

# Errata Sheet

## THURSDAY

### Agriculture and Plant Science

#### ADDITION: Poster Presentation

P1.12

#### 3-D OBJECT DISPLAY AND USED IN FRUIT BRUISE DETECTION SIMULATION

Nishant Suresh and Ping Zhang

*Alcorn State University, Lorman, Mississippi USA*

The price of the fruits depends on the quality of the fruit. A fruit which has bruises will be sold in a lower price compared to a fruit with no bruises. In the fruit packing industry, traditionally, the sorting of the fruits is normally done manually for quality control before shipping to consumer. The use of human resource for sorting of fruits has various disadvantages. Thus the mechanized grading of horticultural products is essential for lowering sale pricing, and handling storage.

In this paper we propose an efficient method for displaying bruised fruits with three dimensional viewing. The images of the fruits are captured by a 3-D camera. The features are then extracted by taking the RGB values. Simulation experiments are conducted on apples and tomatoes and 3-D fruits images will be displayed on a computer monitor.

The proposed algorithm is implemented using Matlab software. With the use of functions available in the module it is possible to rotate, pan and zoom in/out of 3D model. The bruised areas of the testing fruits are extracted and feature extraction is made in the proposed fruit bruise detection system.

Keywords: Three Dimensional Imaging Processing, Fruit Bruise Detection, Simulation, Matlab

#### ADDITION: Poster Presentation

P1.13

#### INVESTIGATION OF DROUGHT RESISTANCE IN BLUEBERRY GENOTYPES

Kyle Powell<sup>1</sup> and Donna Marshall<sup>2</sup>

*William Carey University, Hattiesburg, MS USA<sup>1</sup> and USDA-ARS, MS USA<sup>2</sup>*

Agricultural development for specific flora has boomed since advancement in genetic decoding, engineering of PCR, traditional genetics, etc. in the last 25 years; however, resources must be concentrated on researching of consumer goods and meat products. This paper focused on studying several varieties of both Highbush and Rabbitseye blueberry varieties to obtain quantitative data on their resistance to drought conditions to further the former's progression. Rapid dehydration leaf assay and stomatal count of samples revealed the response time to the stressor. The lower epidermis of each sample varied even within the same genotype. Thus, a statistical average was used to determine the density of the stomates within the species. The expected correlation of higher stomatal density increasing the likelihood of water loss was not met as several genotypes with lower stomates in an area. Qualitatively, the reasoning for this conclusion is the variety of plants production of abscisic acid (ABA), the guard cell's hormone responsible to signaling the stomates to close, is the largest contributor for the plants adaption to drought. There remains a need for more investigation of the genetic link between ABA production and sensitivity so desirable breeds can be selected to create a hardier plant. This work was supported by the Mississippi INBRE, funded by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103476.

### Cellular, Molecular and Developmental Biology

#### ADDITION: Poster Presentation

P2.40

#### ELUCIDATING THE FUNCTIONAL ROLE OF EPITHELIAL DUAL OXIDASE (DUOX) IN THE GULF COAST TICK, *Amblyomma maculatum*

Virginia C. Meyers, Khemraj Budachetri, and Shahid Karim

*University of Southern Mississippi, Hattiesburg, MS USA*

Dual oxidase (Duox) was the last of the six NADPH oxidases (Nox) to be discovered, but is thought to have been the original Nox protein due to functional conservation from arthropods to humans. Duox is Ca<sup>2+</sup>-dependent transmembrane protein present in apical surface of epithelial tissues with known roles of generating the ROS species, H<sub>2</sub>O<sub>2</sub>, implicated in the formation of extracellular tyrosine cross-linkage. In *Caenorhabditis elegans* it is involved in cuticular structure while in *Anopheles gambiae* and *Ixodes scapularis* with the formation of an acellular gut barrier referred to as a dityrosine network (DTN) where it was shown to influence the survival of pathogens by preventing their initiation of a local inflammatory response as assessed by dsDuox knockdown. Using this concept, RNAi using Duox dsRNA targeting the FAD<sup>+</sup>-cofactor binding domain was used to determine the

functional role of Duox in *Amblyomma maculatum*. Duox dsRNA and dsLacZ control were injected in adult female *A. maculatum* and blood fed on a sheep with ticks pulled for qRT-PCR analysis at 5-days post-infestation and when replete at 12-days for ovipositioning. Three trials produced similar results regarding tissue-specific Duox knockdown and compared using a gene study; it was observed that midgut tissues were most knockdown-resistant (65%) when compared to the salivary glands (94%) and ovary (85%). The qRT-PCR analysis was used to determine antioxidant compensatory mechanisms and bacterial burden. Confocal imaging targeting dityrosine was performed to demonstrate Duox role in forming the DTN in *A. maculatum*. Most interestingly, the presence of a DTN was discovered lining the central ducts of the salivary glands, which in *I. scapularis* was previously used as a control as it had no indication of the presence of a DTN. This work was supported by the Mississippi INBRE, funded by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103476.

#### **WITHDRAWAL: Oral Presentation**

##### **O2.15**

#### **11:15 INVESTIGATING THE PROMOTOR OF THE MOLD SPECIFIC GENE M46, IN THE PATHOGENIC DIMORPHIC FUNGUS HISTOPLASMA CAPSULATUM**

Angela R. Jackson and Davida Crossley

*Alcorn State University, Alcorn, MS USA*

*Histoplasma capsulatum* (Hc) is a dimorphic fungus, it can exist as mold or yeast. The yeast is the causative agent for the respiratory infection histoplasmosis. M46 is a mold specific gene. The gene is expressed in the mold, but not in the yeast. Northern blot analysis has shown that M46 is expressed in the mold form of Hc G186AS and Downs strains. The gene is not expressed in the mold form of strains G184AS and G217B. Sequence analysis of the M46 promoter from all four Hc strains has shown that the open reading frame is conserved, and therefore the open reading frame is not a reason for lack of expression. Sequence analysis of the promoter has identified a deletion site and an insertion site in the promoter of strain G217B. The 12 bp deletion is approximately 500 bp upstream of the TATA rich sequence, and the 10 bp insertion site is approximately 40 bp upstream of the TATA rich sequence. The promoter region of strain G184AS was found to be identical to G186AS M46 expressing strain. To determine if the promoter of M46 is functional in all four Hc strains, the promoter will be fused in frame to the reporter GFP (Green Fluorescent Protein). The fragment will be ligated to the telomeric vector pRPU1. The construct will be electroporated into the M46 expressing strain G186AS and the M46 non-expressing strain G184AS. GFP fluorescence will indicate if the M46 promoter is functional in the various strains. The results from this experiment will help with understanding how M46 is regulated in *Histoplasma capsulatum*. This work was supported by the Mississippi INBRE, funded by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103476.

#### **ADDITION: Oral Presentation**

##### **O2.15**

#### **11:15 INVESTIGATING**

Ashly Claiborne and Davida Crossley

*Alcorn State University, Lorman, MS USA*

*Histoplasma capsulatum* (Hc) is a dimorphic fungus. The fungus can exist as mold or yeast. It is found in the environment in soil, from bird and bat excreta. However, when the soil is disturbed and the spores are released and inhaled, it is converted to yeast; the yeast is the cause for histoplasmosis. This study investigates the *M46* gene. *M46* has two exons and one intron. The gene encodes for a protein that is 79 amino acids. It has a predicted protein size of 8.5 kDa. Previous northern blot analysis revealed that *M46* is a mold specific gene, it is expressed in *Hc* mold and not in yeast. This study focuses on determining when *M46* is expressed as it is converting from mold to yeast, and from yeast to mold. Total RNA will be extracted from *Hc* strain G186AS as cells are converting to each morphology. Images of the *Hc* cells will be taken via microscope, concurrently with RNA extractions. Northern blot analysis and qRT-PCR will indicate when *M46* expression is increased and decreased during the morphological shift. Lastly, western blot analysis will determine if *M46* protein is expressed, and to determine the size of the *M46* protein. These results will provide further knowledge on the regulation of a phase-specific gene in a dimorphic fungus.

#### **ADDITION: Poster Presentation**

##### **P2.41**

#### **BIOSYNTHESIS OF PHENAZINE METABOLITES IN *BURKHOLDERIA* SPP.**

Samuel Hendry, Olga Mavrodi, Alex Flynt, and Dmitri Mavrodi

*University of Southern Mississippi, Hattiesburg, MS USA*

Phenazines (Phz) represent a large class of metabolites that are produced by diverse bacteria and exhibit unique redox properties and broad-spectrum antibiotic activity. In fluorescent pseudomonads, phenazines contribute to the development of surface biofilms and to the virulence or competitiveness of producing strains. Our study is focused on the biological functions of phenazines produced by species of the *Burkholderia cepacia* complex. Members of the Bcc complex are ubiquitous in the

environment and contain non-pathogenic species, as well as species that cause hospital-acquired infections and colonize the lungs of individuals with cystic fibrosis. We have assembled and characterized a collection of phenazine-producing *Burkholderia* strains, and identified *Burkholderia lata* 383 as a model for further study. To date, we have generated several isogenic Phz mutants and are currently working on the characterization of phenazine pathway in strain 383. We also evaluated the contribution of phenazine production to pathogenicity of Phz+ *Burkholderia* using *Drosophila melanogaster* as a surrogate host. Our preliminary results suggest that phenazines contribute to the virulence of the producing *Burkholderia* strains. In the long run, the expected results will help to better understand the role of phenazine compounds in an important group of bacterial pathogens, and will aid in the development of strategies to inhibit the production of phenazines and to neutralize their toxicity.

## Chemistry and Chemical Engineering

### CORRECTIONS: Abstract

#### O3.02

#### 8:15 DOPING-INDUCED MOLECULAR PACKING OF CONJUGATED POLYMERS

Frederick McFarland<sup>1</sup>, Benjamin Brickson<sup>2</sup>, and Song Guo<sup>1</sup>

*University of Southern Mississippi Hattiesburg, MS USA<sup>1</sup> and Petal High School Petal, MS USA<sup>2</sup>*

It has been discovered that polythiophene molecules (P3AT) aggregate into 1D nanostructures by solution-induced crystallization. In the case of p-doped P3AT, the doped polymer cations could have different steric arrangements from their neutral forms. The doping-induced conformation change and Coulomb interactions might influence the molecular packing of the P3AT nanostructures. On the other hand, the P3AT pi-stacked structures are more efficient at delocalizing charges, which could also enhance the charge transfer from dopants. Herein the doping-induced molecular packing dynamics are studied by absorption spectroscopy and atomic force microscopy. The absorption spectra show distinctive bands for molecular packing and doping products, respectively. By systematically changing the dopant concentration, quantitative kinetic studies are carried out to correlate the growth dynamics of the two absorption bands. p-doping are shown to substantially facilitate the pi-stacking of the conjugated polymers into 1D aggregates even at marginally low p-dopant concentrations. The impacts of molecular packing on the p-doping kinetics are also explored. Investigation on the cooperative interactions between these two factors during chemical doping will greatly strengthen our understanding on the doping process for conjugated polymers.

### ADDITION: Poster Presentation

#### P3.43

#### CELLULAR AND BIOPHYSICAL STUDIES ON PLANT FLAVONOIDS AS ANTIOXIDANTS

Ka' Bresha Potts<sup>1,2</sup>, Donald Davis<sup>1</sup>, Ming Shenwu<sup>2</sup>, and Bidisha Sengupta<sup>1</sup>

*Chemistry Department<sup>1</sup>, Biology Department<sup>2</sup>, Tougaloo College, Tougaloo, MS USA*

Despite the high toxicity and environmental persistence of organophosphate pesticides, they are still extensively used worldwide. As a result, these compounds with known mutagenic activity, accumulate significantly in tissues via the food chain and pose a severe threat to ecosystems and human health. Recent years have witnessed a renaissance of interest on plant flavonoids for their high potency and low systemic toxicity. They are gradually emerging as promising alternatives to conventional therapeutic drugs. We evaluated the effects of flavonol fisetin, flavone luteolin and an anthocyanin malvidin chloride (MC) against stress induced by a well known pesticide methyl parathion (MP) in HEP-G2 cell lines. For cellular investigations we used MTT cell viability assay while for molecular studies we relied on absorption, fluorescence and melting as well as modeling studies. *Calthymus* DNA was chosen as a model to study the deleterious effects of MP in presence and absence of flavonoids. Fisetin is chosen as an extrinsic probe for this study. There is a significant decrease in MP induced cell death in presence of flavonoids. Molecular studies are carried out on protein extracted from the cells which are exposed to MP in absence and presence of the flavonoids. The beneficial effects of the flavonoids in the prevention of stress induced by MP may be related to their abilities of scavenging free radicals produced by oxidative stress. The structure-activity correlations for the functionalities of the flavonoids are in the order fisetin>luteolin>MC. The presence of ketone and more -OH groups are crucial for radical scavenging property in the flavonoids.

Acknowledgements: This work was supported by the Mississippi INBRE which is funded by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103476. We would also like to acknowledge financial and support support from NSF MS-EPSCoR grant # EPS-0903787, NIH/ NCMHHD/RIMI grant # 1P20MD002725, HHMI grant # 52007562 at Tougaloo College.

**ADDITION: Poster Presentation**

**P3.44**

**NATURAL FLAVONOIDS FISETIN, QUERCETIN AND THEIR SYNTHETIC CHROMOPHORES IN DUPLEX AND QUADRUPLEX DNA MATRICES**

Donald Davis and Bidisha Sengupta

*Department of Chemistry, Tougaloo College, Tougaloo, MS USA*

Plant flavonoids are in prominence from biomedical context for their wide range of therapeutic activities of high potency and low systemic toxicity. Ruzsnyák and Szent-Györgyi first drew attention to the therapeutically beneficial role of dietary flavonoids.<sup>1,2</sup> Flavonoids are abundant in common plant based foods and beverages such as onions, apples, berries, tea and red wine. Both *in vivo* and *in vitro* studies show that flavonoids are therapeutically effective against a wide range of diseases including cancers, allergies, AIDS and different free radical mediated disorders such as atherosclerosis, ischemia, neuronal degeneration, cardiovascular ailments etc.<sup>3</sup> which make them promising alternatives to conventional therapeutic drugs. Fisetin (3,7,3',4'-tetrahydroxyflavone) and quercetin (3,5, 7,3',4'-pentahydroxyflavone) are the bioactive plant flavonoids which are potentially useful therapeutic drugs for the treatment of a broad spectrum of diseases including atherosclerosis, cardiovascular disease, obesity, hypertension and cancer. 3-hydroxy flavone (3HF) and 7-hydroxy flavone (7HF) are the synthetic chromophores of fisetin and quercetin. It is known that single and double stranded nucleic acids structures can serve as receptors for flavonoids.<sup>4</sup> We have exploited dual luminescence properties of fisetin and quercetin along with 3-HF and 7HF to examine their efficacy of binding and compare their interactions with DNA, which is one of the macromolecular targets of flavonoids in physiological systems. Following the sequence of the human telomeric DNA 5'-d(CCCTAA)<sub>n</sub>/(-TTAGGG)<sub>n</sub>-3', two single stranded DNA oligonucleotides, 5'-d(C<sub>3</sub>TA<sub>2</sub>)<sub>3</sub>C<sub>3</sub>-3' and 5'-d(T<sub>2</sub>AG<sub>3</sub>)<sub>4</sub>-3', and their duplex were used as receptors to study binding by the ligands quercetin, fisetin, and their chromophores. Circular dichroism (CD), differential absorption, UV thermal melting, and size exclusion chromatographic studies indicated the formation of unusual DNA structures (such as C<sub>4</sub> and G<sub>4</sub> tetraplexes) for both the C and G rich single stranded DNAs. Upon binding to DNA, dramatic changes were observed in the intrinsic fluorescence behavior of the flavonoids. Molecular docking studies were performed to describe the likely binding sites for the ligands. The spectroscopic studies on flavonoid-DNA interactions described herein demonstrate a powerful approach for examining their DNA binding through exploiting the highly sensitive intrinsic fluorescence properties of the flavonoids as their own "reporter" for their interactions with macromolecular targets.

References:

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3. Kris-Etherton, P. M.; Keen, C. L. Evidence that the antioxidant flavonoids in tea and cocoa are beneficial for cardiovascular health. *Curr Opin Lipidol.* **2002** *13*, 41-9.
4. Marini, M.; Piantanida, I.; Rusak, G.; Zini M. Interactions of quercetin and its lanthane complex with double stranded DNA/RNA and single stranded RNA. Spectrophotometric sensing of poly G, *J. Inorg. Biochem.* **2006**, *100*, 288-298.

Acknowledgements: This work was supported by the Mississippi INBRE which is funded by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103476. We would also like to acknowledge financial and support support from NSF MS-EPSCoR grant # EPS-0903787, NIH/ NCMHHD/RIMI grant # 1P20MD002725, HHMI grant # 52007562 at Tougaloo College.

**ADDITION: Poster Presentation**

**P3.45**

**MICROWAVE-ASSISTED ALKYLATION OF ANILINES**

George Armstrong, Dominique Foster, Johnathan Grayson, and Brandon Hackett

*Tougaloo College, Tougaloo, MS USA*

Ortho-alkylation of substituted anilines was carried out in a matter of minutes under solvent-free conditions in a conventional household microwave oven. This process gives benzylic carbon stereocenter compounds which are excellent building blocks medicinal compounds. Both vinylarenes and 1-arylethanol can be used as alkylating agents. Benzylic carbon stereocenter compounds are found in more than four thousand natural product isolates. Compounds will be tested for efficacy of in stopping growth of breast cancer cells. Initial test results of one compound showed efficacy for reducing *e. coli* cell growth. Compounds synthesized are racemic mixtures. We have in place HPLC and columns to separate racemic mixture, which will allow the evaluation of each enantiomer.

## Health Sciences

### ADDITION: Poster Presentation

#### P6.81

### DEVELOPMENT OF AN INTERACTIVE, SPATIAL, WEB-BASED TOOL FOR PHYSICIAN WORKFORCE PLANNING, RECRUITMENT, AND RESEARCH

Denise D. Krause<sup>1, 2</sup>, John R. Mitchell<sup>2</sup>, and Diane K. Beebe<sup>1</sup>

*University of Mississippi Medical Center<sup>1</sup> Office of Mississippi Physician Workforce<sup>2</sup>*

**Objective.** To develop a web-based, interactive physician workforce surveillance application for the Office of Mississippi Physician Workforce (OMPW) using geographic information systems (GIS) to serve as a tool for effective workforce planning, recruitment, and health services research, to improve access to health care. **Methods.** The Mississippi Board of Medical licensure provided licensure data on all active physicians practicing in the state. From these and other publicly available data, an ArcGIS 10 server application was developed in JavaScript which can run on most platforms, including mobile devices, to query and visualize the geographic distribution of the physician workforce. **Key Findings.** The application allows users to identify and query geographic locations of physicians filtering by selected criteria, to perform drive-time or buffer analyses, and to explore sociodemographic population data by geographic area of choice. The application is particularly useful to medical students and residents, the Rural Physician and Dentist Scholarship Program, the Mississippi State Health Department, and the OMPW. **Implications.** This application visually represents the physician workforce and its attributes and provides access to much needed information for state-wide health workforce planning and research. It is an expandable tool that enables Mississippi to become more proactive in addressing the needs for physicians throughout the state. **Future Directions.** We plan to incorporate more advanced analysis methods, such as linear programming optimization techniques, to examine inequalities in physician availability to population demographics and determine optimal numbers needed. We plan to measure use statistics over time and administer satisfaction and usability surveys to user groups.

### CORRECTION: Authors

#### P6.30

### PREVALENCE OF ZOOBOTIC DISEASES IN DOGS AND CATS BELONGING TO WOMEN ENTERING A REGIONAL DOMESTIC VIOLENCE SHELTER

Sharon Fooshee Grace<sup>1</sup>, Christine Bryan<sup>1</sup>, Andrew Mackin<sup>1</sup>, Leslie Payne<sup>2</sup>, and Joy C. Jones<sup>2</sup>

*College of Veterinary Medicine, Mississippi State University, Starkville, MS USA<sup>1</sup>; Care Lodge Domestic Violence Shelter, Meridian, MS USA<sup>2</sup>*

Pets are important companions for victims of domestic violence (DV). Unfortunately, pets may also suffer abuse and may be harmed if left behind as a family seeks safe shelter. Most women's shelters offer no provision for animal care, causing some women to delay escape in order to protect their pets. In order to assist such families, a partnership was developed between a university-based pet-safe sheltering program and a DV shelter. Five years of observations affirmed the value of pets to DV victims. A total of 37 animals (24 dogs and 13 cats) were placed in the program, staying for an average of 30 days (range 4 to 69 days) before being returned to their owners. Most of the animals enrolled in the program had poor preventive health care at the time of enrollment. Of 37 cats and dogs, vaccinations (including rabies vaccines) were delinquent in 36/37, and at least one zoonotic parasite was identified in 16/37 animals. Zoonotic infections identified and treated included roundworm (2 dogs, 3 cats), hookworm (7 dogs, 4 cats), *Dipylidium caninum* tapeworm (6 dogs), *Spirometra* tapeworm (3 cats), and *Giardia* (3 cats). At present, there is scant information as to the prevalence of zoonotic diseases in animals from families suffering from domestic abuse. Further investigation into the health risks posed by this unique group of pets will allow veterinarians, social workers, and physicians to make informed decisions regarding health of impacted women and children while also maintaining family stability through retention of pets in the home.

### SUBSTITUTION: Poster Presentation P6.32 to Replace Oral Presentation O6.03 at 1:30

#### P6.32

### PUTTING THE PIECES TOGETHER TO IMPROVE HEALTH ACCESS

Ellen Jones<sup>1</sup>, Tim Alford<sup>2</sup>, Erin Harvey<sup>1</sup>, and Anna Lyn Whitt<sup>1</sup>

*MSPHI Madison, MS USA<sup>1</sup> and Kosciusko Medical Clinic Kosciusko, MS USA<sup>2</sup>*

**Objectives:** 1. Describe the Together on Diabetes Program in Mississippi. 2. Discuss the cost savings associated with positive health outcomes for patients with type 2 diabetes. 3. Explain patient centered medical home success in rural areas. **Background:** Together on Diabetes (ToD) is an initiative to improve health outcomes of people living with type 2 diabetes by strengthening patient self-management education, community-based supportive services, and broad-based community mobilization. The Mississippi Public Health Institute aims to implement a patient centered medical home model (PCMH) in a physician owned clinic in rural Mississippi in order to reduce negative health outcomes associated with type 2 diabetes. **Methods:** The MSPHI implemented a ToD grant, funded by the Bristol Myers Squibb Foundation, to monitor and evaluate health outcomes

of people with type 2 diabetes. The anticipated outcome is to show continuous quality improvement and demonstrate effectiveness and cost savings of a diabetes focused PCMH within a physician owned practice. MSPHI looks at clinical measures, such as HbA1c, blood pressure, cholesterol, and BMI, on each patient to gauge positive health outcomes, evaluates patient self-knowledge and management, and patterns and costs of health service utilization. MSPHI is working with the clinic, third party payers, and patients to achieve health equity, while coordinating care through the PCMH model. Results: ToD staff began seeing patients in February, 2014. Preliminary results will be shared and will include patient knowledge regarding disease process, and clinical measures. Future Implications: Sustainability is dependent upon payment reform. Third party payers should reimburse providers for community and educational services if the data demonstrate that those services reduce costs. This is consistent with Affordable Care Act triple aims of improving health care quality; improving health care access; and reducing excess health care costs.

### **O6.03**

#### **1:30 TOBACCO CONTROL AND PREVENTION INITIATIVES AT MISSISSIPPI HOSPITALS**

Ellen Jones, Lydia West, and Clinton Smith

*MSPHI Madison, MS USA*

After this presentation, participants will be able to: 1. List the specifications of the Joint Commission Tobacco Cessation Performance Measure-Set; 2. Explain the reasons these measures increase the probability that a patient will stay quit from tobacco products after discharge from the facility; and 3. Describe the process the Mississippi State Department of Health, Office of Tobacco Control utilized to support hospitals in Mississippi regarding patient tobacco cessation and control resources. Background: The Joint Commission Tobacco Cessation Performance Measure-Set was updated in 2012. The specifications of this measure set include: screening inpatients for tobacco use; providing cessation treatment during the hospital stay and at discharge; and following-up with patients after discharge. The support regarding tobacco cessation patients receive while admitted in hospitals can help them permanently stay quit from tobacco products, consequently improving overall health status. Methods: An online survey to assess facility policies related to tobacco use status of patients and tobacco cessation resources provided through hospital facilities was distributed to 57 Mississippi hospitals with Joint Commission accreditation. Results: Sixty-one percent (N=35) of the facilities responded to the survey. Most facilities indicated that there is a standard of care to screen patients for tobacco use status and provide evidence based treatment options while patients are admitted to the hospital. Conversely, the majority of the respondents indicated that there is not standard of care to contact the patient after discharge regarding tobacco use. Staff at the facilities also indicated whether or not the facility would be interested in participating in a pilot project related to tobacco cessation services. Conclusion: Information gathered from this survey was used to identify the variety of tobacco cessation services Mississippi hospitals offer and provide support for those facilities related to the Joint Commission Tobacco Cessation Performance Measure-Set. The techniques and lessons learned through this project will serve as a model for other health care facilities.

### **WITHDRAWAL: Poster Presentation**

#### **O6.34**

#### **DELTA ALLIANCE FOR CONGREGATIONAL HEALTH: IDENTIFYING AT-RISK AND UNDIAGNOSED INDIVIDUALS THROUGH CONGREGATIONAL HEALTH SCREENINGS**

Jackie Hawkins, Brianna Perryman, Cassandra Dove

*MS State Department of Health, Jackson, MS USA*

Background/Purpose: Delta Alliance for Congregational Health (DACH) is based on a social-ecological model for faith-based institutions to consider the health of individual congregants, the congregation as a whole, and the broader community. Participants will gain an understanding of the DACH model; including best practices and lessons learned; how the DACH model can be implemented in their church/community; and understand the role of the church, community, and the healthcare setting in cardiovascular disease (CVD) risk reduction. Methods: Screenings of the congregants were conducted on a quarterly basis. If screening resulted in abnormal values, participants were referred to their perspective primary care physician or a local medical provider for those without a medical home. Some individuals were followed-up with a community health worker for education and other social services. Results: A total of 1303 screenings for ABCs (Aspirin, Cholesterol, A1C, Blood Pressure, and Tobacco Cessation) were conducted, with 1067 individuals screened from October 2011-April 2013. 94.1% were African American; 3.6% were white; and 2.3% were of other race. The mean age was 48 with an average BMI (Body Mass Index) of 33; 14.8% had elevated glucose levels; 7.3% had elevated cholesterol, 42.5% had elevated hypertension. The screenings indicated that 58.8% of those individuals were obese. Conclusion: The DACH model, provides linkage among at-risk congregants and community members, healthcare, and the church. The DACH model is an effective method for identifying CVD risk in the community setting, reducing risk factors for CVD, and linking to healthcare for clinical diagnosis and follow-up.

### **History and Philosophy of Science**

### **WITHDRAWAL: Oral Presentation**

#### **O7.04**

#### **11:15 DO ENVIRONMENTAL SCIENCE ADVISERS REPRESENT THE THREAT OF A TECHNOCRACY?**

Sara Kolmes

*Florida State University, Tallahassee, FL, USA*

In many arenas, our modern lives are mediated by science and technology. This has immense benefits, but the technological and scientific realities of our world shape the ways we interact with the world and the possibilities open to us. Technological “Lock-In” in which infrastructure is shaped by aspects of a technology not inherent to its purpose, often directs what further development is possible. For example, Robert Moses’ overpasses on the way to Jones beach were built shorter than buses or trains. Only cars could pass, so only those rich enough to own cars in the 1930s could visit. The area developed as a haven for the rich where the poor were not welcome even as cars became common, as only expensive attractions were built there. The concern that technical experts make normative decisions without realizing it is an old one. The status of technical decisions as unquestionable by a layperson and the possibility for this to lead to de-facto rule by experts inspired concerns about a technocracy. Recently, worries that government science advisers pose this risk have resurfaced surrounding environmental scientists. I argue that science advisers do not represent this threat, because scientific results are reported as probabilities rather than binary responses or specific advice. Scientists will report results within statistical standards for the profession (such as 0.05 probability for confidence), and then conscious interpretation of this result into practical advice will occur. Because of the way in which scientific knowledge is expressed, science advisers do not pose a technocratic threat.

## **Physics and Engineering**

### **ADDITION: Poster Presentation**

**P10.07**

#### **IDENTIFYING ALTERNATE TARGETS FOR PROSTATE CANCER DRUG DESIGNING**

Raquema Williams and Pradip Biswas

*Tougaloo College, Tougaloo MS USA*

**Background & Significance:** Prostate cancer affected 2,975,970 (43%) men in the United States this year, and killed 29,480. Nuclear hormone receptor, Androgen Receptor (AR) is the main protein responsible for prostate cancer progressions and thus the main targets for hormonal therapies. However, hormonal therapy is found to acquire resistances and prostate cancer is found to progress in androgen-independent manner. Our objective is to study protein-protein and protein-DNA interfaces of AR and identify and validate alternate targets for hormone-independent drug designing.

**Methodology:** Using crystal structures of AR and AR-DNA interfaces, molecular modeling, molecular dynamics simulations, and bioinformatics we have explored unique sequence motifs for dimerization and DNA recognition that could act as a suitable template for ligand-independent drug designing.

**Results:** Using AR ligand binding domain (LBD) crystal structure 1T5Z.pdb, we have modeled and validated a dimer structure and explored essential hydrogen-bonding contacts for dimerization. The LBD dimerization contacts are found to be inadequate for alternate drug designing target. We then explored the dimerization contacts of AR DNA binding domain (1R4I.pdb) and found essential contacts that could be used as alternate targets to design inhibitors. Currently, we are grafting the essential contact residues of AR-DBD in Alanine and Glutamine based helices and elucidating their binding affinities with AR in order to develop ligand-independent peptide inhibitors.

**Conclusion:** The discovery of novel protein targets from protein-protein and protein-DNA interfaces would open avenues for the development of a new generation of small molecule therapeutics for hormone-independent progression of prostate cancers.

This work was supported by the Mississippi INBRE, funded by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103476.

## **Zoology and Entomology**

### **WITHDRAWAL: Oral Presentation**

**O13.05**

#### **10:00 ECOLOGICAL SERVICE OF CAVITY DWELLING BIRDS**

Charles C. Barnes, Darrell D. Barnes, Mark L. Montgomery, Maithri Adris, James Sylvester, Brent Lavers, Paul Grisham, Piyatilake Adris, Ray Cox, Sarah Mattox, K.N.Thimmaiah, Padma Thimmaiah, Kyle Ellis, and Jeremy Isome

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The 2014 project, which extended from April-June, included a survey of insect and prey populations using pit fall traps near existing man-made cavities for bluebirds on the Northwest MS Community College-DeSoto Campus in Southaven, MS. The hypothesis was that there would be more insect/prey biodiversity (utilizing Simpson’s index of biodiversity) near the bird-occupied cavities (sites 1, 2, 3 and 7) than at the control sites (sites 4, 5 and 6). All sites were located on the Northwest MS Community College-DeSoto Campus. It was determined in this brief experiment that the insect/prey biodiversity was slightly less (2.373) when all of the experimental bird-occupied cavity sites (House Sparrow, *Passer domesticus* and Eastern Bluebird, *Sialia sialis*) were

compared to the control sites (2.395). The biodiversity was markedly less at the single site 1 (2.010, occupied by House Sparrow, *Passer domesticus*) when compared against all of the controls (2.395). The presence of bird lice/mites heavily contributed to the diminished biodiversity around the control sites.

#### **ADDITION: Oral Presentation**

##### **O13.05**

#### **10:00 DYNAMICS OF PROGESTERONE, TNF- $\alpha$ AND A METABOLITE OF PGF<sub>2 $\alpha$</sub> IN BLOOD PLASMA OF BEEF COWS FOLLOWING EMBRYO TRANSFER**

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Lactating beef cows received an embryo along with no treatment (control), controlled internal drug releasing device (CIDR), human chorionic gonadotropin (hCG), or gonadotropin releasing hormone (GnRH) to assess the effectiveness of these treatments in increasing blood progesterone (P4) and its effects on tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) and prostaglandin F<sub>2 $\alpha$</sub>  (PGF<sub>2 $\alpha$</sub> ) after the transfer of embryos. All cows were previously synchronized for estrus and on d 7 after exhibiting estrus (d 0) they received embryos. Blood samples were taken on d 0 (d of embryo transfer), d 7, and d 14 for analysis of P4 and TNF- $\alpha$  and on half the animals in each experimental group on d 7 (collected every 15 min for 2 h) and the remaining half on d 14 for PGF<sub>2 $\alpha$</sub> . Percent retention rates on d 60 were 56.2, 62.5, 46.7 and 13.3 for cows in the control, CIDR, hCG and GnRH groups; respectively. Progesterone was greater ( $P \leq 0.05$ ) in cows receiving hCG compared to other groups on d 7. Mean concentrations of P4 in all treatment groups increased from d 0 to d 7 and declined ( $P \leq 0.05$ ) from d 7 to d 14. Contrary to pregnant cows, non-pregnant cows had an overall decline in P4 and TNF- $\alpha$  from d 0 to d 14 ( $P \leq 0.05$ ). Whereas, increased ( $P \leq 0.05$ ) concentrations of PGF<sub>2 $\alpha$</sub>  metabolite (PGFM) were seen in pregnant and non-pregnant animals on d 14; however, no difference ( $P \geq 0.05$ ) was observed overall between the two groups.

## **FRIDAY**

### **Health Sciences**

#### **CORRECTIONS: Abstract**

##### **P6.76**

#### **EXPOSURE TO SEROTONIN ADVERSELY AFFECTS OLIGODENDROCYTE DEVELOPMENT AND MYELINATION IN VITRO**

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As serotonin (5-hydroxytryptamin, 5-HT) has been implicated to play critical roles in early neural development, the perinatal exposure to selective serotonin reuptake inhibitors (SSRIs) results in cortical network miswiring, abnormal social behavior, callosal myelin malformation, as well as oligodendrocytes (OL) pathology in rats. To gain further insight into the cellular and molecular mechanisms underlying SSRIs-induced OL and myelin abnormalities, we investigated the effect of 5-HT exposure on OL development, cell death, and myelination in cell culture models. First, we showed that 5-HT receptor 1A and 2A subtypes were expressed in OL lineages, using immunocytochemistry, Western blot, as well as intracellular Ca<sup>2+</sup> measurement. We then assessed the effect of serotonin exposure on the lineage development, expression of myelin proteins, cell death, and myelination, in purified OL and neuron-OL myelination cultures. At higher doses, such exposure triggered a development-dependent cell death, as immature OLs exhibited increasing susceptibility to 5-HT treatment compared to OL progenitor cells (OPCs). We showed further that 5-HT-induced immature OL death was mediated at least partially via 5-HT<sub>2A</sub> receptor, since cell death could be mimicked by 5-HT<sub>2A</sub> receptor agonist DOI, but attenuated by pre-treatment with 5-HT<sub>2A</sub> receptor antagonist ritanserin. In contrast to cell injury observed in pure OL cultures, 5-HT exposure did not lead to OL death or reduced OL density in neuron-OL co-cultures. However, abnormal patterns of contactin-associated protein (Caspr) clustering were observed at the sites of Node of Ranvier, suggesting that 5-HT exposure may affect other axon-derived factors for myelination. In summary, this is the first study to demonstrate that manipulation of serotonin levels affects OL development and myelination, which may contribute to altered neural connectivity noted in SSRIs treated animals.