. Although the relevance of Hoxa1 during embryonic development has been recognized for over two decades, and its role as an important human oncogene has been described recently, little is known about the molecular mechanism of action of this important transcription factor due to a limited number of known target genes. For this reason, the gene regulatory interactions of Hoxa1 and its target genes have not been well characterized. Thus, the goal of this work is to identify functional relationships between Hoxa1 and related genes combined in groups based on similarities in their expression profiles using clustering and computational network modeling techniques. Analysis interactions among gene pairs and their functional relationships will help determine strong Hoxa1 gene associations and

will help elucidate the mechanism of action of this transcription factor. The identification of differentially expressed Hoxa1 target genes will enable further studies of the consequences of aberrant expression of Hoxa1 during embryonic development and/or cellular transformation. In this study, we investigated Hoxa1 gene interactions in mouse Embryonic Stem (ES) cells using time-series gene expression data and pathway analyses, and validated replicated commonalities amongst research data sets. Specific datasets were selected that classified Hoxa1 targets and encompassed our lab's genes of interest. Biological interactions and their functional relationships among gene pairs were identified using Pathway Architect as an analysis tool. The time progressions of these gene profiles were analyzed to yield inferred gene expression networks using the published algorithm NARROMI via MATLAB. GRNs were constructed using preliminary RNA-sequencing results and visualized using Cytoscape software. Web-based tools for GRN construction were employed and the results were compared. Genes such as Gbx2, Hand1, Cidea, and Sox17 were inferred to have direct interaction with Hoxa1, whereas Wnt5a, Lamb3, and Mmp19 were found to have indirect interactions



---

# GRADUATE ORAL PRESENTATIONS WINNERS

with *Hoxa1*. These observations suggest putative mechanisms of action of *Hoxa1* and its associated target genes. Furthermore, the constructed GRN infers the sequential interactions were verified with published data. In this research we have generated embryonic stem (ES) cells from wild-type, *Hoxa1*, and *Hoxa1* mouse embryos to use as a model system in which to characterize in detail the putative genes involved in the *Hoxa1* signaling pathway and to identify *Hoxa1* target genes by microarray analyses.

## 1st Place – Biology

### **GSP46 - Identification of Quantitative Trait Loci Correlating with Differential Susceptibility of Mice to Pneumonic *Burkholderia pseudomallei* Infection**

**Felicia Emery**, Jyothi Parvathareddy, Ashtoush Pandey, Yan Cui and Robert A. Williams. The University of Tennessee Health Science Center.

*Burkholderia pseudomallei* (Bp) is a pathogenic gram-negative bacterium that causes the severe human disease melioidosis. Bp is listed as a CDC Tier 1 select agent with no available vaccine. Because of the low LD50 via aerosols and resistance to multiple antibiotics, Bp is considered a potential bioterrorism agent that poses a threat to national security if intentionally released into the human population. Our goal is to use a murine model of Bp infection to gain a better understanding of the interactions between this bacterium and its hosts. We have utilized a powerful mouse genetics resource that consists of a panel of fully genotyped recombinant inbred mice that were derived from the breeding of C57BL/6J and DBA/2J parental inbred strains (commonly referred to as BXD mice) and a powerful array of complementary computer-phenotypic readouts of differential susceptibility in the parental and BXD strains. Preliminary

studies revealed that Bp infection elicits based modeling algorithms and databases collectively known as the GeneNetwork. Our initial goal was to establish clear phenotypically distinct innate immune responses in terms of survival and weight loss following pneumonic infection in parental and BXD mice. We have performed preliminary interval mapping of our survival and weight loss phenotypic data using Gene Network and have observed that survival is a complex trait involving loci on chromosomes 5 and 7 and weight retention involves loci on chromosome 12. Using a combination of QTL mapping and normative gene expression data from various host tissues we have identified several potential candidate genes within the significant and/or suggestive interval on these chromosomes that may control susceptibility or resistance to Bp infection. Results generated from this work will enable us to understand the gene networks that confer resistance and/or susceptibility to Bp, which can provide a foundation for the development of a biodefense vaccine, improved therapeutics and implementation of public health maintenance approaches in the U.S. and globally.

## 2<sup>nd</sup> Place - Biology

### **GSP44 - The Surface Protein (MPER) of HIV on the Q $\beta$ Coliphage as a Vaccine Candidate**

**Timothy Egbo**, Carrie Sanders, Shenell Reynolds and Alain Bopda Waffo. Alabama State University

HIV infection has been of great concern to public health with the recent estimate of 1,201,100 infected with the virus in the United States, according to the Center for Disease Control (CDC). There is a critical need for a safe and effective vaccine to protect the uninfected. Studies have shown that the membrane proximal external region (MPER) represents one of the most neutralizing targets for HIV vaccine research. The tryptophan-rich proximal region of the external membrane mediates binding entry of the virion. We anticipate that the MPER,

---

## GRADUATE ORAL PRESENTATIONS WINNERS

which is also a neutralizing site of the transmembrane protein, will serve as an antigen to stimulate antibodies once presented on the Q $\beta$  phage. The novel Q $\beta$  phage was preferred because it can be easily separated, purified with genotype and phenotype linkages. We designed the PCR template using oligos that represent a specific region of the 50 amino acid MPER. We performed the cloning by fusing the MPER motif in frame at the end of the A1 gene. The recombinant plasmid was used to transform *E. coli* HB101, and the binding of the phage exposing MPER motif on antibody was achieved using ELISA. Further analysis will be done using western blot, dot blot, and EM to reveal the fusion of the MPER-A1 of the surface of Q $\beta$ . Future studies include animal immunization with Q $\beta$ MPER, and analysis of antibodies from HIV patients with Q $\beta$ MPER using ELISA. We hope that MPER-Q $\beta$  will serve as a vaccine candidate and as a standard for vaccine efficacy.

### 3<sup>rd</sup> Place - Biology

#### **GSP112 - Using Synthetic Biology to Study Beta-Carotene Expression in Two Strains of *E. coli***

**Elizabeth F. Mullins**, Moses A. McDaniel, Gary L. Harmon and Ronald H. Blackmon. H. G. Cooke Department of Natural Sciences, Elizabeth City State University, Elizabeth City, NC 27909.

A relatively new, interdisciplinary field of study, synthetic biology makes use of molecular biology, genetic engineering, and microbiology methods for the design and construction of new biological parts, devices and systems. In addition, the field also encompasses the re-design of existing, natural biological systems for useful purposes. In this investigation, a genetic circuit containing a constitutive promoter, the genes of the beta-carotene pathway and a double terminator was constructed and

transformed into two strains of *E. coli* cells. The output from the synthetic genetic circuit was quantified from each strain to determine the effect of the chassis on gene expression and to ascertain the optimum host for beta-carotene expression. [This report is supported in part by MSEIP grant #P120A120117-14 from the U.S. Department of Education.]

---

---

## Computer Science/ Mathematics/Physics/ Earth Science/ Environmental Science [CS/ENG/ES]

### 1st Place – CS/ENG/ES

#### **GSP78 - Chemical separation of *Ocimum Gratissimum* (OG) to Identify the Key Components Exhibiting Anti-Cancer Activity on Prostate Cancer (PC3•AR and PC3) Cell Lines**

**Sakeli M. Hall**<sup>1</sup>, Ifedayo Victor Ogungbe<sup>1</sup>, Jelani C. Zarif<sup>2</sup>, Veronique Schulz<sup>3</sup> and Stephen I.N. Ekunwe<sup>1</sup>. <sup>1</sup>Jackson State University, <sup>2</sup>Johns Hopkins School of Medicine, <sup>3</sup>Van Andel Institute.

Prostate Cancer is the fifth leading cause of cancer related deaths in the United States with an estimated 233,000 new cases and 29,480 deaths in 2014. Although prostate cancer can affect any man, African American men have a higher propensity for developing this disease than men of other ethnic groups. Treatment options are varied for individuals with prostate cancer. Because most conventional treatment options involve the use of harsh chemicals that have many unpleasant and adverse side effects, many alternative medicine and natural products are now gaining great favorability as alternative treatment options. *Ocimum gratissimum* (Og) is a Nigerian medicinal plant whose leaf extracts have been found to inhibit proliferation of various cancerous cell lines. In this study, dried and ground Og leaves were subjected to soxhlet extraction first with dichloromethane, a less

---

## GRADUATE ORAL PRESENTATIONS WINNERS

polar solvent and then methanol, a more polar solvent. The dichloromethane crude extract obtained was separated further by flash chromatography after thin layer chromatography (TLC) analysis. activity on prostate cancer, PC3•AR and PC3 The fractions obtained were dried and tested for their anti- proliferation activity on prostate cancer, PC3•AR and PC3 cells using thymidine incorporation and MTS. It was hypothesized that the separated fractions will inhibit the proliferation of PC3•AR and PC3 cells. From the results obtained, it was concluded that fractions S6, S6-17 and S6-17-2.2 exhibited the highest anti-proliferation activity on PC3•AR and PC3 cells. Therefore, further analysis needs to be done to evaluate the mechanism of action of these fractions.

### 2nd Place – CS/ENG/ES

#### **GSP93 - Assessing the Usefulness of Free Energy in Identifying DNA Promoter Regions**

**Selene Perales**, Charles Bland and Abigail S. Newsome. Mississippi Valley State University.

Because of the fast rate at which genetic sequence data are growing, efficient annotation methods are becoming increasingly important. Traditional biological data annotation techniques are insufficient for managing the significant amounts of data being produced; these techniques are time consuming and costly. Therefore, designing computer applications to analyze and annotate sequences at a fast pace has become one of the most important issues today. This study assesses the feasibility of computer-based prediction approaches for promoter identification/annotation in prokaryotes using free energy. Free energy is a structural property of DNA that can be easily measured from sequence data using nearest-neighbor thermodynamic parameters of base pairings.

The free energy of promoter regions in *E. coli* was compared to that of non-promoter regions. The results indicated a highly significant difference,  $p < 2.2e-16$ . It was concluded that free energy would be a useful parameter for distinguishing between promoter and non-promoter regions. Thus, computer-based predictions based on this parameter would be highly accurate.

### 3<sup>rd</sup> Place – CS/ENG/ES

#### **GSP68 - Inferring the Cancer-related HOXA1 Gene Regulatory Network**

**Augusta A. Smith** and Eduardo Martinez-Ceballos. Southern University and A&M College.

HoxA1 is a member of the homeobox (Hox) family of transcription factors, which are important regulators of embryonic organogenesis. In humans, HoxA1 mutations have been described in association with various Central Nervous System (CNS) disorders and its overexpression has been associated with cancer development. Although HoxA1 has been recognized as an important oncogene, little is known about the molecular mechanism by which this transcription factor promotes cell proliferation. To address this problem, we sought to construct the HoxA1 Gene Regulatory Network (GNR) using mouse Embryonic Stem (ES) cells since we hypothesize that using an ES model would identify more HoxA1 targets than a specific cancer cell line. Thus, we performed high-throughput RNA sequencing (RNA-seq) analyses on Wild type vs. HoxA1 mutant ES cells treated with Retinoic Acid, an inducer of HoxA1 in cells, for different periods of time. The time-course RNA-seq data was examined using a noise and redundancy reduction technique called NARROMI to infer the Cancer-related HoxA1 GNR. Preliminary analysis of the inferred network indicates that short series of RNA-seq data provide biological insights on the oncogenic mechanism of HoxA1 action.

---

---

# UNDERGRADUATE ORAL PRESENTATIONS WINNERS

## Biology-A

### Ist Place

#### **BIO38 - Characterization of Mycobacteriophages Abena and Revitiligo**

**Rachel Darko**, Dometria Gilbert and Courtney Robinson. Howard University Department of Biology Ernest E. Just Hall, 415 College St. NW, Washington, D.C. 20059

The purpose of this project was to isolate, purify, and characterize mycobacteriophages obtained from the campus of Howard University while contributing to the understanding of global mycobacteriophagic diversity. Mycobacteriophages specifically infect bacteria that belong to the genus *Mycobacterium*. A soil sample was collected near the Bethune Annex Residential Hall at Howard University (38.92041°N, 77.01784°W). An enrichment involving the addition of *Mycobacterium smegmatis* MCA2 155 to the soil sample was performed with the intention of increasing the number of viral particles in the sample and the probability of isolating a phage. Two phages, Abena and Revitiligo, were isolated from this sample and purified. The purity of the phage was achieved and confirmed through repetitive rounds of streaking, and plating on *M. smegmatis*. The phage Abena yielded plaques with a bull's-eye morphology and a diameter of 0.8mm-1mm. The phage yielded turbid plaques with a consistent diameter of 1mm. Due to differences in plaque characteristics, we concluded that we had isolated two distinct phages. Future studies will use PCR to determine the mycobacteriophage clusters to which Abena and Revitiligo belong. Furthermore, we are interested in the

interactions that occur between mycobacteriophages and their hosts. During the plating of a phage, the salt calcium chloride is added to top agar to aid in the attachment of bacteriophages and bacteria. Additional studies will determine whether aluminum chloride, magnesium chloride, and sodium chloride hinder or enhance plaque formation. The data we generated regarding mycobacteriophage diversity and phage-host interactions has the potential to inform research that seeks to use phages for genetic studies (both bacterial and phage-related) and various facets of biomedical research.

### 2<sup>nd</sup> Place

#### **BIO103- Analysis of Gene Regulation of the Estradiol Receptor in *Schistosoma mansoni* Castrated *Biomphalaria glabrata* Snails**

**Breahna Blakely** and Matty Knight. University of the District of Columbia.

Parasitic castration is a well-known phenomenon in which the parasitic trematode, *Schistosoma mansoni* infection blocks egg clutch production in its intermediate snail host. For example, when this parasite infects a susceptible snail host, such as the NMRI strain of *Biomphalaria glabrata*, it may either produce no eggs, or fecundity might be delayed. The molecular basis of parasitic castration is unknown. Similar to humans, hormone receptors which affect estradiol expression in *Biomphalaria glabrata*, influencing egg production, also affects women, by triggering breast cancer, infertility, ovarian cancer, and endometrial cancer. We hypothesize that the snail schistosome interaction will provide a good animal model system towards a better understanding of gene regulation of the estradiol receptor and fecundity, leading to controlling the expression or suppression of these hormonal receptors in important human diseases. Parasite infected *Biomphalaria glabrata* no longer produced egg clutches. Differences in the

---

# UNDERGRADUATE ORAL PRESENTATIONS WINNERS

transcription of the estradiol receptor was examined by both end point qualitative RT-PCR and qPCR in normal snails, pre-patent, and patent- castrated snails. The temporal expression of the receptor was also examined at early time points (30 minutes, 2 hours, and 16 hours, 72 hours) post-infection. Differential expression of the receptor between early and late stage infection was determined. Lack of fecundity in *Biomphalaria glabrata* post infection is caused by suppression of estradiol expression.

## 3rd Place

### **BIO39 - Arabidopsis Scaffold Protein RACK1 A Regulates Diverse Environmental Stress Signaling Pathways**

**Angel Rogers**, Deana Smalls, Victor Leonard and Hemayet Ullah. Howard University.

5 RACK1 (Receptor for Activated C Kinase 1) is a WD-40 scaffold protein, conserved in eukaryotes. In the model plant *Arabidopsis thaliana*, the genome maintains three different RACK1 genes termed RACK1 A, RACK1 B, and RACK1C with a very high (85-93%) sequence conservation. Loss of function mutants in *Arabidopsis* indicate that RACK1 proteins regulate environmental stress signaling pathways, namely the drought stress resistance pathway. RACK1 A- the predominant isoform, is found to interact with diverse environmental stress related proteins. Deduced crystal structure of RACK 1 A indicates that post-translational modifications like sumoylation and phosphorylation can regulate its function. Tyrosine phosphorylation on residue 248 is

found to regulate its homodimerization capacity as well as its interactions with other proteins (Kundu et al., 2013). Small compounds inhibiting Y248 phosphorylations are isolated and the effectiveness of the compounds in regulating diverse environmental stress responses by the model plant *Arabidopsis* are evaluated. Here we present, evidence that the compounds are effective in regulating salt and drought stress responses in *Arabidopsis*.

---

## Biology-B

### 1<sup>st</sup> Place

### **BIO40 - The Role of Transcription Factor IRF8 in T Lymphocytes**

**Steve B. Pierre-Louis**<sup>1</sup>, Michelle N. Messmer<sup>2</sup> and Scott I. Abrams<sup>2</sup>. Department of Immunology, Roswell Park Cancer Institute, Him and Carlton Streets, Buffalo, NY, 14263; Howard University, 2400 Sixth St. NW, Washington, DC, 20059.

Interferon Regulatory Factor 8, IRF8, is a crucial transcription factor controlling the development and function of immune cell populations, especially myeloid cells and B cells. The role of IRF8 in T cells; however, is less clear. T cells are critical immune cells required to suppress tumor growth. In previous studies, the 4T1 tumor model was shown to secrete factors that suppress IRF8 in myeloid cells reducing their ability to stimulate anti-tumor immune responses. We therefore hypothesized that tumor growth can also suppress IRF8 expression in T cells. To test this hypothesis, we used a mouse model engineered to express IRF8 tagged with green fluorescent protein (GFP) which allowed tracking changes in IRF8 by measuring GFP fluorescence. The IRF8-GFP mice were challenged with 4T1 tumors, and expression of IRF8 was measured in T cells from blood, spleen and tumor. Changes in IRF8 were undetectable in T cells from blood, but slightly increased in spleen from naive and

---

# UNDERGRADUATE ORAL PRESENTATIONS WINNERS

## Biology-B

tumor-bearing mice. However, T cells within the tumor clearly expressed IRF8, suggesting tumor-infiltrating T cells are activated. In vitro activation of cells from spleens of naive and tumor-bearing mice showed that IRF8 corresponds to T-cell activation and is reduced in tumor-bearing spleens. Future studies will investigate whether suppression of IRF8 contributes directly to reduced T cell activation as well as other mechanistic roles for IRF8 within T cells.

### 2<sup>nd</sup> Place Co-Winner

**BIO48- Gene suppression of PIWI Causes Susceptibility to Schistosomes in Resistant Snails.**

**Christopher Wellman**, Carolyn Cousin and Matty Knight. University of the District of Columbia.

*Biomphalaria glabrata* is a tropical freshwater mollusk found in streams, ponds, marshes and rivers throughout South America and the Caribbean islands. *B. glabrata* is also the intermediate host to the parasite *Schistosoma mansoni*. This helminth, is one of the parasites in the genus *Schistosoma* that causes the tropical disease, Schistosomiasis, a disease that infects at least 200 million people a year in over 70 countries world-wide. In the laboratory, we use a strain of *B. glabrata* called BS-90 that is naturally resistant to *S. mansoni*. In the resistant snail, the parasite is quickly encapsulated by hemocytes, the cellular

component of the snail's innate defense system, soon after infection, before it is able to enter into the intramolluscan mother sporocyst stage of its life cycle. PIWI the acronym for P-element wimpy testes or HIWI (Human element wimpy testes) is the largest class of small non-coding RNA molecules expressed in animal cells. The function of PIWI is to silence mobile genetic elements, transposons and retrotransposons that could cause mutations and even alter the size of the genome. Resistance in the BS90 snail is a temperature dependent trait, and snails that are maintained at elevated temperature of 32°C become susceptible to *S. mansoni* infection. Comparative analysis of the RNA sequence (RNAseq) data from 2 hours infected BS90 snails maintained either at permissive (32°C) or non-permissive (25°C) showed that PIWI RNA is down regulated (3-fold) when the BS90 snail is resistant. On the basis of these data, we hypothesize that by using PIWI siRNA to silence PIWI RNA in the resistant BS-90 snail, these snails will become susceptible to the parasite.

### 2<sup>nd</sup> Place Co-Winner

**BIO105 - Cell Adhesion Molecules and Oocyte Development**

**Joshua Burton**<sup>1</sup> and Melissa Pepling<sup>2</sup>.  
<sup>1</sup>Department of Biological Sciences, Hampton University, Hampton, VA 23668. <sup>2</sup>Department of Biology, Syracuse University, Syracuse, NY 13224

The biological success of an organism can be characterized by its ability to produce viable offspring. The development of female gametes through the process of oogenesis is imperative for reproduction, especially since the oocyte pool is established at birth. As many as 6.7 million American women suffer from infertility, and are affected by reproductive disorders like premature ovarian failure. It is hypothesized that cell adhesion molecules such as E-Cadherin and N-Cadherin play a role during oocyte



---

# UNDERGRADUATE ORAL PRESENTATIONS WINNERS

## Biology-B

development, and their aberrant expression is linked to reproductive disorders associated with abnormal oogenesis. The proposed model is that these molecules help to hold oocytes together in cysts, in addition to allowing them to bind to granulosa cells to form primordial follicles. If this model is correct, the down regulation of the cadherins may contribute to an increase in oocyte loss which will adversely affect fertility. Immunocytochemistry and confocal microscopy were used to confirm that both E-Cadherin and N-Cadherin are expressed in the fetal and neonatal mouse ovary.

E-Cadherin appears to be primarily expressed in the oocytes while N-Cadherin appears to be expressed both in the oocytes and also in the surrounding granulosa cells. This suggests that N-Cadherin is important for forming the primordial follicle. Western blots were also used to quantify protein expression levels in the fetal and neonatal ovary, during the period when cyst breakdown is most substantial. Future work will seek to specifically ascertain the function of both cadherins by blocking them in organ culture. [This research is supported by a grant from NSF IOS-1146940]

## 3<sup>rd</sup> Place

### BIO57- Comparative Progeny Production in *Habrobracon hebetor* Parasitizing Diapausing and Non Diapausing *Plodia interpunctella*

Herbert Sutton and George Mbata. Fort Valley State University.

This research was focused on looking into the reproduction of hebetor wasps as they parasitized Indian meal moth larvae. This experiment is important for the future of pest control. Using biological methods can prove to be much safer than pesticides. When doing this experiment the results were expected to follow the same pattern but variations do occur due to human error, infertility among the wasps or defense mechanisms used by the larvae, so this experiment must be done multiple times. Our hypothesis was that the Indian meal Moth larvae, whether diapausing or non-diapausing will not affect the offspring production of the *H. hebetor*, and with that diapause will not affect the parasitizing of the Imm so the population will be controlled. Methods included extracting both the hebetor from its population and the larvae from their population and exposing them to one another for several days by sealing them together in jars and placing them in an incubator. Our results showed that the hebetor was producing offspring in diapausing and non diapausing larvae, some larvae reached adulthood but many did not. Our results proved our hypothesis to be correct because progeny production was not affected by diapause and the population was controlled. As stated before this research is the future of pest control. It could lead to many toxins being taken off the market and subsequently taken out of the air. That would vastly improve health conditions and could even slow down global warming as well as issues with the ozone layer with those toxins gone from the air.

---

---

# UNDERGRADUATE ORAL PRESENTATIONS WINNERS

## Chemistry

### 1st Place

#### **CH27- Identification of Organic Insecticide Samples from the Federal University of Technology at Akure**

**Breon Davis** and Dwayne L. Daniels. Fort Valley State University.

This research capitalized on different methods to determine the purity of organic insecticides from The Federal University of Technology at Akure (FUTA), in Akure, Nigeria. Through the use of IR, NMR, and GC-MS, the chemical structures and the purity of the samples will be determined. During the experiment, Fourier Transform-Infrared, Nuclear Magnetic Resonance, Gas Chromatography-Mass Spectrum, and Elemental Analysis was used to determine its functional groups and purity of the six samples. Throughout the research, each test showed the various percentages of elements involved in the samples, such as Carbon, Hydrogen, etc..., and its functional group, to determine whether the sample compounds were pure. Our results showed that the samples weren't 100% pure.

### 2nd Place

#### **CH43 - Detection of Ethylene Glycol by Surface Enhanced Raman Spectroscopy**

**Kristena Cunningham** and Robin Bright. Fort Valley State University.

Ethylene glycol (ethane-1, 2-diol) is an organic compound that is colorless, odorless, with a

sweet taste. It is a toxic compound commonly found in automotive antifreeze. If ethylene glycol is ingested, it can cause liver and kidney failures. Intentional poisonings by ethylene glycol resulting in death has been documented. The detection of ethylene glycol in liquid foods is being investigated as a possible bioterrorism act. The focus of this study is to develop a detection of ethylene glycol using gold nanoparticles and surface-enhanced Raman spectroscopy. Previous studies have shown that the ethylene glycol did not adsorb to the gold nanoparticle surface. Cysteine is an amino acid with a thiol, amino, and hydroxyl functional groups that will act as a conjugating agent between the gold nanoparticle and ethylene glycol compound. The thiol and amino groups will bind to the gold nanoparticles and the hydroxyl group will bind to the ethylene glycol. The results of this study are the optimization of cysteine to gold nanoparticle conjugation in relationship to the amount of ethylene glycol that can be detected.

---

## CMPE

### Computer Science/ Mathematics/Physics/ Engineering

#### 1<sup>st</sup> Place

#### **CMPE85 - Application of Structural Equation Modeling to Robotics Education**

**Naija Thomas** and Rachid Belmasrour. Southern University at New Orleans.

Structural equation model is a depiction of the relationship amongst latent variables using a quantitative survey from a theoretical model that have several hypotheses. Structural equation modeling includes multiple regression models



---

# UNDERGRADUATE ORAL PRESENTATIONS WINNERS

## Computer Science/ Mathematics/Physics/ Engineering

made up of many independent and dependent variables. The objective of this project is to determine correlations between latent variables that were constructed from survey questions for students taking part in robotics activities during summer programs at Southern University at New Orleans. The regression model obtained measured the effect of robotics education on academic performance of students. The steps used to build the model are model specification, identification, estimation and testing. We used smart Partial Least Squares (PLS) software to compute the weight, path coefficients, and loadings which gives an understanding of the variance that is needed to explain the predicted variables. The significance of this project is that the influence of robotics activities on education performance was determined through structural equation modeling.

### 2<sup>nd</sup> Place

#### **CMPE84 - Effect of Loss Cut on Trading with Technical Indicators**

**LaQunia Banks**, Rachid Belmasrour, Cynthia Singleton and Joe Omojola. Southern University at New Orleans.

When investing in the stock market there are so many things to consider such as when to buy or to sell a stock, what moving averages will work best for the stock, etc... The overwhelming

choice of considerations could set off emotions which is reflected in the gyrations of the stock market prices and measured by the volatility index (VIX) indicator. To take the emotion out of investing in the stock market some investors place a loss-cut order so that the broker can sell at the market price when the stock reaches a pre-determined price. In Phase 1 of this this research, 5 indicators were used to decide entry conditions for 20 different stocks. The loss-cut principle was used to determine exit condition. The indicators used are Price & 60-day XMA, Price & 70-day XMA, Price & 100-day XMA, 9 & 15 XMA Crossover, 30 & 50 XMA Crossover, and the MACD indicator. In phase 2, the On Balance Volume (OBV) indicator was used as a complimentary confirmation the indicators listed above. The loss-cut order placed on the exit condition 10% below the latest high of the given stock. The main objective is to determine the most effective method. In order to achieve this main objective, we first must conduct the proper test to determine if the data is significant. From there a determination will be made if the loss-cut orders along with the technical indicators are effective with cutting losses in the stock market.

### 3<sup>rd</sup> Place

#### **CMPE67 - Identifying Solitary Wave Solutions of Boussinesq Equation as Inverse Problem using Mathematica Identifying Solitary Wave Solutions of Boussinesq Equation as Inverse Problem using Mathematica**

**Brandon Bailey** and Tchavdar Marinov. Southern University at New Orleans.

A special numerical technique for identification of solitary wave solutions of Boussinesq and Korteweg--de Vries equations has been proposed in Marinov at al., Novel Numerical Approach to Solitary-Wave Solutions Identification of Boussinesq and Korteweg-de Vries Equations. Int. Journal of Bifurcation and Chaos. Vol. 15, No. 2, 2005. The stationary localized waves are considered in the frame moving to the right. The original ill-posed

---

# UNDERGRADUATE ORAL PRESENTATIONS WINNERS

problem is transferred into a problem of the unknown coefficient from over-posed boundary data in which the trivial solution is excluded. The Method of Variational Imbedding is used for solving the inverse problem. In the present work the proposed technique was applied to the Boussinesq equation. We construct an algorithm to investigate numerically the solitary wave-like solutions of the Boussinesq nonlinear differential equation using Mathematica. We reformulate the bifurcation problem, introducing a new parameter and in such a way we expel the nontrivial solution from the original problem. The Method of Variational Imbedding (MVI) is used for solving the inverse problem. We illustrate the approach with two sample codes: using Finite Difference Scheme and using NDSolve function.

---

## Science Education/ Earth Science/ Environmental Science

### 1<sup>st</sup> Place

#### ES108 - Mid-Atlantic Rain Forest: Increasing Survival Rates and Maintaining Biodiversity

**Pamela Cameau**<sup>1</sup>, Ashanti Bernateau<sup>1</sup>, Crystal Smitherman<sup>1</sup>, Brandi Adams<sup>1</sup>, Zeniquia Miller<sup>1</sup>, Shalanda Grier<sup>1</sup>, Rebecca Castro<sup>1</sup> and Wagner Belo<sup>2</sup>. <sup>1</sup>Hampton University, Hampton, VA 23668. <sup>2</sup>Wagner Belo 100 Strong and IFET, The Brazilian University, Rio Pomba, Brazil.

The Atlantic rain forest is a biome and region that covers the Atlantic coast of Brazil from the

Rio Grande do Norte and the Rio Grande do sul to the areas including Paraguay and Argentina. It was the first environment that Portuguese colonizers found over 500 years ago. Eight Hampton University students traveled to the Mid-Atlantic rain forest, specifically Iracambi, to observe the effects of human and animal interaction on the land. The Mid-Atlantic rain forest houses 2,200 species of birds, mammals, reptiles, and amphibians. The Atlantic rain forest is the largest rain forest in the world and today, only 7% of it remains resulting in a loss of health, bio-capacity, productivity and stability. It is understood that humans are consuming natural resources faster than they are regenerating which is damaging the renewal capacity and lowering system capacity. To serve and thrive, humans must change as quickly as the system changes while slowing the rate of system change to healthier levels. [*This research was supported by a grant from NSF:1000286 Washington Baltimore Hampton Roads Louis Stokes Alliance for Minority Participation.*]

---

---

### 2<sup>nd</sup> Place

#### PSE115 - Smoking Behavior Controlled by Automatic and Non-Automatic Cognitive Processes

**Tiffany Long**<sup>1</sup>, Stephen Tiffany<sup>2</sup> and Courtney Motschman<sup>2</sup>. <sup>1</sup>University of the District of Columbia, <sup>2</sup>University at Buffalo.

The Center for Disease Control (CDC) reports that an estimated 42 million people in the United States smoke cigarettes. Cigarette smoking is associated with various health risks such as cancer, heart disease, and respiratory issues. Tobacco has addictive properties such as nicotine and one of the primary features of tobacco dependence is frequent heavy use of tobacco products. The purpose of this study is to examine the mechanisms involved in smoking. This study examines the cognitive processes controlling the motor behaviors involved in smoking a cigarette. The study hypothesized the

---

# UNDERGRADUATE ORAL PRESENTATIONS WINNERS

## Science Education/ Earth Science/ Environmental Science

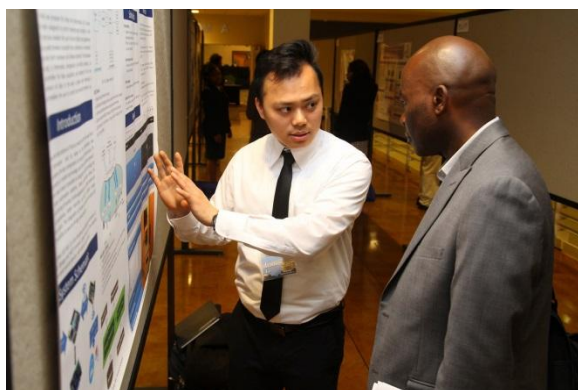
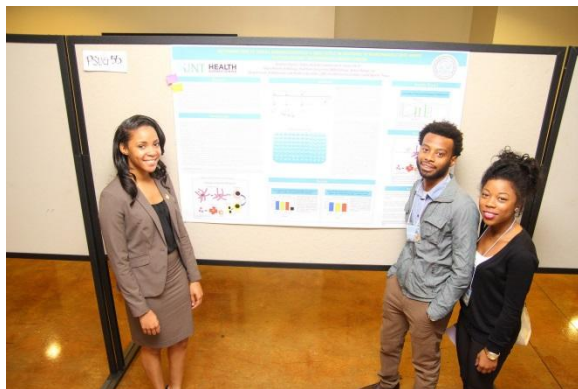
automaticity of the cognitive processes controlling the motor behaviors involved in smoking a cigarette will differ among heavy and occasional smokers within the different conditions based upon the participants' reaction time on the button press task. Participants engaged in dual tasks, consisting of the button press box within the three different smoking conditions (smoking, pretend smoking, and nonsmoking), to measure participants reaction time within the study. This study consisted of 52

participants both heavy and occasional smokers' ages 18 to 25 within the University of Buffalo and surrounding areas. The materials used in this study was a carbon monoxide meter, questionnaires on Smoking Urges Brief version (QSU- Brief), the State Anger Scale (SAS), Direct RT software, Button press box and the video recording software. The results show there was no difference in craving or frustration level across the 3 conditions (nonsmoking, smoking, pretend smoking) when baseline levels were taken into account which suggest that any disruption in reaction time task performance would not be due to craving or frustration. This study extends previous research on the automaticity of smoking behavior through its use of additional methodological components (e.g., frustration measure, craving measure, and a control measure for dual-task performance).

---

# 72nd NIS/BKX *Joint Annual Meeting*

# POSTER PRESENTATIONS SESSION



---

# 72th NIS/BKX

## *Joint Annual Meeting*

# POSTER AWARD WINNERS

## GRADUATE POSTER PRESENTATIONS

### 1st Place – Biology

#### **GSP46 - Identification of Quantitative Trait Loci Correlating with Differential Susceptibility of Mice to Pneumonic *Burkholderia pseudomallei* Infection**

**Felicia Emery**, Jyothi Parvathareddy, Ashtoush Pandey, Yan Cui and Robert A. Williams. The University of Tennessee Health Science Center.

*Burkholderia pseudomallei* (Bp) is a pathogenic gram-negative bacterium that causes the severe human disease melioidosis. Bp is listed as a CDC Tier 1 select agent with no available vaccine. Because of the low LD50 via aerosols and resistance to multiple antibiotics, Bp is considered a potential bioterrorism agent that poses a threat to national security if intentionally released into the human population. Our goal is to use a murine model of Bp infection to gain a better understanding of the interactions between this bacterium and its hosts. We have utilized a powerful mouse genetics resource that consists of a panel of fully genotyped recombinant inbred mice that were derived from the breeding of C57BL/6J and DBA/2J parental inbred strains (commonly referred to as BXD mice) and a powerful array of complementary computer-based modeling algorithms and databases

collectively known as the GeneNetwork. Our initial goal was to establish clear phenotypic readouts of differential susceptibility in the parental and BXD strains. Preliminary studies revealed that Bp infection elicits phenotypically distinct innate immune responses in terms of survival and weight loss following pneumonic infection in parental and BXD mice. We have performed preliminary interval mapping of our survival and weight loss phenotypic data using GeneNetwork and have observed that survival is a complex trait involving loci on chromosomes 5 and 7 and weight retention involves loci on chromosome 12. Using a combination of QTL mapping and normative gene expression data from various host tissues we have identified several potential candidate genes within the significant and/or suggestive interval on these chromosomes that may control susceptibility or resistance to Bp infection. Results generated from this work will enable us to understand the gene networks that confer resistance and/or susceptibility to Bp, which can provide a foundation for the development of a biodefense vaccine, improved therapeutics and implementation of public health maintenance approaches in the U.S. and globally.



---

# GRADUATE POSTER AWARD WINNERS

## 2<sup>nd</sup> Place - Biology

### GSP44 - The Surface Protein (MPER) of HIV on the Q $\beta$ Coliphage as a Vaccine Candidate

**Timothy Egbo**, Carrie Sanders, Shenell Reynolds and Alain Bopda Waffo. Alabama State University.

HIV infection has been of great concern to public health with the recent estimate of 1,201,100 infected with the virus in the United States, according to the Center for Disease Control (CDC). There is a critical need for a safe and effective vaccine to protect the uninfected. Studies have shown that the membrane proximal external region (MPER) represents one of the most neutralizing targets for HIV vaccine research. The tryptophan-rich proximal region of the external membrane mediates binding entry of the virion. We anticipate that the MPER, which is also a neutralizing site of the transmembrane protein, will serve as an antigen to stimulate antibodies once presented on the Q $\beta$  phage. The novel Q $\beta$  phage was preferred because it can be easily separated, purified with genotype and phenotype linkages. We designed the PCR template using oligos that represent a specific region of the 50 amino acid MPER. We performed the cloning by fusing the MPER motif in frame at the end of the A1 gene. The recombinant plasmid was used to transform E. coli HB101, and the binding of the phage exposing MPER motif on antibody was achieved using ELISA. Further analysis will be done using western blot, dot blot, and EM to reveal the fusion of the MPER-A1 of the surface of Q $\beta$ . Future studies include animal immunization with Q $\beta$ MPER, and analysis of antibodies from HIV

patients with Q $\beta$ MPER using ELISA. We hope that MPER-Q $\beta$  will serve as a vaccine candidate and as a standard for vaccine efficacy.

## 3<sup>rd</sup> Place - Biology

### GSP112 - Using Synthetic Biology to Study Beta-Carotene Expression in Two Strains of E. coli

**Elizabeth F. Mullins**, Moses A. McDaniel, Gary L. Harmon and Ronald H. Blackmon. H. G. Cooke Department of Natural Sciences, Elizabeth City State University, Elizabeth City, NC 27909.

A relatively new, interdisciplinary field of study, synthetic biology makes use of molecular biology, genetic engineering, and microbiology methods for the design and construction of new biological parts, devices and systems. In addition, the field also encompasses the re-design of existing, natural biological systems for useful purposes. In this investigation, a genetic circuit containing a constitutive promoter, the genes of the beta-carotene pathway and a double terminator was constructed and transformed into two strains of E. coli cells. The output from the synthetic genetic circuit was quantified from each strain to determine the effect of the chassis on gene expression and to ascertain the optimum host for beta-carotene expression. [*This report is supported in part by MSEIP grant #P120A120117-14 from the U.S. Department of Education.*]

---

---

# GRADUATE POSTER AWARD WINNERS

## Computer Science/Engineering/ Environmental Science [CS/ENG/ES]

### 1st Place

GSP78 - Chemical separation of *Ocimum Gratissimum* (OG) to Identify the Key Components Exhibiting Anti-Cancer Activity on Prostate Cancer (PC3•AR and PC3) Cell Lines

**Sakeli M. Hall**<sup>1</sup>, Ifedayo Victor Ogungbe<sup>1</sup>, Jelani C. Zarif<sup>2</sup>, Veronique Schulz<sup>3</sup> and Stephen I.N. Ekunwe<sup>1</sup>. <sup>1</sup>Jackson State University, <sup>2</sup>Johns Hopkins School of Medicine, <sup>3</sup>Van Andel Institute.

Prostate Cancer is the fifth leading cause of cancer related deaths in the United States with an estimated 233,000 new cases and 29,480 deaths in 2014. Although prostate cancer can affect any man, African American men have a higher propensity for developing this disease than men of other ethnic groups. Treatment options are varied for individuals with prostate cancer. Because most conventional treatment options involve the use of harsh chemicals that have many unpleasant and adverse side effects, many alternative medicine and natural products are now gaining great favorability as alternative treatment options. *Ocimum gratissimum* (Og) is a Nigerian medicinal plant whose leaf extracts have been found to inhibit proliferation of various cancerous cell lines. In this study, dried and ground Og leaves were subjected to soxhlet extraction first with dichloromethane, a less

polar solvent and then methanol, a more polar solvent. The dichloromethane crude extract obtained was separated further by flash chromatography after thin layer chromatography (TLC) analysis. The fractions obtained were dried and tested for their anti-proliferation activity on prostate cancer, PC3•AR and PC3 cells using thymidine incorporation and MTS. It was hypothesized that the separated fractions will inhibit the proliferation of PC3•AR and PC3 cells. From the results obtained, it was concluded that fractions S6, S6-17 and S6-17-2.2 exhibited the highest anti-proliferation activity on PC3•AR and PC3 cells. Therefore, further analysis needs to be done to evaluate the mechanism of action of these fractions.

### 2nd Place

**GSP93 - Assessing the Usefulness of Free Energy in Identifying DNA Promoter Regions**

**Selene Perales**, Charles Bland and Abigail S. Newsome. Mississippi Valley State University.

Because of the fast rate at which genetic sequence data are growing, efficient annotation methods are becoming increasingly important. Traditional biological data annotation techniques are insufficient for managing the significant amounts of data being produced; these techniques are time consuming and costly. Therefore, designing computer applications to analyze and annotate sequences at a fast pace has become one of the most important issues today. This study assesses the feasibility of computer-based prediction approaches for promoter identification/annotation in prokaryotes using free energy. Free energy is a structural property of DNA that can be easily measured from sequence data using nearest-neighbor thermodynamic parameters of base pairings. The free energy of promoter regions in *E. coli* was compared to that of non-promoter regions. The results indicated a highly significant difference,  $p < 2.2e-16$ . It was concluded that

---

# GRADUATE POSTER AWARD WINNERS

free energy would be a useful parameter for distinguishing between promoter and non-promoter regions. Thus, computer-based predictions based on this parameter would be highly accurate.

## 3<sup>rd</sup> Place

### **GSP68 - Inferring the Cancer-related HOXA1 Gene Regulatory Network**

**Augusta A. Smith** and Eduardo Martinez-Ceballos. Southern University and A&M College.

HoxA1 is a member of the homeobox (Hox) family of transcription factors, which are important regulators of embryonic organogenesis. In humans, HoxA1 mutations have been described in association with various Central Nervous System (CNS) disorders and its overexpression has been associated with cancer development. Although HoxA1 has been recognized as an important oncogene, little is known about the molecular mechanism by which this transcription factor promotes cell proliferation. To address this problem, we sought to construct the HoxA1 Gene Regulatory Network (GNR) using mouse Embryonic Stem (ES) cells since we hypothesize that using an ES model would identify more HoxA1 targets than a specific cancer cell line. Thus, we performed high-throughput RNA sequencing (RNA-seq) analyses on Wild type vs. HoxA1 mutant ES cells treated with Retinoic Acid, an inducer of HoxA1 in cells, for different periods of time. The time-course RNA-seq data was

examined using a noise and redundancy reduction technique called NARROMI to infer the Cancer-related HoxA1 GNR. Preliminary analysis of the inferred network indicates that short series of RNA-seq data provide biological insights on the oncogenic mechanism of HoxA1 action.



---

# UNDERGRADUATE POSTER AWARD WINNERS

## Biology-A

### 1<sup>st</sup> Place

#### **PSUG30 - Identification of Rotifers in Aquatic Environments**

**Sacile Tanner** and Joseph D'Silva. Norfolk State University.

The oldest reported fossil of rotifers have been found in Dominican amber dating to the Eocene, which lasted, from 55.9 to 33.9 million years ago. (Waggoner & Poinar, 1993). Due to sensitivity to toxins, Rotifers contribute to inducing a healthy body of water by removing turbidity. Rotifers inhabit freshwater systems in Norfolk, Virginia. Previous research results conclude that *Synchaeta*, *Filinia*, *Keratella*, and *Trichocerca* have been identified in the freshwater systems in Norfolk, Virginia (Park & Marshall, 1993). Rotifers from genera *Philodina*, *Keratella*, and *Brachionus* have been identified from the freshwater systems in Norfolk (Dr. D'Silva – pers. comm.). The Rotifers identified at the freshwater sites in Norfolk suggest a likelihood of others existing in marine water at different localities. This study was performed to survey other localities (Suffolk, Portsmouth, and Hampton) to collect, identify, and reveal the inhabitation of similar and other rotifers in marine water systems. Water samples were collected from the Chesapeake Bay, duck pond on Fostrill Road, lake in Ballentine Townhomes, and the birdbath. The salinity levels, nitrate levels, chlorine levels, pH, dissolved oxygen, and temperature were determined from the water collected. Water samples were examined under a microscope to identify Rotifers. Preliminary samplings (06/03/2014) indicate Rotifers are present in Suffolk, Portsmouth, and

Hampton. The identification of rotifers can display that freshwater microorganism can inhabit marine water systems that have minimum pollution.

### 2<sup>nd</sup> Place

#### **PSUG29 - Metabolomics and Climate Change – Antioxidant Enzyme Profile and GC/MS Analysis of Crop Metabolites**

**Matthew Carey** and Camellia Okpodu. Norfolk State University.

Plant adaptation to stress involves key changes in enzymatic processes which shows changes in the expression of genes and gene-products. Our poster examines the physiological and molecular processes for stress adaptation, focusing specifically on the antioxidant scavenging enzyme, superoxide dismutase (SOD). Our research will examine the changes in SOD genes, proteins and metabolites after specific crops are exposed to various abiotic stresses (e.g., drought, elevated temperature and salinity). Metabolomics has become a hot topic due to concerns about the effects of climate change on plant resources, biodiversity and global food security. Our work takes both a short-term and long-term look at what role 'omics' research will play in the future development of systematic approaches to address how plants tolerate climatic change.

### 3<sup>rd</sup> Place

#### **PSUG32 - Effects of Ocean Acidification on the Embryonic Development Dungeness Crabs**

**Torian Jones**, Shawn Arellano and Nicole Casper. Norfolk State University.

Ocean acidification is a phenomenon taking place in response to the introduction of excess CO<sub>2</sub> into oceans from the atmosphere. Shell-forming organisms are expected to be greatly affected by inhibition of the calcification process

---

# UNDERGRADUATE POSTER AWARD WINNERS

## Biology-A

in acidified water. In addition to shell production inhibition, ocean acidification may also affect early development of crabs. To examine this, an experiment was conducted in a simulated ocean acidification environment on the embryos of four *Metacarcinus magister* ovigers. Embryos were held in CO<sub>2</sub> enriched seawater at three levels: an ambient concentration of 400 ppm, the moderate of 750 ppm, and the level projected by the IPCC for the year 2100, 1000ppm. We monitored physical development and the number of days embryos spent in each of three stages. Mortality was only observed in about one-fourth of the embryos and did not significantly vary between treatments. Development was not significantly delayed; there was successful hatching in all three treatments and no significant variation in hatching between mothers or treatments.

---

## Computer Science/ Mathematics/Physics/ Earth Science/ Environmental Science

### ENG/ENVSCI/MATH

#### 1st Place

#### PSUG27 - Smart House

**Kia Graham**, Ebony Leblanc and Tyangelio Gaines. Southern University and A&M College.

SMART House will enable control of home utilities via speech recognition commands. This application would provide convenience for the household as ultimately decreasing wasted energy per household with use. As of 2012 the

---

---

US government has released reports that have shown that over 40 percent of all power consumption in America is distributed throughout home utilities. The national average bill for home application is approximately \$95.66, while consuming roughly 920 kW\*hr for each home (approximately 16,832,343). Several poles conducted across the country show that Americans are growing concerned about these high average and believe that necessary steps must be taken in order to drive these cost down and preserve energy demands. As technology advances each year, such as Apple Iphone's "SIRI", voice recognition through home utilities can be used as an application to decrease obsolete energy. With a voice recognition application, it will maximize access of home utilities. With the similar features of SIRI, speech recognition, the personalized operator will be able to control utilities such as lights, audio, and motor operated blinds.

---

# POSTER AWARD WINNERS

## ENG/ENVSCI/MATH

### 2<sup>nd</sup> Place

#### **PSUG106 - Biochemical and Genetic Characterization of Antimicrobial Activity Produced by Pseudomonas sp. GM24**

**Rebecca Anilu Castro**<sup>1</sup>, W. Nathan Cude<sup>2</sup>, Shen Lu<sup>2</sup> and Dale A. Pelletier<sup>2</sup>. <sup>1</sup>Hampton University, <sup>2</sup>Oak Ridge National Laboratory. <sup>1</sup>Department of Biological Science and Marine and Environmental Science Hampton University Hampton VA 23668, <sup>2</sup>Bio-science Division, Oak Ridge National Laboratory, Oak Ridge TN 37830

Fluorescent pseudomonads are common and abundant members of the Populus rhizosphere and endosphere microbial communities. We have previously isolated and characterized a number of Pseudomonas strains from this environment, which are metabolically, and genetically diverse members of the  $\gamma$ -proteobacteria. One of these isolates Pseudomonas sp. GM24 was found to inhibit several other microbial strains [1]. This is potentially beneficial to both the host plant and the microbe; by secreting this antimicrobial it can potentially kill pathogens trying to infect the host organism and allow GM24 to compete in this very complex environment. By locating the gene(s) responsible for producing and excreting the antimicrobial we can further investigate what the structure of the active compound might be. To identify the gene two approaches are used a genetic and biochemical. The genetic approach involves construction of GM24 mutants by

random transposon mutagenesis approach and screening for loss of antimicrobial activity. This involves mating with E. coli to mobilize the plasmid containing the transposon into GM24 in order to create a library of mutant strains to phenotype. The biochemical approach is using liquid-liquid and solid-phase extraction techniques to fractionate the antimicrobial. Compound followed by analysis utilizing electrospray ionizing mass spectrometry to potentially identify the chemical formula of the antimicrobial metabolite.

### 3<sup>rd</sup> Place

#### **PSUG83 - Search for the Most Effective Stock Asset**

**Janica Gordon** and Joe Omojola. Southern University at New Orleans.

Assume that each technical indicator is an asset "manager". The most effective "manager" will be the one that makes the most consistent profit with the least amount of transactions. Given a set of technical indicators, the objective of this project is to determine the most effective asset "manager" for a group of stocks over a period of time. Technical indicators are metrics derived from past data and they are used to make decisions about buying and selling stocks. This project compared the performance of 5 technical indicators on 20 stocks for the period 2010 to 2013 to determine the most effective "manager". Taking into consideration, the Analysis of Variance (ANOVA) t-tests, and the number of trades, we were able to determine the most effective "Manager". This project is an attempt to develop efficient objective or mechanical trading methods for an investor.

---

*Beta Kappa Phi and The National Institute of Science fulfills*

## A SOCIAL RESPONSIBILITY PROJECT AT *The Stewpot Kitchen*

---

Our organizations are hosted in five regions and the students believe that they have a responsibility to take care of the communities they lie in, therefore, as a part of annual conference activities the students make a major contribution to the conference city they visit. Our host institution has chosen a visit to the 'Stewpot Kitchen'. See history described below:

### **A HISTORY DEEP-ROOTED IN OUR COMMUNITY**

In 1981, representatives from seven churches in Jackson, Mississippi came together across denominational lines, to discuss a problem they all had in common – meeting the consistent request for food and assistance from downtown Jackson's poor and homeless. These seven churches – Calvary Baptist, Capitola Street Methodists, Central Presbyterian, Galloway United Methodist, St. Andrew's Episcopal, St. Peter's catholic and St. Kames Episcopal – came together and created what is known today as Stewpot Community Services.

The original Stewpot was located on West Capitol Street in an old service station. From its beginning, Stewpot was housed in Central Presbyterian Church on West Capitol, on the western edge of downtown Jackson. When the church closed its doors in 1992, the Presbytery of Mississippi entered into an agreement, which essentially donated the property to Stewpot. In honor of Central Presbyterian Church, the property is now known as the Central Urban Ministry Center.

From its nativity, the goal of Stewpot has been to promote, develop, stimulate and encourage physical and spiritual development by providing nutritious meals to the community. The Stewpot Kitchen was a success almost instantly. The Community Kitchen provides a noontime meal to anyone – one questions asked – seven days a week, 365 days a year. In 1982, the success of the soup kitchen inspired the establishment of a Food pantry. This mini-grocery store provides a four-day emergency supply of food for carefully screened applicants.

The students of beta Kappa Chi Scientific Honor Society and the national Institute of Science are happy to help citizens from all walks of life. Their various disciplines and fields of science relate to healthcare, mathematics, engineering and technology, therefore, it is just a prelude to what their career paths may hold for the future. The zeal and compassion they show is just a small example of their true intent toward and love of their fellow man.

BKX and NIS Students and Faculty Volunteer efforts at the **STEW POT KITCHEN, 1100 W Capitol St, Jackson MS**



**Friday, March 13, 2016**  
**9:00 AM – 12:00 PM**



Photos courtesy of BKX and Dr. Oswald Tekyi-Mensah





# Meet the New Officers

## National Institute of Science Vice President

Dr. Freddie M. Dixon is Professor of Biology in the Division of Sciences and Mathematics at the University of the District of Columbia. Dr. Dixon has been a member of the National Institute of Science (NIS) since the 1980's and has served in the capacity of Vice President, Eastern Regional Director and Recruitment Director. She was instrumental in establishing student chapters of the NIS.

Her contributions to the learning experiences of faculty and students is multifaceted and includes not only teaching and mentoring but also creating numerous research and funding opportunities that had not existed prior to her involvement. She is Program Director of both the NIH/ MARC U\*STAR Honors Program and the NSF/HBCU-UP STEM Center for Research and Development. In recognition of the value of undergraduate research in student development, Dr. Dixon spearheaded the efforts to establish Undergraduate Research Day at the University. Starting in 2008, this event has provided all students at UDC with the opportunity to present their research to the entire University community. In 2011, Dr. Dixon received the NASA District of Columbia Space Grant Consortium Outstanding STEM Faculty Award for outstanding contribution to STEM that goes above and beyond the classroom.

Her research includes the role of *Candida albicans* adhesins in pathogenesis. This research has been published in the *Journal of Medical Mycology* and was selected as one of two outstanding papers of the year. Additionally, she has received funding to investigate the influence of *Bradyrhizobium* isolated from soils treated with biosolids compost on nitrogen fixation and yield of cowpea.

In addition to her contributions in the academic realm, Dr. Dixon has worked to enhance the scientific literacy of the greater Washington, DC region. She served as president of Minority Women in Science (MWIS) Washington, DC Metropolitan Area Chapter; an organization dedicated to introducing science to primary and middle school students. For many years, Dr. Dixon has served as chairperson and member of the MWIS Math-Science Gift store, which provides free science, technology, engineering, and mathematics (STEM) orientated toys to children ranging from pre-school through eighth grade and Science Discovery Day, an event in which middle school students meet local STEM professionals.

A native of Jacksonville, Florida, Dr. Dixon received her B.S. degree from Florida A. and M. University and her M.S. and Ph.D. degrees from Howard University.

---

## Executive Secretary



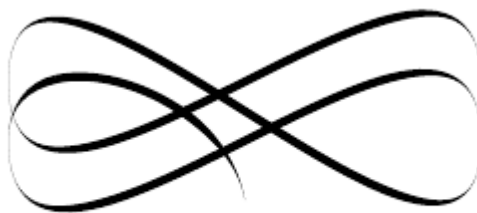
Dr. Oswald Tekyi-Mensah, Professor of Physics at Alabama State University (ASU), joined NIS in 2006 and currently serves as the Executive Secretary of the society. He served as the Vice-President of NIS from 2011 to 2014. Together with Dr. Kennedy Wekesa, Dean of the College of Science, Mathematics and Technology at ASU, they established the local chapter of NIS chapter on the campus of ASU.

He was instrumental in moving the registration process of the Joint Meeting of NIS and BKX into the 21<sup>st</sup> century when in

2006 ASU co-hosted the Joint Meeting of NIS-BKX with Tuskegee University. He led the planning committee and recommended the transition from paper to online the abstract submission and registration processes. He continues to assist in the enhancement of the online registration and submission processes. Additionally, during the 2015 Joint Meeting, he coordinated the abstract retrieval, review, and scheduling of oral and poster presentations. He is charged with assisting with this task for the oncoming 2016 Joint Meeting. He has served on the auditing committee for several years.

Dr. Oswald Tekyi-Mensah joined the faculty of ASU in 1995. His area of expertise is in gamma-ray, x-ray and electron spectroscopy. His research encompasses nuclear structure, nuclear shielding, acid rain and asbestos. He co-authored several proposals that implemented scholarship programs, technology enhancements, science education and research at ASU. He is currently involved in coding physics problems for WebWork, an online homework engine, to enhance science education in physics and physical science courses. He participated in the peer review of National Institute of General Medical Sciences (NIGMS) supplemental communications technology grant applications to MARC and MBRS Programs in 1999, 2000, and 2002.

Dr. Oswald Tekyi-Mensah earned his BS degree in physics at Alabama State University and attained his MS and PhD degrees in nuclear physics at Florida State University.





**NATIONAL INSTITUTE OF SCIENCE****ANNUAL MEETING****HOSTED BY****JACKSON STATE UNIVERSITY****MARCH 11-14, 2015****Members:**

I would like to take this opportunity to thank each and every one of you for entrusting in me the office of President of this great organization. I can assure you that I will continue to do all in my power to uphold the standards of this organization to best of my ability. I would like to especially thank the officers for working with me.

During this year I have been seeking agencies to apply for funds for NIS. I am in the process of submitting to NIH and NSF for a conference grant for the 73<sup>rd</sup> Annual Joint NIS/BKX meeting. The site for the meeting has not yet been determined. I will keep in close contact with Mrs. Anita Taylor, answering as many of her questions as I possibly could and offering suggestions. We operated this year in the absence of Mrs. Kim Fenwick, the Executive Secretary, and limited funds. I have continued to work with Dr. Carolyn Cousin seeking vendors to participate in our Market Place, for the next conference.

I would like for us to re-think the "Adopt a School Program". Adopt-A-School fosters a better understanding of the community's school system, strengthens and improves school programs and curricula, and creates a sense of personal involvement and interaction between organizations and schools. The adopter derives a sense of satisfaction in service and benefits from excellent public relations throughout the community. The adoptee reaps benefits when the organization makes a commitment to assist in the development of the full educational potential of a school. For more information about our Adopt-A-School programs see attachment.

Finally, I have had very little contact with Beta Kappa Chi in planning this meeting.

These are just a few things I have accomplished over the year. As always, I am available to serve you. If you have any ideas or suggestions, please feel free to contact me at 504-816-4725 or [rbroadway@dillard.edu](mailto:rbroadway@dillard.edu). Thank you and enjoy the meeting.

Respectfully submitted,



**Ruby Broadway**  
President

**National Institute of Science****Report of the Executive Secretary (2015-2016)****Oswald Tekyi-Mensah, Alabama State University**

The 72nd Joint Annual Meeting of the National Institute of Science (NIS) and Beta Kappa Chi (BKX) Scientific Honor Society, hosted by Jackson State University, was held in Jackson, Mississippi, March 11-14<sup>th</sup>, 2015. The activities were held at the Hilton Capitol Inn and on the campus of Jackson State University. The theme for the meeting was *“Establishing Biological Options and Launching Alliances (EBOLA).”*

It was the first meeting organized without the financial support of the National Institute of Health (NIH) grant. Despite the anxiety we all experienced, the meeting was a success due to the hard work of the organizers and host institution. To cut down on cost, many of the activities and meals were held on-campus. In addition, Jackson State University used their buses to transport participants to and from the hotel.

The meeting was preceded by an all-day molecular biology techniques workshop held on the campus in J.A. Peoples Science Building. In attendance were faculty and students that were selected from a pool of applicants who applied to participate.

There were seven graduate oral presentations of which six were scored. Thirty-four undergraduate oral presentations were scheduled, of which, twenty-three were in biology (BIO); seven in the category of computer science, mathematics, physics and engineering (CMPE); three in the category of Psychology, Social Science, Science Education (PSSE); and lastly, one in Earth-Environmental Science (ES). Nineteen graduate posters were submitted but five did not show. Thirty undergraduate posters were submitted and thirteen presenters did not show.

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

---

Undergraduate Oral		Names	Affiliation
Biology A	1st	Rachel Darko	Howard University
	2nd	Breahna Blakely	University of the District of Columbia
	3rd	Angel Rogers	Howard University
Biology B	1st	Steve Pierre-Louis	Howard University
	2nd	Christopher Wellman	University of the District of Columbia
	2nd	Joshua Burton	Hampton University
	3rd	Herbert Sutton	Fort Valley State University
Chemistry	1st	Breon Davis	Fort Valley State University
	2nd	Kristena Cunningham	Fort Valley State University
CMPE	1st	Naija Thomas	Southern University at New Orleans
	2nd	LaQunia Banks	Southern University at New Orleans
	3rd	Brandon Bailey	Southern University at New Orleans
PSE/ES	1st	Pamela Cameau	Hampton University
	2nd	Tiffany Long	University of the District of Columbia

Undergraduate  
Posters

Biology	1st	Sacile Tanner	Norfolk State University
	2nd	Matthew Carey	Norfolk State University
	3rd	Torian Jones	Norfolk State University
Eng/EnvSci/Math	1st	Kia Graham	Southern University and A&M College
	2nd	Rebecca Anilu Castro	Hampton University
	3rd	Janica Gordon	Southern University at New Orleans
Graduate Oral	1st	Dominique Townsend	Southern University and A&M College
Graduate Posters (All Categories)	1st	Felicia Emory	University of Tennessee Health Sci. Ctr.
	2nd	Sakeli Hall	Jackson State University
	3rd	Selene Perales	Mississippi Valley State University

Several speakers were featured at the meeting. Dr. Agnes Day, Chairman and Associate Professor of the Department of Microbiology at Howard University addressed the NIS Memorial Lecture and Luncheon. Dr. George Mbata, Chairman of the Department of Biology and Professor of Entomology at Fort Valley State University addressed the audience at the Renowned Scientific Lecture Dinner. The Distinguished Guest Lecture Luncheon featured Dr. Rafael Luna who is a member of BKX and Professor of Biological Chemistry and Molecular Pharmacology at the Harvard Medical School. Dr. Marcus Jones, also a member of BKX and a Microbiome Lead Scientist at J. Craig Venture Institute as well as a professor at New York School of Medicine addressed the BKX Scientific Honor Society Lecturer Dinner. Lastly, the Awards Bruch and Summa lecture featured Dr. Isiah Warner, Vice Chancellor for Strategic Initiatives and a professor at Louisiana State University.

Four workshops were implemented and were as follows:

1. NASA: It “is” Rocket Science
2. Political and Legal Implications on Scientific Research
3. Disease Control: Is America at Risk?
4. Princeton Review – GRE Prep/MCAT Prep.

The newly elected NIS officials are:

President: Ruby Broadway, Dillard University,  
Vice President: Freddie Dixon, University of the District of Columbia,  
Editor: Carolyn Cousin & Anita Taylor, University of the District of Columbia,  
Executive Secretary: Oswald Tekyi-Mensah, Alabama State University,  
Assistant Executive Secretary: B.K. Robertson, Alabama State University, and  
Treasurer: Rosie Sneed, University of the District of Columbia.

For the social responsibility community project, the students, staff and faculty offered their services to the “Stewpot Kitchen”. They performed the phenomenal task of sorting, transporting, storing and stacking assortments of donated canned goods and cleaning the storage facility. Although the work was somewhat tedious, they really enjoyed their participation. The goal of the Stewpot Kitchen is to promote, develop, stimulate and encourage physical and spiritual development by providing nutritious meals to the community. Its Food pantry provides the poor and homeless with food supplies.

We are most grateful to everyone who contributed to the planning and implementing the event. Special thanks to Dr. Terrence Wright, for leading the Jackson State University team as well as to Ms. Deadra James Mackie, executive secretary of BKX, for leading the BKX planning committee. Our utmost appreciation to Dr. Carolyn Meyers, President of Jackson State University for hosting the meeting and allowing us to use their fabulous facilities.

NIS is charged in planning this year’s meeting. In my current capacity as executive secretary of NIS, I was assigned the task of maintaining and updating the website. Rather than build a new website from scratch, a cost saving measure was to adjust the BKX conference website used in last year’s meeting to meet our NIS obligations. In addition

this year may have noticed the ability to access their abstracts using their assigned reference numbers to make changes. In addition, they now have the ability to format and insert special characters within their text. Upon acceptance, each abstract will be assigned an abstract number to make the numbering of abstracts consistent this time. Another adjustment directs registration funds into an NIS registered account.

The development and testing of the website for flaws necessitated a delay in opening of the website to the public for registration and submission of abstracts. A link to the conference registration site can be created seamlessly within the NIS homepage by whoever is in charge of managing the website.

I am also responsible for handling the electronic submission of abstracts and electronic sign up of judges. I have formed an abstract review committee and upon their recommendations will alert students on the status of their abstracts. Once the abstract due date passes, I will compile, sort and structure the abstracts for print. In collaboration with Dr. Penn-Marshall and Ms. Scott, we will schedule the platform and poster presentations and assign the rooms. I will assist Ms. Anita Taylor in soliciting and selecting judges, distributing and collecting judging forms and materials. I will assist Dr. Rosie Sneed, NIS treasurer, in compiling a list of conference registrants and sort them in various ways for analysis. Finally, I will serve in other capacities during the meeting to accomplish our mission in hosting a successful meeting.

Certificate, membership cards, pins and medallions were distributed as indicated in the table below:

<b>Name</b>	<b>Certificate</b>	<b>Membership Card</b>	<b>Pins</b>	<b>Medallion</b>
<b>Alabama State University</b>				
1.Barlow, Brett	X	X	X	
2.Jackson, Wykenia	X	X	X	
3.Peebles, Mary	X	X	X	
<b>Dillard University</b>				
1. Charles, Krista	X	X	X	
2. Chatman, Charles	X	X	X	
3. Fox, Letesia	X	X	X	
4. Gibbs, dance	X	X	X	
5. Gilmore, Latoya	X	X	X	
6. Green, James	X	X	X	
7. Hall, Khalil	X	X	X	
8. Page, Ashley	X	X	X	



9. Richard, Tequila	X	X	X	
10. Robinson, Erica	X	X	X	
11. Sene, Serigne	X	X	X	
12. Terry, Amaunnie	X	X	X	
13. Triggs, Jalesa	X	X	X	
14. Wells, A'drianne	X	X	X	
<b>Howard University</b>				
1. Amajoyi, Veronica E.	X	X		
2. Bates, Paris M.	X	X		
3. Cabbell, Nicolette	X	X		
4. Charles, Sabrina M.	X	X		
5. Fadoju, Deborah G.	X	X	X	
6. Fitzgerald, Derek A.	X	X		
7. Galloway, Brittany N.	X	X	X	
8. Gayle, Rajae M.	X	X		
9. Gladney II, Glenn A.	X	X		
10. Harper, Evan S	X	X		
11. Harvey, Jayla	X	X	X	
12. Herring, Nala R.	X	X		
13. Kamei, Yan	X	X		
14. Morning, Brittney M	X	X		
15. Mowatt, Giovanni A.	X	X		
16. Nnebe, Chelsssea O.	X	X		
17. Okon, Edidiong Abasi E.	X	X		
18. Onwukaeme, Michael C	X	X		
19. Osunsanmi, Nicole J.O.	X	X		
20. Ramirez, Kristina F	X	X		
21. Richard, Mercades J	X	X		
22. Taylor, Alysa H.	X	X		
23. Thomas, Antolice E.	X	X		
24. Wilcher, Kaila C	X	X		
25. Williams, Georgia A	X	X		
<b>Huston-Tillotson University</b>				
1. Evans, Jarrett		X		
2. Horsfall, Sominabo	X	X	E	
3. Job, Judith		X		
4. West, Tomboitemie	X	X	E	
<i>Faculty</i>				
5. Golden, Carolyn		X		

<b>Southern University at New Orleans</b>				
1. Banks, LaQunis		X		
2. Brock, Aljerneau	X	X	X	
3. Brown, Jennetter	X	X		
4. Daitri, Paula	X	X	X	
5. DeQuair, Robatina	X	X	X	
6. Dillon, Amber	X			
7. Ekpo, Peace	X	X	X	
8. Gordon, Janica	X	X		
9. Harris, Candace	X	X		
10. Joseph, Macola	X	X		
11. Perkins, Keith	X	X		
12. Rose, Altoneisha	X	X	X	
13. Sandifer, Dezire	X	X	X	
14. Smith, Michelle	X	X		
15. Tangban, Favour	X	X		
16. Thomas, Naija	X	X	X	
17. Turner, Lashonda	X	X	X	
18. Ussin, Jelisa	X	X		
19. Verdun, Tajiria	X	X		
20. Weber, Davion	X	X	X	
21. Webster, Amir	X	X	X	
<i>Faculty</i>				
22. Atteia, Bashir	X	X	X	
23. Belmasrour	X	X	X	
24. Elaasar, Mostafa	X	X	X	
25. Johnson, Carl P.	X	X	X	
26. Kambhampati, Murty S.	X	X	X	
27. Omojola, Joe	X	X	X	
28. Okwan, Phyllis	X	X	X	
29. Singleton, Cynthia	X	X	X	
30. Sisay, Nebiat	X	X	X	
31. Tietzel, Illya	X	X	X	
<b>University of the District of Columbia</b>				
1. Casanova, Meru	X	X		
2. West-Furlow, Mary P	X	X		
3. Webs Pierre		X		

---

# STUDENT'S CORNER



# STUDENT'S CORNER



*WHAT IS THE STUDENT CORNER ????*.....

Students are a major component of the present and the essence of the future of the NIS. They are not always given the voice that they desire and the voice that we as members of the NIS and readers of the *Transactions* should insist that they have. To give our students more input in the continuing growth and development of the NIS, we have incorporated a new feature in the *Transactions*, the '**Student's Corner**'. It is as flexible as our organization strives to be. Its coverage and format changes from issue to issue. Since, the NIS places a great deal of focus on undergraduate and graduate research, we asked three students to give their true feelings about research. All three said that they loved it. They just happened to be at UDC, because this is the home of the editors. This will not be our policy. We initiated this corner with UDC students, because they were very convenient. In future editions of the *Transactions*, we will scan each attending university and seek out any and everyone for comments. We will bring in our student editor to make sure this is done.

As one of the editors and the self-designated poet laureate of the NIS, I combined the students' ideas and pontificated about their thoughts, put pen to paper and emerged with the poem- "Why I Love Research".

The question was given to them. Now sit back and enjoy, what your colleagues had to say about research. Their thoughts are truly amazing.

Dr. Carolyn Cousin  
Editor



*Why do you love research?*



**W**hen I am asked to talk about research and my love for this endeavor, it is preceded by learning how to differentiate between academic endeavors and social activities. This learning process began my first day in school. I was a curious child, always asking questions and wanting to know the answers to somewhat complex questions. Being curious has its drawbacks, especially when you start your first day of kindergarten and you are fearless of teachers, principals and other adult authority figures. My fearlessness enhanced my sociability. Therefore being a very sociable person, always talking and rarely paying attention to the teacher, lead me to a troubled situation that I could not handle. This resulted in my father being summoned to school for a consultation with my teachers. A firm discussion after school that day with my father was all it took to get me to focus and to differentiate between social activities and academic activities, as well as to put them in the proper sequence with academics getting a much greater priority than sociability. The discussion clearly indicated and made me aware that academic endeavors were far above social endeavors in the school environment. Since then I have stayed focused on my academics and stayed out of trouble. With my father this is a much easier course to take. This is true to a large extent because my father was very keen on education. He was always insisting that we must read. He had me and my siblings read a book nearly every weekend and watch the discovery channel during the weekdays. The six grade science fair was one of my fondest memories in elementary school. My project won 3<sup>rd</sup> place and it was one of the greatest achievements of my young life.

My interest in science with a slant toward research lay dormant for several years. During my tenure at the University of the District of Columbia, I was introduced to biomedical research and applied to the Cancer Academy Program where I gained hands-on exposure in research. While in the Academy I was given a research project and had the opportunity to present the research at several national scientific conferences all over the Nation. After four years of matriculation at UDC, lots of support from dedicated and extremely competent faculty, outstanding courses and a true sense of belonging, I graduated in 2014 and have worked in my mentors' laboratory during this past year as a

Post-Baccalaureate Student. This is a new program and I am the initial student trainee. I have learned techniques at the National Institutes of Health as a part of the Advance Research Techniques Corp) ARTC), at Georgetown's Lombardi Comprehensive Cancer Center, and at George Washington University in the Department of Infectious Diseases. Further, prior to graduation I was selected to be a MARC student and found this Program to be both supportive and innovative. I have won over 10 awards for my research at national and local meetings but that is not what drives my love for research. It is the joy of discovery and the satisfaction of accomplishing something that has not previously been known. I have one refereed publication while in undergraduate school and I am writing the manuscript for the remaining work I did as an undergraduate and a Post-Bac student. I entered Howard University in January 2016 as a doctorate student in parasitology. My goal is to become an independent researcher. My current research is most exciting and is indicating that major changes are occurring in the infection of parasites as a result of global warming. I am anxious to make my contributions in this area.

Michael Smith



**B**eing from Florida, I was learning how to fish before I could talk. My mother would leave for work and my father would leave a note, pack my older brother and me up and head out on the boat for the day. My family and I would travel from north Florida to the Florida Key's each summer growing up where we would snorkel over the coral reefs and catch lobster when in season. I remember asking questions like, why did we have to drive all the way to the Key's to get lobster? Why couldn't we go out on the boat here and catch them? Why did oysters look different from this area? I had fallen in love with the ocean and science and hadn't realized it yet because in Florida, that was just the way of life. After getting my Associates Degree in Florida, my life redirected me to Washington D.C. I had visited the district as a teenager and adored the area. I knew one day I would live here. I didn't realize how much I missed the ocean and all the marine life I grew up seeing until it wasn't in my backyard anymore, but I felt like I was in the right place. At the UDC, I had personal mentors that changed my life. I always knew I wanted to know more about marine science and then I was introduced into research through the ARTC (Advanced Research Techniques Corps) internship. I worked in a toxicology lab on campus studying invertebrates. In doing so I was



able work with animals doing research that had never been explored before. Everything was new to me and I was eager to learn my way around the lab. Before long I was doing and setting up my own experiments with the overseeing of my mentor. I soon found myself at my first national conference, ERN. This was very exhilarating for me because the research I had worked so diligently on I was presenting for not only my peers and other researchers, but I was presenting for judges. When people would stop and ask me about my research it gave me a sense of pride and I knew that this was what I wanted to continue doing. Further perusing my education in the field of marine biology, I realize that research doesn't just have to inside a laboratory. I can do research by taking a more hands on approach outside of the laboratory. My continued passion for research made me realize that I was able to start answering my own questions and that I am capable of changing the world around me.

Christina Ranney



I know my undergraduate research exposure has literally changed my life. I have always wanted to be a scientist and conduct research, but it never truly came to be a reality until I join the NSF/HBCU-UP STEM Center at the University of the District of Columbia (UDC) and worked directly with a professor who was deeply involved in research on the evolution of Dycimbe. I liked the topic, but it was not an area where I had a strong interest. I could see the passion that my mentor had for every discovery that we made. I did not experience that same passion. I don't know if my lack of enthusiasm was the reason that I had zero success in winning any awards for my research efforts while I worked on that project. This brings to mind my sad and embarrassing evening

at the Awards Banquet for the 71<sup>st</sup> Joint Annual Meeting of the National Institute of Science/Beta Kappa Chi Scientific Honor Society (NIS/BKX). Students in my University's entourage were winning awards for their excellent research projects and presentations. I am sure for some people it was like a night at the Oscars. Everyone at the table where I sat were systematically cheering and screaming as one after another person rose from their seats to walk, run or skip down the aisle to the dais to receive a first, second or third place award for excellence. Some of these students had never won anything before, yet that night they rose to their feet in triumph. There were cheers, fraternity hoots and something akin to "March Madness" all around. When the dust settled, I was the only one except for one other young lady from UDC that failed to make that cheerful walk of elation. I wondered about myself. How bad

must I have been? Everyone was winning, cheering, shouting. I slump down further into my chair and the cheers eventually died down because the event was finally ending. I said to myself that something has got to be wrong with me. Was my lack of enthusiasm for what I was doing obvious or was I just “a bad” presenter. You know I never found out what the reason was. It may have been just serendipity.

My mentor left the University the next year and I went to another laboratory at the University. From the very beginning, I could sense that this experience would be different. Even from the beginning my interest soared and I soon garnered the very same passion that I saw in my previous mentor for her research when I start examining gene involvement in parasite /host interactions. I spent as much time as was needed working in the lab and even time that was needed for something else I spent working in the lab. My entire perspective about research changed. My former research mentor and the one that I have now were equally passionate about what they were doing, but now, I was different. I became passionate about my research. I loved every moment that I spent in the lab. Things started happening when I presented at scientific meetings. I started winning. I won first place in Biology at the 72<sup>nd</sup> Joint meeting of BKX/NIS and several other subsequent awards. But my crowning success came at the NSF/Emerging Researchers National Conference (ERN) meeting in February 2016, when the professor who announced the undergraduate winners in Biology said “for the very best undergraduate oral presentation in biology for 2016 with a unanimous vote and my name was called. I had won first place over many undergraduate biology presenters. My mentors always have said to everyone in our laboratory that it does not matter whether you win or not, do your best. “Doing your best is what I expect from you”, they would say. Now, I know that this is true. However, it does feel very good to win and this comes from someone who is familiar with losing a lot.

In conclusion, I knew the subject area in both labs, but I don't know if it were my lack of enthusiasm and/or my lack of passion that permeated my initial presentations. On the other hand is my passion and commitment so obvious that it pervades my entire being so that I parade my competencies which are now translated into excellent oration? I don't know the answer. I do know that once you truly gain a passion for any endeavor, it is then fun, no matter how time consuming. This is what has happen to me with research. I will enter the doctorate program at Howard University in the fall of 2016. My joy surpasses that of a man who has won the million dollar lottery and my passion for what I can accomplish is even greater.

Christopher Wellman



---

## **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

*By Carolyn Cousin*

### How to Start a NIS Membership Chapter



#### I. Eligibility

Candidates are recruited from the STEM disciplines. Freshmen may apply for membership and all undergraduates must have at least a 2.5. All students must complete an undergraduate application and pay dues. Likewise, all faculty must complete a graduate application and pay dues). *Applications will be emailed to Sponsor or can be obtained via the website: [www.nationalinstituteofscience.org](http://www.nationalinstituteofscience.org).*

The candidates are required to learn the basic history of the NIS found on the Website ([www.nationalinstituteofscience.org](http://www.nationalinstituteofscience.org)) at the time of their notice for initiation.

**Society Colors:** The official colors of the Society are Golden Yellow and Winter Green.



**NIS Induction Ceremony  
for the  
NIS Student Club  
Induction Protocol, Pledge, Ritual, Motto, Poem,  
Symbol, and Colors**

**II. How to Conduct an Induction Ceremony**

1. The pledgees are seated in a group on the left of the room, while the membership is seated parallel on the right. In the front of the room is a table with three candles: The President in the center and the Secretary and Treasurer (secretary and treasurer) on their right of the candle. If you have a shield, it should be displayed in front of the candles, but not blocking them. On the table with the candles should be the latest copy of the *Transactions*, the membership certificates, (First, application and national dues should be submitted to the National NIS Office-Address is on the application) and other literature available (NIS brochure) and the pins when ordered for the initiation.
2. **The Faculty Advisors Recites the Official NIS Poem:**

**Welcome the Challenge**

If you only have an inch to move  
Then your vigor will be less intense  
If you only have a hill to climb  
Then, why prepare for a mountain  
If you only can see out of rose-colored glasses

Then how can you know there is pain to avoid?  
If you only prepare for one exam  
How can you expect to pass the course?

---

## STARTING A NIS CHAPTER

---

Never, ever see limitations  
Never do just enough to get by  
Start the race by running  
During the course of it, begin to fly

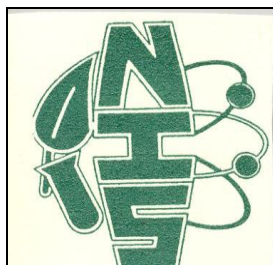
See the world as it is  
So you can do something about what exist  
Go as far as you can humanly go  
Never, never pretend all is bliss

You are a powerful being  
There are few things you cannot do  
True or false, please feel this way  
If you expect to make it through  
The realities of life may someday set in  
This will be as it always has been.  
But now attach you wings and go  
Where others have never been  
During your journey, you may falter  
During your journey and drop  
But because of all of us  
Until you reach the sky, we will never let you stop.

by Carolyn Cousin

**3. The candidates are seated and the President gives a brief history of the organization.**

**4. The meaning of the NIS Key:**



(a) NIS stands for the name of the organization.



---

## STARTING A NIS CHAPTER

---

- (b) Surrounding the name is an electron orbit, a test tube and a leaf. These symbols represent the STEM (science, technology, and engineering and mathematics/STEM) discipline.
- (c) The NIS has the following motto: Science can enlighten man like no other discipline, because it tends to be conclusive.

### **5. Activation of Pledges by the President:**

I (your name), pledge to promote scholarly activities in science, technology, mathematics, and engineering including research, education, and outreach, in order to provide, whenever possible, opportunities for networking and dissemination of relevant information in these areas. THIS I DO PLEDGE.

### **6. The administration of the oath follows, by the Vice-President (en masse) to the pledgees who stand:**

#### **7. The Vice-President will then say:** "Our objectives are:

- (a) To stimulate and promote interest in scientific education, research and outreach.
- (b) To assist in encouraging others to seek careers in the STEM disciplines.
- (c) To reach back and guide while assisting others who have an interest in STEM careers.

### **8. The candidates file past the Vice-President and the President who shakes their hands and offer congratulations, and on to the Secretary (or secretary and treasurer) who does likewise, issues the materials, and, obtains their signatures (for records in case of ordering keys, etc., later), and then on to the members of the organization who in turn offer congratulations.**

### **9. The Secretary gives a short lecture on the organization of the chapter and its activities. The new members are given an opportunity to ask questions of officers and old members.**

**10. Adjournment:** The initiation might be followed by a banquet and a prepared contribution from a member of the chapter.

---

# Meeting Announcements

## 2016 Meeting Announcement

The 73rd Joint Annual Meeting of NIS/BKX will be co-hosted by Hampton University and Norfolk State University in Spring 2016 in Hampton, Virginia.

### Expiration of the T-36 NIH Student Travel Grant

For the past sixteen years, the Annual Joint Meeting had been funded by the NIS T-36 Travel grant, written and administered by Dr. Carolyn Cousin, University of the District of Columbia. This grant expired in Spring, 2014. We thank Dr. Cousin for her successful efforts in 3 renewals of this grant on behalf of these meetings and now it is dependent upon each individual school to obtain the funding to attend these meetings.

### About The Annual Joint Meetings

The Joint Meeting sponsors a Graduate Symposium (Graduate Sessions A and B) 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.

### 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: **No abstracts will be accepted by e-mail. 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.**

---

## MEETING ANNOUNCEMENTS

---

### Graduate Presentations and Awards Criteria

#### Graduate Session A

In order to participate in Graduate Session A an abstract and a manuscript must be submitted prior to making the presentation at the Joint Annual Meeting. Graduate Session A 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 Graduate Session A will have their manuscripts published in the next “Transactions” journal after making revisions suggested by the reviewers. Approximately, ten participants will be selected for oral presentations in Session A. Selected individuals will be eligible for the Graduate Presentation A award which will be based on evaluation of the manuscript including the abstract and oral presentation.

#### Graduate Session B

For **Graduate session B**, only an abstract must be submitted. Separate awards will be made for Graduate Session B based on the written abstract and oral presentation.

### Undergraduate Presentations and Awards Criteria

#### 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.

### Important Information Regarding ALL Deadlines and Awards

Abstracts submitted **by the designated deadline** due date **WILL BE ELIGIBLE FOR AWARDS**. Abstracts submitted **after the designated due date** but before the closing of the site will be accepted but **WILL NOT BE ELIGIBLE FOR AWARDS**.

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

Write or e-mail comments, opinions or suggestions to the Transactions Editors  
Dr. Carolyn Cousin ([ccousin@udc.edu](mailto:ccousin@udc.edu)) or Anita Taylor ([anitaylor@udc.edu](mailto:anitaylor@udc.edu)).

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

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**

**Dr. Carolyn Cousin**

**NIS Program Coordinator**

Division of Sciences and Mathematics

University of the District of Columbia

4200 Connecticut Ave., N.W.

Bldg. 44, 2nd Floor, Room 200-07

Washington, DC 20008

e-mail: [ccousin@udc.edu](mailto:ccousin@udc.edu)

Tel: 202-274-5874



---

---

# 2015 72<sup>nd</sup> BKX/NIS Joint Annual Meeting

---



We thank you  
**Jackson State University**  
*National Institute of Science*

---

---