HOWARD UNIVERSITY

# RESEARCH SYMPOSIUM

APRIL 16, 2015

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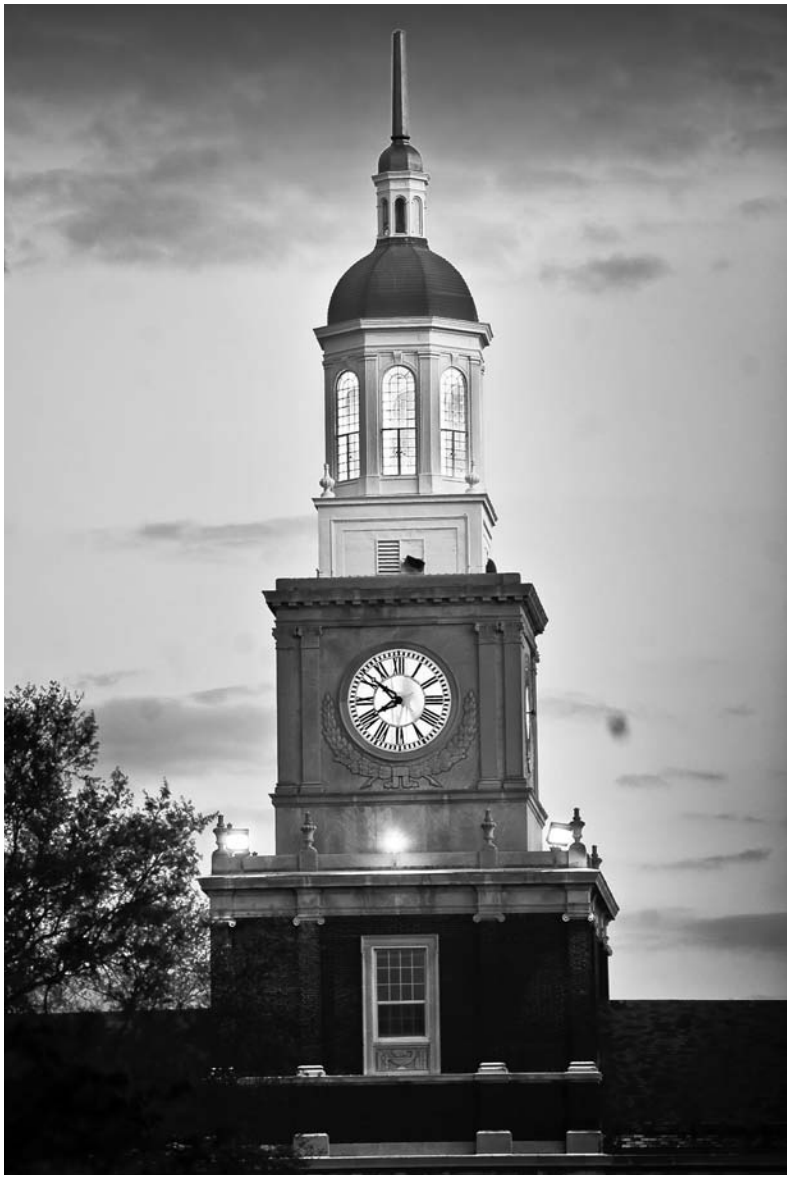
## *ABSTRACT BOOK*

HOWARD UNIVERSITY

# RESEARCH SYMPOSIUM



## *Abstract Book*

APRIL 16, 2015

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# Biological & Biomedical Sciences

### Capturing and taming of the mycobacteriophages Benji3 and R0ndNuag3

Presenter's Name: Chante Acevero and Tara Spencer
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Sarifya Ambersley, Priscella Holland, Victoria Larsen, Ayele Gugssa, Nichelle Jackson

**Background:** Bacteriophages (phages) are viruses that infect bacteria. Mycobacteriophages are viruses that specifically infect bacterial cells of the genus *Mycobacterium*. The objective of this study was to capture and tame a mycobacteriophage from the Howard University Campus that successfully infects cells of the bacteria, *Mycobacterium smegmatis* mc2 155. **Method:** A soil sample was obtained, and the bacteriophages present were isolated using Enrichment sampling. The bacteriophages were then isolated from the Enrichment culture and purified using the Spot Assay and Plaque Streak Protocol respectively. Pure phage stocks of high phage concentration for genome extraction were then obtained through the Empirical Testing of phage titres and 5-plate infections. **Results:** Both mycobacteriophages, under the names Benji3 and R0ndNuag3, produce transparent plaques of a circular morphology, indicating that they reproduce by the lytic cycle. Plaques produced by R0ndNuag3 were 1 mm in diameter and those of Benji3 were 1.5mm in diameter. **Conclusion:** The genomic information of our mycobacteriophages, Benji3 and R0ndNuag3, can potentially be of importance in the development of vaccines and treatment for pathogenic diseases caused by bacteria of the genus *Mycobacterium*, as well as in the development of biocontrol agents. As a result, the phage genomes have been extracted from pure stocks of the two bacteriophages, so that they can be visualized and annotated.

KEY WORDS: Benji3, R0ndNuag3, mycobacteriophage, capture, tame

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### Collection, Identification, and Analysis of Plant Species found in the forest of Wheaton Regional Park, Montgomery County, MD

Presenter's Name: Christianah Ademuwagun
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Dr. Janelle Burke

Flora is the plant life occurring in a particular region or time. In the 1960s, Dr. Hammond of Howard University successfully identified, collected and archived about 443 species found in the Wheaton Regional Park in a span of three years. In summer 2015, we embarked on a comparative study to compare and contrast the plant composition of Wheaton Regional Park 50 years later. Data was collected from June 2 to July 25, 2015. Flowering ad fruiting plant specimens were collected. These were preserved as herbarium specimen for study and identification at the Howard University herbarium. A total of 148 species were collected and 55 of these were entirely new species in the area. Our results indicate that nearly 1/3 of the plants collected were new to the area and most of them are invasive species. In the future, we will collect species grown in spring 2015 and further compare the data with that of Dr. Hammond's.

KEY WORDS: flora, flowering, plant, species, fruiting

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### Mortality Rate of Myocardial Infarction Patient Long-Term survival Revisited

Presenter's Name: Elizabeth Adeyemi
Classification: Professional Student
*Presentation Type: Poster Presentation*

**Background:** Previous studies' indication that MI mortality rate decreases considerable after treatment point to the fact that decrease in mortality rate was only short time duration of thirty day and that there was no significant change in long term survival. Limited research has been focused on this problem. **Methods:** Using PubMed and ProQuest, we searched studies on MI incidence and mortality rate in patients who received treatment after infarction from 2010 to 2014. **Results:** 28 studies with 38,740 patients were included. There was no sufficient information on long-term mortality rate. Kaiser Permanente in 2010 showed a decrease of mortality rate for both men and women from 10.5% to 7.8%. Overall decrease

in hospital mortality rate was found in Japan from 20% to 7.8%. Females' mortality remains high. There was substantial improvement in acute and long-term inpatients hospitalization in US multiple ICU admission, mortality occurred in 2,190 patients out of 14,434 patients. However, decrease mortality rate up to I year was less notable. **Conclusion:** Thirty days mortality survival rate of myocardial infarction incidence increased in both males and females, most especially in the case of patients who are in the hospital environment. There was no definite result on long-term survival rate. Public awareness and quick reaction to myocardial infarction incidence needs to be further investigated. More research should be done on long-term mortality survival of MI incidence in order to decrease the short-term mortality rate.

KEY WORDS: Myocardial, infarction, Mortality, Long-term, Survival

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### Clinical and pathological risk factors of Fibrosis progression in African Americans with chronic Hepatitis C

Presenter's Name: Ali Afsari
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Ali Afsari, Babak Shokrani, Edward Lee, Ana Shahnazi, Charles Howell, Armana Saeed , Tina Boortalary, Zaki Sherif, Mehdi Nouraie, Sadhna Ahuja, Adeyinka O Laiyemo, Kawtar Alkhalloufi, Temitayo Ogundipe, Hassan Brim, Hassan Ashktorab

**Aim:** To evaluate steatosis and fibrosis in African Americans with chronic HC. **Methods:** We reviewed pathology reports and medical records of 603 African Americans with chronic HCV from Jan. 2004 to Dec. 2013. Demographic, clinical and pathological data including; HIV, HCV genotype, Hepatitis B virus, Diabetes, hypertension, BMI, alcohol consumption, smoking, drug use, and steatosis were collected. STATA software was used for the statistical analysis of the collected data. **Results:** The frequency of obesity, alcohol consumption and DM were 34%, 26%, and 22%, respectively. The frequency of HTN, HIV, HBV, were 16%, 11%, and 4%, respectively. Median BMI was 27.3(24.4-32.2). The frequency of fibrosis stages 0, 1, 2, 3 and 4 were 2%, 48%, 28%, 11% and 11%, respectively. We found a significant association between HIV infection and liver fibrosis (OR=1.8, 95% CI: 1.2-2.9), and between HTN and fibrosis (OR=1.8, 95%CI: 1.03-2.3). Age association with fibrosis was at an OR=1.7 (95%CI: 1.3-2.2) for every 10 years. Steatosis was an independent risk factor for higher fibrosis grade (OR = 2.2, 95%CI: 1.5-3.4). Female gender (OR = 1.8, 95%CI: 1.1-2.9) and hepatocytes iron deposition grade are associated with higher steatosis' grade (P=0.020). **Conclusion:** This study shows that steatosis is independently associated with fibrosis in African American patients with HCV infection. Female patients were at higher risk for steatosis. Also, hypertension and HIV, higher BMI and age were found to be risk factors for fibrosis.

KEY WORDS: Steatosis and Fibrosis in African American with Chronic HCV

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### Meta-analysis of MSI rate in colorectal cancer, effect of race and clinical factors

Presenter's Name: Sadhna Ahuja
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Mehdi Nouraie, Babak Shokrani, Edward Lee, Hassan Brim, Hassan Ashktorab

**AIM:** To determine and evaluate association of race and clinical factors with MSI rate through a meta-analysis. **Methods:** Eleven studies out of 15105 (1993-2013) were retained after a search in different literature databases, using keywords; colorectal cancer, microsatellite instability. We used random effect meta-analysis to calculate the MSI frequency in all studies as well as in AA vs. CA samples. Meta-regression analysis was used to assess the univariate effect of race, gender, age, tumor location and stage on MSI rate. **Results:** A total sample size of 7575 CRCs were included in this analysis. The overall MSI rate was 14% (95%CI: 0.12-0.16, I2=85%). Patients' race was determined in 5 studies (including 1249 AA and 2999 CA). The MSI rate was 12% (95%CI: 0.08-0.16, I2=81%) in AA and 10% (95%CI: 0.08-0.13, I2=53%) in CA (P for race effect = 0.14). In meta-regression analysis, male gender (b=-0.35, P = 0.17) was marginally associated with lower MSI frequency and K-ras mutation was marginally associated with higher MSI frequency (b =0.25, P = 0.12). MSI frequency rate in AA was highest in Washington DC (19%) and lowest in North Carolina (7%). **Conclusion:** Female gender and K-ras mutation rate was associated with high MSI frequency. There are different range of MSI in AA across the USA and this may be due to population heterogeneity and different environmental exposures

KEY WORDS: Colorectal cancer, Microsatellite instability

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## Computer Optimization of Nanoparticle Fabrication for Cancer Chemotherapy

Presenter's Name: Emmanuel Akala
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

Coauthors: Simeon Adesina, Oluwaseun Ogunwuyi

The new concept of quality by design (QbD) in the pharmaceutical industry involves designing and developing drug formulations and manufacturing processes which ensure predefined drug product specifications. QbD helps to understand how process and formulation variables affect product characteristics and subsequent optimization of these variables vis-à-vis final specifications. Statistical design of experiments (DoE) is a technique for identifying important parameters in a pharmaceutical dosage form design and for optimizing the parameters with respect to certain specifications. DoE establishes in mathematical form the relationships between critical process parameters together with critical material attributes (CMAs) and critical quality attributes (CQAs). The present study focuses on the fabrication of stealth biodegradable nanoparticles by dispersion polymerization. Aided by a statistical software, D-optimal mixture design was used to vary the components (CMAs: crosslinker, initiator, stabilizer and macromonomers) to obtain twenty nanoparticle formulations (PLLA-based nanoparticles) and thirty formulations (polycaprolactone-based nanoparticles). Scheffe polynomial models were generated to predict particle size (nm), zeta potential, and yield (%) as functions of the composition of the formulations. Simultaneous numerical and graphical optimizations were carried out on the response variables (CQAs). Solutions were returned from simultaneous optimization of the response variables for component combinations to (1) minimize nanoparticle size (small nanoparticles are internalized into disease organs easily, avoid reticuloendothelial clearance and lung filtration); (2) minimize the surface negative zeta potential, as nanoparticles with positive zeta potential pose a threat of causing transient embolism and rapid body clearance and (3) maximize percent yield to make the nanoparticle fabrication an economic proposition.

KEY WORDS: Nanoparticles, Cancer Chemotherapy, Computer Optimization

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## The Role of Trauma Type in the Risk for insomnia Presenter's Name: Ameenat Akeeb

Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Tyish Hall Brown, Thomas Mellman

**Objective:** Insomnia is common following exposure to trauma and can occur independently or as a feature of posttraumatic stress disorder (PTSD). However, there is limited research identifying risk factors associated with the development of insomnia following exposure to a traumatic event. The goal of this study was to evaluate the role of specific trauma types in the risk for insomnia in a community sample of urban African Americans young adults. **Methods:** A sample of 554 non-clinical, urban, young adult African Americans was recruited for a larger study from which 465 participants were utilized for this study based on their completion of all study self-report measures. Participants were initially screened by phone to determine whether they provisionally met study criteria. Once selected, participants underwent informed consent and then completed a battery of self-report measures that included the Life Events Checklist, the PTSD Checklist, the Insomnia Severity Index, and the Fear of Sleep Index. **Results:** Of the seven trauma categories that were endorsed by at least 20% of the sample, results from logistic regression models indicated that sexual trauma, physical assault, accidents, natural disasters, and sudden violent death predicted insomnia independent of sex. However, PTSD symptom severity and nocturnal fears differentially influenced the relationship between trauma type and risk for insomnia. **Conclusions:** Exposure to specific types of trauma increases the odds of insomnia 2 to 4 times over. Additionally, PTSD symptom severity and nocturnal fears contribute differentially to the relationship between trauma exposure and insomnia suggesting the possibility of multiple underlying pathways.

KEY WORDS: Insomnia, Sleep disturbance, Trauma, PTSD, African American

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### Rare case of Plasma cell leukemia presents with a chest wall mass

Presenter's Name: Ahmed Ali
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

**Background:** Plasma cell leukemia (PCL) is a rare variant of multiple myeloma (MM) that presents either as a progression of previously diagnosed MM or as the initial manifestation of disease. PCL occurs in all races however it is more common in African Americans and Africans. **Case presentation:** A 65-year-old African American male with past medical history of diabetes mellitus, history of inguinal and abdominal wall hernia who presented to the hospital with abdominal and groin pain from the hernia. CT abdomen showed hepatosplenomegaly and left chest wall mass with overlying ribs destruction. Blood work revealed hyper-calcemia. MM work up showed monoclonality of IgG lambda type. The biopsy of the mass revealed plasma cells with a high proliferation index with high Ki-67 expression, approximately 50% to 60% with restrictive clonal lambda positivity with no kappa expression. Bortezomib, Cyclophosphamide and dexamethasone (CyBorD regimen) was initiated as an induction therapy and patient will undergo autologous bone marrow transplant subsequently. **Discussion:** PCL is an aggressive hematology malignancy requires an immediate intervention. Presenting symptoms are similar to the one of MM but more acute and aggressive. Most cases of this rare leukemia present without masses or aggregations of leukemic cells as oppose to our patient. **Conclusions:** Patient who presents with plasma cell leukemia needs to start induction treatment once the diagnosis is established and referred to a center of Bone Marrow (BM) transplant to perform autologous BM transplant as patients are likely to enter complete remission after transplantation.

KEY WORDS: Plasma Cell Leukemia Chest Mass

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### Rapid genetic engineering of Bacteriophage P22 lysogens by Bacteriophage -λ-based recombineering to create "P22 Challenge Phage" for in-vivo analysis of Protein-DNA interactions

Presenter's Name: Maram Almohaywi
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Maram Almohaywi, Berencia Fore, Kessler Hurd, Morenike Olu, Kelly Hughes, Joseph Aubee, and Karl M. Thompson

Bacteriophage P22 is a temperate bacteriophage of *Salmonella typhimurium*. The P22 Challenge Phage is a genetic tool used to analyze protein-DNA interactions in vivo. The P22 Challenge phage utilizes surrogate *cis* and *trans*-acting gene regulatory elements to study foreign protein-DNA interactions in vivo. The traditional construction of the P22 challenge phage includes recombinant DNA technology and in-vivo crossing of homologous plasmids into Bacteriophage P22 genomes. The result is a recombinant phage with its lysis-lysogeny decision is controlled by a foreign *cis*-acting DNA sequence that recognizes a foreign protein. Bacteriophage λ based recombineering is a rapid and inexpensive method of genetic engineering, using linear DNA with flanking homology of 40 base pairs. Recombineering is catalyzed by the activity of three bacteriophage λ proteins, Gam, Exo, and Beta, that can be expressed from a plasmid with an arabinose inducible promoter, pKD46. Here we attempt to improve the traditional method of genetically engineering P22 Challenge Phages using Bacteriophage λ based recombineering.

KEY WORDS: Bacteriophage, Genetic Engineering, Bacterial Genetics, P22, Virology, Recombineering, Virus

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### Modelling Clustered Multivariate Binomial Data: Application to the Joint Modeling of HCV and HIV Co-Infection

Presenter's Name: Edmund Ameyaw
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Paul Bezandry, Victor Apprey, John Kwagyan

Bonney (1996) established a conditional likelihood-based formulation to model correlated binary data. In this paper, we adopt the approach and extend it to model multivariate binomial data taking into consideration both clustering and overdispersion. The motivation of our proposed approach is to study co-infection with hepatitis C virus (HCV) and human immunodeficiency virus (HIV) in an inner city hospital using a joint statistical modeling approach allowing for (i) characterization of the dependency of each binary response separately on some covariates and (ii) the characterization of the degree of association between the pairs of responses and the dependence of this association on covariates. We then compare our approach to a recent model developed by Del Faval et al (2013) which uses additive and multiplicative random effects by proposing series of Bayesian hierarchical model that deals with overdispersion and clustering at the same time.

KEY WORDS: Binomial data, Bivariate Data, Clustering, Overdispersion

## Optimization of PP1-targeting Small Molecule EBOV Inhibitors

Presenter's Name: Tatiana Ammosova
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Xionghao Lin, Colette Pietzsch, Yasemin Saygideğer Kont, Aykut Üren, Dmytro Kovalskyy, Andrey Ilatovskiy, Michael Petukhov, Alexander Bukreyev and Sergei Nekhai

Recently we developed a novel small molecule compound 1E7-03 that binds protein phosphatase 1 (PP1) *in vitro* and inhibits transcription of Ebola virus (EBOV) genes resulting in inhibition of virus replication in cultured cells (1). Pharmacokinetic analysis of 1E7-03 revealed that this compound is quickly metabolized in plasma of mice into smaller molecular weight compounds, which were less active than the original compound. To identify a stable homologue of 1E7-03, we assembled a library of 80 analogous molecules which showed activity in PP1-sensitive inhibition of HIV-1, were active in the binding to PP1 in Biacore analysis, or demonstrated high binding ICM score in *in-silico* docking analysis with PP1 crystal structure. These 80 compounds were screened in a HTS assay for inhibition of EBOV and also tested for toxicity. We identified top 6 candidates, which were further analyzed by mass spectrometry for their stability in murine plasma *in vitro*. We identified a novel compound C42, which was stable in murine plasma, and efficiently inhibited EBOV in cultured cells. The compound also showed efficient binding to PP1 (Kd=18 μM) *in vitro* using Biacore assay. The compound C42 will be tested for protection against EBOV *in vivo*.

KEY WORDS: Ebola virus, PP1 inhibitor

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## Isolating and Purifying JunBug39 From Its Host Mycobacterium smegmatis

Presenter's Name: Joycemary Amponsem
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

All around us there are astronomical amounts of bacteria that surround our environments and colonize our bodies. While only a small percentage of bacteria are pathogens, this class has caused many deaths throughout human civilization. Many advances in science have been made to combat this deadly group of bacteria including the development of antibiotics. However, as more bacteria become antibiotic resistant scientists have started looking for viable alternatives. Nature provides this alternative through viruses known as bacteriophages or phages that infect bacteria with their genetic material and replicate inside the membrane at astounding rates. In phage therapy, scientists use the highly replicative nature of phages to lyse or burst bacterial membrane which leads to bacterial death. This project entailed isolating, purifying, sequencing, and annotating the DNA of a novel phage population from its host *Mycobacterium smegmatis* in order to gain a deeper understanding of the mechanisms and nature of bacteriophages. The phage I isolated in this experiment was named JunBug39.

KEY WORDS: bacteria; bacteriophages; phage therapy; annotation; DNA

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## Targeted cancer gene sequencing identifies potential causative novel candidate mutations in African Americans colon carcinogenesis

Presenter's Name: Hassan Ashktorab
Classification: Senior Faculty
*Presentation Type: Poster Presentation*

Coauthors: Nickerson, Michael L, Lee E; Shokrani, Babak,Afsari, Ali, Laiyemo, Adeyinka O., Varma, Sudhir, Brim, Hassan

**Aim:** Here, we report the identification of distinct novel variants from CRC patients in mismatch repair (MMR) genes MHS3 and MSH6, and APC. **Method:** We developed a panel of 20 frequently altered colon cancer genes comprised of *ACVR2A, APC, ARID1A, BRAF, FAM123B, FBXW7, KRAS, MSH2, MSH3, MSH6, NRAS, PIK3CA, POLE, PTEN, SMAD2, SMAD4, SOX9, TCF7L2, TGFBR2,* and*TP53*for targeted sequencing in 138 colon tissues comprised of 26 normal tissue sample, 22 adenomas, 33 advanced adenoma and 57 colorectaltumors. Multiplex PCR and Ion Torrent sequencing was used to examine 98.8% of the targeted exons and splice junctions at a depth of sequencing that allowed for high confidence variant calling (most bases were covered by ≥ 500 reads). After alignment and variant calling, we annotated the variants with information from the 1000 Genomes Project, COSMIC, Polyphen2, and PFAM domain and transcription factor motifs. **Results:** Excluding synonymous SNVs, 212 deleterious variants in adenoma, 760 in advanced adenoma, and 2624 variants in tumors were detected. Three were known pathogenic variants (MSH3 V250M, MSH6 T627I and APC R1432X). Novel variants (1591 and 1363) were found in Morgens (MSH6 and MSH3) and APC gene, respectively. Most of the MMR (449) and APC (563) variants

are deleterious mutations, respectively, suggesting the value of a broad cancer gene panel. Spearman correlation between number of deleterious mutations and progression of disease (normal-adenoma-cancer) for MSH3, *MSH6* and *APC* was 0.27, 0.28 and 0.36 respectively. The occurrence of potentially deleterious MMR and APC gene variants suggests possible misclassification of MMR status. Notably, among the 57 CRC cases, [(22/57=39%) for MSH3, MSH6; and (36/57=63% for APC)] carried likely deleterious MMR and APC mutations, respectively, suggesting the value of a broad cancer gene panel. **Conclusion:** These findings further highlight the relevance of APC gene in CRC onset but also the potential underestimation of the MSI-H in sporadic CRC as many of the novel mutations in MMR genes detected here were of a deleterious nature.

KEY WORDS: Next generation sequencing, African Americans, colorectal cancer

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### The i6A37 tRNA modification contributes to RpoS translation via efficient recognition of UXX-Leucine codons in Escherichia coli

Presenter's Name: Joseph Aubee
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Joseph Aubee, Morenike Olu, Karl Thompson

RpoS is the stationary phase/general stress response sigma factor that allows for core RNA polymerase to recognize promoters of genes whose expression is necessary for adaptation to stationary phase/starvation conditions. RpoS is regulated at multiple levels, particularly at the post-transcriptional stage of gene expression by small regulatory RNAs, the ATP-dependent protease ClpXP, along with adaptor and anti-adaptor proteins. RpoS expression is also modulated via efficient translation of the reading frame by mechanisms that are not completely understood. Our group has recently reported that the i6A37 tRNA transferase, MiaA, affects RpoS expression independently of small RNA action and protein stability. The mechanism whereby MiaA affects RpoS translation has been previously undefined. MiaA acts on tRNAs that recognize UXX codons. RpoS has an over-representation of UXX-Leucine codons within its open reading frame and we hypothesized that MiaA is necessary for UXX-Leu decoding. Over-expression of LeuX, a UXX-decoding Leucine-charged tRNA, suppresses the MiaA effect on RpoS. Changing the UXX-Leucine codons in an rpoS-lacZ translational fusion to non-UXX Leucine codons, creating silent Leucine mutations, decreases the sensitivity of the rpoS-lacZ translational fusion to the absence of MiaA.

KEY WORDS: tRNA modifications, RpoS, Bacterial Genetics, Gene Expression, E. coli, mRNA translation

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### Purification and Characterization of Mycobacteriophage: Jacksonphage25 and Bagasao1

Presenter's Name: Adore Bagasao
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Ashley Jackson

**Background:** Bacteriophage (phages) are parasites that use host biosynthetic machinery in order to replicate. The study of phages can be used to further genetics, epidemiology, and therapeutics. The experiment is done in order to capture the phage from the environment and purify a single phage. This process will eventually lead to the characterization and analysis of a newly-discovered bacteriophage population. **Methods:** The phage was collected from the soil at the Blackburn Center at Howard University. An enrichment culture was created in order to favor the replication of the mycobacteriophage with the host bacteria, *Mycobacterium smegmatis*. Streaking and 10-fold dilution protocols were performed in order to isolate and purify a single phage population. An empirical test was also conducted in order to predict the concentration of phage to produce a lawn that is almost completely lysed. **Results:** The single phage population was purified and a High Titer Lysate was achieved with a volume to pipette concentration of 10.8 x 10-4. The plaque morphology of the phage is small, 1mm, turbid, and circular. **Conclusion:** Achieving the High Titer Lysate will ultimately be used in order to extract the genomic DNA, use restriction enzymes, and electron microscopy. The DNA will be sent to the Sequencing Center, and annotations and characterization of its DNA sequence will extend the research of mycobacteriophage for genetic and therapeutic application.

KEY WORDS: mycobacteriophage, phage, isolation, characterization, purification

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## Drug Delivery: Encapsulated Zeolite H-Y under Simulated Body Conditions

Presenter's Name: Kristen Bailey
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Obinna Okani, Nicholas Guthrie, Angelica Mack, Salam Titinchi

Drug delivery utilizes methods of transferring pharmaceuticals in the body to achieve a desired effect. However, medical professionals have discovered that these techniques of drug transportation demonstrate restricted efficiency in encapsulation and dispersal. Recent biotechnological research has found that zeolites may be the solution. Zeolites are microporous, inorganic materials with a low silicon to aluminum ratio and high ion exchange capacity. Previous investigation has repeatedly proven that size, shape, and surface characteristics are very essential in determining the efficiency of drug delivery systems. An experiment in the Journal of Biomedical Materials Research Part A regarding drug delivery through the use of zeolites has found that drug release is strictly correlated with its grade of dissociation17. Based on the shape selective properties, high surface area, and presence of channel and cavity systems, we predict that the use of zeolite H-Y, with a pore size of 11.5 Angstroms, will present a more efficient encapsulation and controlled release. In this experiment, we investigate the efficiency of encapsulation of paracetamol in Zeolite-HY and its release under simulated body conditions at pH 4, pH 7, and pH 9 to mimic the stomach, the human body, and the small intestines, respectively. After various loading methods through the use of FT-IR, XRD, SEM, and TEM, the peaks reflected in the aspirin loaded FT-IR spectra. Results concerning the release of paracetamol from the loaded zeolites are pending. Further study on zeolite H-Y can be conducted under more diverse conditions. The functional groups can also be changed.

KEY WORDS: Zeolites, drug delivery, pharmaceuticals, paracetamol, Biochemistry

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## The Acquisition, Confirmation and Purification of T1TAGA using Host Mycobacterium smegmatis

Presenter's Name: Diamonds Banks
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Nichelle Jackson

A mycobacteriophage (phage) is a virus that infects and kills mycobacteria cells. Phages infect bacteria by connecting to a specific protein on the membrane of the bacteria and injecting genetic material which then combines with bacteria DNA to begin the cycle of replication. Phages are important because they allow biologists to create and carry vaccines and advance the study of biodiversity and genetics through the characterization of phage genomes. This experiment aims to discover a new bacteriophage which targets *Mycobacterium smegmatis* mc2 155 (*M. smegmatis*). This particular bacterium and the phages that infect it are important to this study because *M. smegmatis* has recently been characterized as a close relative of *Mycobacterium tuberculosis* (*M. tuberculosis*), the bacterium that causes Tuberculosis disease. This relationship is important because *M. smegmatis* can be used as a model for *M. tuberculosis*. Phage was extracted from a soil sample taken from in front of the Ernest E. Just Hall Building at Howard University through direct plating method to obtain initial plaques. Spot tests confirmed phage presence. Streaking produced a pure species of phage and a series of titrations maximized the amount of phage captured. T1TAGA produced plaques that usually form a 3mm bullseye shape. Future research will work to extract , sequence, analyze and annotate the genomic DNA of the newly discovered phage in order to contribute to the Science Education Alliance Phage Hunters Advancing Genomics and Evolutionary Sciences mycobacteriophage database (Phages DB).

KEY WORDS: Bacteriophage, Mycobacterium smegmatis, SEA PHAGES, mycobacterium tuberculosis

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## Venous Thromboembolism Outcomes of Partial Colectomies in Patients with Colon Cancer: The Role Operative Time

Presenter's Name: Dylan Bezzini
Classification: Professional Student
*Presentation Type: Oral Presentation*

Coauthors: Navin Changoor, Gezzer Ortega, Raphael Diaz, Lori Wilson, Debra Ford

**Purpose:** Malignancy and operative time are risk factors for development of post-operative venous thromboembolism (VTE). The purpose of our study was to evaluate the effect of operative time during partial colectomy on development of VTE using the American College of Surgeons-National Surgical Quality Improvement Program (ACS-NSQIP). **Methods:** We performed a retrospective review of ACS-NSQIP from 2005-2010. Patients underwent open or laparoscopic partial colectomies with post-operative diagnosis of colon cancer. Patient, case, and post-operative characteristics were collected. Cases were grouped by operative time intervals of <60, 60-240, 240-300, 300-360, >360 minutes based on mean operative time. Primary outcome of interest was VTE complications. **Results:** We identified 21,580 patients with median age of 68, 52.7% were female, 12.8% were smokers, and 6.5% had disseminated cancer. Open partial colectomies (OPC) were involved in 57.5% of patients and laparoscopic partial colectomies (LPC) in 42.5% of patients. Mean operative times were 139 and 159 minutes, respectively. Overall VTE rate by time was 2.1%, 1.9%, 2.3%, 3.9% and 4.6% for < 1 hour, 1 – 4 hours, 4-5 hours, 5-6 and >6 hours respectively (p=0.001). On adjusted analysis, there was increased VTE risk for intervals 5-6 hours (OR 2.04, 95% CI 1.24-3.36) and >6 hours (OR 2.2, 95% CI 1.22-3.98). LPC was less likely to develop VTE complications (OR=0.65, 95% CI 0.53-0.80). **Conclusion:** Partial colectomies for patients with colon cancer exceeding 5 hours and open approaches increased the post-operative VTE complication likelihood. Surgeons should be aware and consider efficiency as they approach their peri-operative planning.

KEY WORDS: Post-operative venous thromboembolism, partial colectomy, ACS-NSQIP. Operative time, outcomes

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## Shock Index as a Predictor of Outcomes in Patients with Septic Shock

Presenter's Name: Isaac Biney
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Alem Mehari

**Introduction:** The shock index (SI), calculated as heart rate divided by systolic blood pressure, has been shown to predict disease escalation in patients presenting to the emergency department with severe sepsis. However, it has not been studied in intensive care unit (ICU) patients. In this study, we evaluated if a sustained SI can be used to predict outcomes in a defined ICU patient population. **Methods:** Patients admitted to the ICU with severe sepsis or septic shock requiring vasopressor support within 48 hours and successfully resuscitated were included. The shock index was calculated for each set of vital signs from the time of withdrawal of vasopressor support for a total of 96 hours or till an outcome measure was met. **Results:** 46 patients were identified with mean age of 61±13 years. Fifty two percent were male and 80% were African Americans. Sustained SI elevation was present in 29 (63%) patients. ICU mortality was significantly higher in those with sustained SI elevation; 15 (52%) compared to 3 (18%) without a sustained SI elevation (p=0.022). Patients with sustained SI elevation had significantly higher lactate levels (3.3±2.3 vs 1.9±1.3; p=0.034). There was no difference in the MPM 11 score between the 2 groups (62.3±26.1 vs 63.0±20.4; p=0.711). ICU length of stay was 16±11 days in the sustained SI elevation group compared to 10±9 in the non-sustained group (p=0.087).**Conclusion:** SI elevation was associated with worse outcomes in ICU patients who were initially successfully resuscitated for septic shock; however larger studies are needed to confirm this finding.

KEY WORDS: Shock Index, sustained, Intensive care unit

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## ETR-1, an ELAV-type RNA binding protein, may play a role in regulating germline apoptosis in Caenorhabditis elegans

Presenter's Name: Ruby Boateng
Classification: Graduate Student
*Presentation Type: Poster Presentation*

**Background:** ETR-1, an ELAV-type RNA binding protein (RBP), is a muscle protein in *Caenorhabditis elegans* whose depletion results in reduced brood size in specific backgrounds, paralyzed arrested elongation two-fold and

lethality. Human homologs of ETR-1 have been implicated in myotonic muscular dystrophy when mutated. Recently, ETR-1 was identified in a large-scale *C. elegans* RNAi suppressor screen for genes that when co-depleted with WEE-1.3 resulted in a restoration of fertility from the otherwise very severe infertile phenotype exhibited upon *wee-1.3 (RNAi)*. This led us to question whether ETR-1 has previously overlooked roles in the germline, particularly in regulating apoptosis and fertility of this nematode. **Methods:** *C. elegans* techniques such as standard brood analysis, RNA interference (RNAi), CRISPR-Cas9 genome editing, and immunohistochemistry are utilized. **Results:** We will demonstrate that depletion of ETR-1 alone results in reduced fertility and is due to an increase in germline apoptosis. We are utilizing the CRISPR-Cas9 technology to generate genome-edited lines where green fluorescent protein (GFP) endogenously tags specific isoforms of ETR-1. This will allow us to determine both the temporal and spatial expression pattern of ETR-1, including subcellular localization and specific role(s) of the multiple isoforms by ETR-1. **Conclusions:** Identifying the mechanism will provide knowledge regarding an RNA binding protein with a novel function within the meiotic cell cycle. Furthermore, understanding the role of *etr-1* will be used to help understand the role of CUG-BP in muscular dystrophy, as well as the causes of infertility that is associated with a failed cell cycle.

KEY WORDS: RNA binding proteins, C.elegans, CRISPER/CAS 9, RNAi, Immunohistochemistry

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## Screening for Adult Lung Stem Cells within the Alveolar Type 2 Population

Presenter's Name: Chanell Boyd
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Douglas Brownfield, Mark Krasnow

Chronic obstructive pulmonary disease (COPD), one of the leading as well as most quickly rising causes of death in the US, is associated with the destruction of alveoli, the sac-like regions at the lung periphery that mediate gas exchange. Damage of alveolar type (AT) 1 cells, which provide the surface for gas exchange, or AT2 cells, which secrete surfactants to reduce surface tension, can give rise to COPD. Recent work on alveolar repair in mice has shown that a small number of AT2 cells are capable of replicating via EGFR/KRAS signaling upon injury as well as reprogramming to AT1 cells through an unknown mechanism. Here, we seek to determine whether these rare AT2 cells comprise a static progenitor pool by establishing markers for subsets of the AT2 population. Utilizing single cell transcriptional profiles of adult AT2 cells, we screened differentially expressed genes and selected candidates previously implicated in differentiation and proliferation. Using immunofluorescence on sectioned adult lobes, we found distinct groups of AT2 cells based on levels of the proteins Fos and Fgfr2. Further studies of these markers through lineage tracing *in vivo* will provide greater understanding of the pathways that govern the AT2 regenerative program. Such understanding could be utilized in the treatment of lung trauma through drugs to promote regeneration or cell-based therapeutics to replace defective alveolar epithelial cells.

KEY WORDS: Lungs Aveolar Type Progenitor Stanford

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## Acute Isometric Exercise on Autonomic Function in African Americans

Presenter's Name: Rachel Branham
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Jonique Hightower, Isaias Julio

**Background:** The leading public health problem in the adult African American community is hypertension. Isometric handgrip training have been reported to lower blood pressure, however, the mechanism is not clear. **Purpose:** The present study investigated whether differences in cardiac autonomic function exist in normotensive young adult African Americans before and after an acute isometric muscle contraction. **Methods:** Six volunteers (n=4 women, n=2 men) served as the study participants. Power spectral analysis of heart rate variability (HRV) provided distributions representative of parasympathetic and sympathetic modulations and sympathovagal balance before and post-isometric exercise (at 30% maximum voluntary strength). Power spectra of R-R intervals within the 0.15- to 0.4 Hz range were defined as the high-frequency (HF) component of HRV representing parasympathetic modulation. The low-frequency (LF) component of HRV (0.04-0.15) is a mixture of both parasympathetic activity and sympathetic activity. Digitized R-R interval was recorded using the BioPac MP-100 data acquisition system (BioPac Systems, Inc., Goleta, CA) and sampled at 1000 Hz. After inspection of the R-R intervals the, Fast Fourier Transformation spectral analysis of the data was performed using Nevrokard neural software (Nevrokard Kiauta, d.o.o., Slovenia). **Results:** There was no significance difference

in HF compared between baseline and post-exercise condition (79 ± 4.4 vs. 70 ± 1.8 n.u.), nor in LF between conditions (16.6 ± 3.7 vs. 23.2 ± 2.2 n.u.). **Conclusion:** Isometric exercise failed to increase HF, which suggests that the antihypertensive mechanism of isometric training is not neutrally mediated.
Vernon Bond

KEY WORDS: Hypertension, Isometric Exercise, African-American, Autonomic, Funtion

## Immature Neuron Population in the Amygdala of Cognitively Declining Monkeys: an Alzheimer's Study

Presenter's Name: Honoree' Brewton
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Mark Burke, Roberta Palmour, Frank Ervin

**Background:** Alzheimer's disease, a form of dementia, causes problems with memory, thinking, and behavior. Although memory loss is not a direct cause of Alzheimer's, in normal aging, the brain experiences declines in memory abilities. The amygdala is critically involved as an indicator of implicit memory. It is well known that there is amygdaloidal neuron loss with Alzheimer's. **Hypothesis:** The immature neuronal population in the amygdala will be differentially affected based on the cognitive status. **Methods:** Aging monkeys (n=34) were housed in their naturalistic environment at the Behavioral Science Foundation, St. Kitts, and were tested every six months using a CANTAB (Cambridge Neuropsychological Test Automated Battery) touch-screen cognitive test commencing at the age of 15 years. Based on their performance, these monkeys were classified into one of three categories: a slow, steady decline in cognitive performance (Group 1); a rapid, persistent decline in cognitive performance (Group 2); and normal cognitive performance (control). Following the death of these subjects, their brains were removed, preserved in formalin, and shipped to the United States. Immature neurons were identified through immunostaining with doublecortin (DCX), a putative marker for immature neurons. **Results:** We report here a significant reduction in immature neurons in the amygdala only in the subjects that displayed rapid cognitive decline. **Conclusions:** The aim of this project is to investigate the differential expression of neurogenesis in the amygdala of these three groups. These data indicate that immature neurons may play a role in implicit memory deficits in aging and dementia.

KEY WORDS: Alzheimer's Disease, Amygdala, Nonhuman primates, Immunohistochemistry, Neurogenesis

## A Microbiomic analysis in African American with Colonic Lesions

Presenter's Name: Hassan Brim
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Hassan Brim*, Shibu Yooseph, Edward Lee, Zaki A. Sherif, Adeyinka O Laiyemo, Sudhir Varma, Manolito Torralba, Scot E. Dowd, Wimal Pathmasiri, Susan Sumner, Willem M. de Vos, Karen E. Nelson, Erwin G. Zoetendal, Hassan Ashktorab

**Background:** Increasing evidence suggests a role of the gut microbiota in colorectal cancer (CRC). However, no specific bacteria have been linked to its initiation or progression.
**Aim:** To analyze the gut microbiome in African Americans with colorectal lesions with the goal of detecting markers of diagnostic value. Materials & Methods: A metabolomic analysis was performed on fecal water extracts of 10 adenoma and 10 healthy subjects. We also analyzed DNA from these samples and from 10 CRC tumors and their matched normal tissues for their microbiota composition and genomic content. Metagenomic Linkage Groups (MLGs) were established and those with high discriminative power between healthy and neoplastic specimens were analyzed for their genetic content. Also, metagenomic reads from stool samples were mapped against bacterial genes from tissues and vice-versa to identify common markers with discriminative power. Results: The metabolomic analysis of adenomas revealed low amino acids content when compared to normals. The microbiota in both cancer vs. normal tissues and adenoma vs. normal stool samples were different at the 16S rRNA gene level. The metagenomic analysis led to 5 statistically significant MLGs in each set of samples. There was little overlap between the stool-based and tissue-based significant MLGs. Mapping stools reads to annotated tissue genes and vice-versa revealed a panel of 9 markers with statistically significant discriminative power between normal and adenoma samples. These markers identified with sequences from Streptococcus sp. VT_162. **Conclusion:** We defined MLGs with discriminative power among cancers vs. normal and adenomas vs. normals and identified 9 bacterial markers that can potentially be used as a panel for non-invasive CRC

KEY WORDS: Microbiomic, Metagenomic, Colon, Cancer, Diagnostic

## Collecting, Purifying, and Analyzing Bacteriophages (Phages)

Presenter's Name: Jessica Broaden
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Dr. Courtney Robinson

**Background:** Phages are viruses that infect bacteria. Phages are highly specific and typically infect one type of bacterium; the host bacterial cell used in this project was *Mycobacterium smegmatis*. The study of phages can lead to developments in treatments for diseases caused by antibiotic resistant bacteria. The objective of this study was to isolate a single phage and analyze its structure and genome. **Methods:** The protocol involved the collection of a soil sample, isolation and purification of the phage, and then molecular and structural analysis of the phage. Enrichment culture techniques were used to capture a phage from soil found near Greene Stadium on Howard University's campus. Spot and streak tests allowed for the selection of a phage containing plaque and purification of that plaque so only a single phage population was present. The phage titer and empirical tests led to the production of a high titer lysate with high phage concentrations for DNA isolation. Then, the viral DNA was extracted using various chemicals and enzymes. **Results:** The phage produced two, clear plaques measuring approximately 1 mm and 0.5 mm. **Conclusions:** Repeated purification tests verified the presence of two morphologies. The clear morphology confirms the lytic cycle. Through restriction enzyme digest, gel electrophoresis, and electron microscopy, the phage will be characterized; these results will help confirm that the phage is unique.

KEY WORDS: bacteriophage, phage, Mycobacterium smegmatis, plaque, high-titer lysate

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## Arthritis in the Cobb Collection

Presenter's Name: Regina Bruce
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Christopher Cross, Dr. Fatimah Jackson

Arthritis is the leading cause of disability in the United States affecting one in every five Americans. Currently, about 52.5 million Americans have been diagnosed with some form of arthritis; however, African Americans are amongst the highest population affected. This may be attributed to socioeconomic factors that limit African Americans from access to adequate health care. Arthritis puts African Americans at risk of developing chronic illnesses such as heart disease, diabetes, high blood pressure, and obesity. This study will focus on specimens in the Cobb collection with associated causes of death linked to arthritis, more specifically osteoarthritis (OA) and rheumatoid arthritis (RA). The individuals in the Cobb collection lived during the 19th to 20th century in the Washington metropolitan area. The historical context combined with preliminary analysis of the clinical records on these individuals indicates a labor intensive lifestyle that imposed stress and overuse of the joints. In order to substantiate these findings we will anatomical analyze the skeletons for increased bone density (presence of bone spurs) in addition to identifying arthritic genetic markers. This study will help inform clinicians and advance personalized medical treatments geared towards treating OA and RA in African Americans. It will also provide insight into the genetic ancestry of African Americans that can be used to educate and improve public knowledge regarding African American health.

KEY WORDS: osteoarthritis, rheumatoid arthritis, African Americans, Cobb Collection

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## Hearing Lost and Deafness and the Effects on Development

Presenter's Name: Ivory Bryan
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

This was a research study exploring the special effects on development in individuals with hearing loss and deafness. The importance of this study is to highlight how essential hearing is to language development, communication, and learning. Hearing loss or deafness can affect individuals in various ways, such that: reception and expression of communication, the language barrier affecting problems in learning and therefore reduces educational triumph, lack of communication skills can affect professional environment, and lastly the disability can affect self-conception. Having experienced hearing loss, one can relate to the difficulties the disability bring about. Study show that those individuals with mild occurrences of hearing loss is the most affected with learning developments. However, early diagnoses of hearing loss or deafness can provide help in developing in major daily tasks.

KEY WORDS: Hearing Loss, Deafness, Development, Special Affects, Auditory Problems

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### Public Opinion of African Americans in the Media-How do we view ourselves?

Presenter's Name: Brittany Burton
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Blake Newby, Giselle Johnson, Cache McClay, Erenee Champagne, Irene Wagner, Sarah Orihu, Desjoire Smith, Brea Simons

Today, black women have become more ubiquitous in media. Black women are portrayed in a myriad of fashions which range from powerful, strong, intelligent black women to overly sexualized, aggressive, money hungry, and violent. While African-Americans that watch media programming are aware that the roles we portray are not truly representative of Black people, as whole, individuals who are not exposed to culturally and diverse populations, may rely on programming to form their opinion about black women. The purpose of this study was to determine the perspective of participants of African American women presented in images. A total of 50 participants were presented with high profile images that ranged from figures represented on reality programming, scripted sitcoms, and public figures. The interviews will be analyzed to determine what if any themes exist in the public opinion of high profile images. Through qualitative research, this study will analyze the
Public opinion of high profile Black women in the media.

KEY WORDS: Public Opinion, High Profile African American Women in Media, programming

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### Pharmacological Treatment and Drug Unavailability for African Americans in Cobb Collection

Presenter's Name: Andrea Bush
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

As pharmaceutical practices progress and medicine continues to develop, the treatment, alleviation, and disappearance of both diseases and their symptoms are becoming more widespread. Throughout the emergence of the Cobb Collection, however, the availability of pharmacological treatment and research was limited to African Americans. These limitations not only arose from the lack of scientifically validated drugs for common diseases such as heart disease, cancer, and infectious diseases, but were caused by African Americans' inability to afford health care. Both the Great Depression of the 1930s and the racial and ethnic disparities in health care that were already prevalent left diseases untreated and health care unavailable. Through the study of drugs and their side effects, this research examines the historical availability of drugs from the 1940s to the 1960s. It not only examines diseases and what drugs were available and used throughout the time of the Cobb Collection to cure them, but assesses how the drugs of today could have impacted overall health during the time of the Cobb Collection

KEY WORDS: Cobb drug African Americans unavailability

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### Microglia: A Possible Therapeutic Target for Alzheimer's Disease

Presenter's Name: Kelley Butler
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Mark Burke

Alzheimer's disease (AD) is a common form of dementia characterized by impaired cognitive function and memory loss. The pathological hallmarks of AD include neurofibrillary tangles and amyloid-beta (Aβ) plaques. Microglia are the central nervous system's resident phagocytes that develop in utero. They naturally exist in an inactive, 'ramified', state evenly distributed through the healthy brain. In AD, microglia aggregate in areas where plaque burden is highest and they transition to an activated, 'deramified' state characterized by outstretched dendrites and the release of macrophage-colony stimulating factors and chemokines. We selected aged (16-25 yr-old) *Chlorocebus sabeus* vervets as models for AD because they develop Aβ plaques and dementia-like symptoms similar to those seen in human AD patients. Subjects were monitored for changes in cognitive function using the CANTAB cognitive testing battery. In our study, we utilize a free-floating immunohistochemistry staining method to avoid tissue damage while illuminating microglial aggregates in 50$\mu$m sections. First, we perform a methanol peroxidase quench to promote endogenous peroxidase activity and permeabilize cell membranes. Anti-Iba-1, a marker for activated microglia, is used followed by secondary antibody and ABC incubation. Iba-1 positive cells are then visualized by diaminobenzadine. Sections are mounted on gelatinized slides, dehydrated in graded ethanols and cleared with xylenes. Quantitative analysis of immunostaining in the hippocampus and cortex will be performed using a MicroBrightField StereoInvestigator analysis system. We're concerned with these structures because they are vital in memory formation and spatial

recognition. Possible correlations between cognitive function and deterioration and microglial burden can then be drawn.

KEY WORDS: Neurological disease; Alzheimer's Disease; Immune response; Microglia; Vervet

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## Surrogate Data Testing of a Commercial Heart Rate Variation Algorithm

Presenter's Name: Nicolette Cabbell
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

**Background:** Heart Rate Variability (HRV) is correlated with certain clinical diseases and reflects interactions between the sympathetic and parasympathetic nervous systems. Studies involving some interventions such as exercise and mental activity can produce confusing data. To improve our understanding of a commercial HRV program we applied a method of surrogate data testing. **Method:** This study did not involve human or animal experiments. Surrogate data was obtained by retrieving average daily temperatures for the District of Columbia for the period January 21, 2013-January 21, 2015. This data was treated as heart rates and used in a computer program to simulate electrocardiograms (ECG). These simulated rates were analyzed with Biopac's AcqKnowledge 3.9 Software's HRV algorithm. A frequency domain analysis produced frequency bands: very low frequency (VLF), low frequency (LF), high frequency (HF), very high frequency (VHF). Sympathetic/ vagal influences were derived. **Results:** The surrogate data when converted to beats per minute equated 14 minutes of ECG data. The analysis gave high peaks in VLF/LF bands. Sympathetic and vagal values were comparable to those reported in the literature. **Conclusion:** The Biopac HRV algorithm is not simply responsive to biological data. Changes (slow/fast) in a data series can be identified. The seasonal slow changes in temperature load the low frequency bands and resemble slow long-term changes in heart rates. The sympathetic/ vagal values reflect more rapid daily fluctuations in temperature and resemble rapid changes in heart rate produced by the autonomic nervous system.

KEY WORDS: Parasympathetic, Heart, Nerves, Sympathetic, Algorithm

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## How the eniirment affects our health

Presenter's Name: Ashley Canada
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

**Background:** In this abstract/ paper will express disparities with health and out environment what many underserved communities are exposed to on a daily basis, and describing current health disparities which are effecting ethnic/racial groups, evidence of past indications that are related to current disparities in ethnic/ racial groups, and concludes with encounters and answers to lessen these disparities with in our everyday environment. Objective: A community coalition on how the environment within urban communities are more health hazardous than in white more upscale communities from water to air pollution. When speaking in regards to the disparities in health and health care have been found that around two periods. Indications have prescribed in the past health disparities in ethnic and racial sections or sub groups continue to be this on- going challenging, with little to no progression made to eradicate them over time. **Method:** There was a study that was conducted in 2009 of 173 east Harlem and 152 Upper East side or stores and markets, that was stocked, what kind of food was placed in the urban stores, and who had fresher and less chemically processed food. When it comes to anything Ethnic and racial disparities exist for numerous and more multifaceted motives. On the other hand, the newer indications are wanted to find and conclusion to many past problems. In 1993 there was a Framing the debate and discussion around the "distinctiveness related to disparities in health and health care is a necessary beginning in eliminating unequal burdens in health status. Focusing efforts to eliminate unequal burdens can strengthen existing solutions and policy formation related to this issue." **Results:** According to the census of 2000, there were many indications that the Demographics America is fluctuating. According to the 2000 Census data, more than 25% of the U.S. population is composed of ethnic minority groups: 12.1% African American, 9% Hispanic, 2.9% Asian, and 1.0% Native Americans. If current birth and immigration trends continue, it is expected that the Hispanic population will increase by 21%, Asian 22%, African-Americans 12% and the White population 2% by the year 2040 (U.S. Bureau of the Census, 2000). **Conclusion:** A greater effect needs to be mad to make it more accessible for clearer air and better more organic less chemically processed food, in more urban communities. Demographic variations pooled with the fact that many minorities are overly drain with disease suggest that health and the environment systems in the forthcoming will experience a much more diverse customers and sicker population, if this does not change.

KEY WORDS: Health, Urban Communities, Chemicals within foods, Changes, Comparisons

## Surface modification of HA particle to improve the mechanical strength of PLA/HA composites

Presenter's Name: Nan Cao
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Tongxin Wang, Yanda Lei, Laurence C Chow, James W Mitchell

**Background:** While metallic implants such as stainless steel and titanium alloys are widely used implants for the orthopedic purpose, there are still several drawbacks limiting their extensive usage, including stress-shielding effect, wear and fatigue problems, interference with diagnostic instruments such as MRI. Polymer composites consisting with an FDA approved polylactide (PLA) polymer matrix and osteoconductive hydroxyapatite (HA) filler is a good alternative to avoid the above concerns. Generally, PLA/HA composites were prepared from unmodified HA or silane-modified HA, which usually led to less mechanical strength of the composites or unsatisfactory dispersion of filler in polymeric matrix. **Methods:** This project focused on developing alternative strategies to modify HA surface in order to improve HA dispersion or mechanical strength of composites. HA particles were modified with (a) surface grafted polymerization (SIP) directly from HA surface; (b) phosphonate molecules followed with SIP; (c) carboxylate molecules followed with SIP; (d) silane; (e) no modification at all. The PLA/HA composites specimens were fabricated by a Haake Polylab OS RheoDrive 7 workstation followed with a Haake Minijet inject modeling. **Results:** (1) SIP grafted HA particles showed improved dispersion in solvent, while SIP combined with phosphonate modification showed best dispersion. (2) PLA/HA composites prepared from phosphonate modification combined with SIP showed stronger tensile strength than those from other strategies, indicating the improved dispersion of the filler in PLA and the interfacial adhesion. **Conclusion:** Phosphonate modification combined with SIP could improve the dispersion of the filler in PLA and the interfacial adhesion within PLA/HA composites, thus could improve the mechanical strength. This material can be a promising substitute for bone implant because of its bioresorbable property, less stress-shielding effect and improved mechanical strength.

KEY WORDS: PLA/HA composites, surface modification, osteo materials

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## Disruption of Nrf2 increases brain amyloid beta plaque load in a mouse model of Alzheimer's disease.

Presenter's Name: Priscilla Carpenter
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Mecca McPherson, Jahn O'Neil, Joanne Allard

**Background:** Activation of the Kelch-Like ECH associated protein1(Keap1)/nuclear factor erythroid 2 related factor2(Nrf2)/antioxidant response elements (ARE) pathway is known to provide preventative and protective effects against oxidative stress by initiating the transcription of cytoprotective genes. Recent studies have linked inadequate activation of the Keap1/Nrf2/ARE pathway to several neurodegenerative disorders including Alzheimer's disease (AD). METHODS: In this study we use a mouse model of AD (APP+/PS1+ mice) to investigate the effects of Nrf2 deficiency on the progression of AD-like pathology. APP+/PS1+ mice develop amyloid beta (Aβ) plaque deposition in their brains beginning at 6 months of age, as well as a dramatic age-related increase in microglial activation, compared to wild-type (WT) mice. These mice were crossed with genetic Nrf2 knockout mice to produce a mouse model of AD which does not produce functional Nrf2 proteins (APP+/PS1+/NRF2-). Enzyme-linked immunosorbant assay (ELISA) was used to determine serum levels of Aβ42 proteins. A histological stain (Congo red) was used to visualize Aβ deposition in brain tissue which was quantified by stereological analysis. **Results:** Disruption of Nrf2 resulted in increased Aβ plaque load in APP+/PS1+/Nrf2- mice compared to APP+/PS1+ mice; however onset age of plaque deposition was not affected. Blood serum levels of Aβ42 trended toward decreased levels in APP+/PS1+/Nrf2- mice. **Conclusion/Disscusion:** These results indicate that the rate of progression of Alzheimer's disease may be significantly increased without the maintenance of Nrf2 function. Targeting and stabilizing the Nrf2 pathway may significantly slow the progression of AD.

KEY WORDS: Nrf2, Alzhiemer's disease, amyloid beta, transgenic mice

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## Cultured Eosinophil Supernatants are Toxic to Prostate Cancer Multicellular Tumor Spheroids

Presenter's Name: Shakila Carroll
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Paulette Furbert-Harris

At Howard University two androgen-dependent prostate cancer cell lines derived from, African American patients (IRB approved), HPC1L and HPC8L were used in a multicellular spheroid tumor (MTS) model to investigate the effect of Eosinophil cultured supernatants. Eosinophils play a key role in allergic inflammatory responses in humans. However they produce granules which contain toxic proteins that are released upon activation of the cell. We hypothesize that cultured activated Eosinophils release proteins into the culture supernatant which inhibit the growth of the HPC1L and HPC8L cells *in vitro*. HPC1L and HPC8L were cultured over a 72 hour period to develop MTS, then treated with serial dilutions of cultured supernatants for 5 to 8 days. HPC8L demonstrated well developed spheroids unlike HPC1L. At day 5 HPC8L MTS had developed a necrotic core surrounded by a zone of quiescent cells and outer zone of proliferating cells. The necrotic cores of the treated spheroids were larger than that of the controls for all dilutions tested. This is a unique observation as it was expected that death would occur in the proliferating zone. The neet concentration was the most effective of all the dilutions tested. Future research will involve testing supernatants collected greater than 24 hours and creating MTS single cell suspension to determine viability of cells in test and control. These observations suggest potential role for Eosinophils in host anti-cancer response.

KEY WORDS: Tumor, spheroids, cell, Prostate cancer, Eosinophil

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## Discovery and Characterization of Bacteriophage Cass

Presenter's Name: Richawna Cassie
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

**Background:** Bacteriophages are viruses that infect bacteria cells. They are ubiquitous and found everywhere their host cell is found. In the Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science (SEA-PHAGES) program we examined various bacteriophages that infect *Mycobacterium smegmatis* mc2155. Methods: A soil sample was obtained from the coordinates 38.92 N, 77.019444 W. Phages were extracted from the sample via direct plating, and a single population was purified via streaking. The concentration of phage particles was determined via titer assay of a serial dilution. Using the titer, calculations were made to generate 5 web plates of 85% or more lysis to obtain a high titer lysate. The phage's DNA was then extracted. Results: A phage, named Cass, was discovered using these procedures. The phage produces clear plaques that are 1.5mm in diameter and has a titer of 1.33 x 1010 pfu/mL. Conclusions: Based on the plaque morphology we conclude that Cass is a lytic phage. The next steps will be to cleave the phage DNA with restriction enzymes via gel electrophoresis and examine the phage structure via electron microscopy. *Smegmatis* is closely related to *Mycobacterium leprae* and *Mycobacterium tuberculosis* which are responsible for causing leprosy and tuberculosis, respectively. Research with the phages that infect *Mycobacterium smegmatis* will help advance studies in each of these diseases.

KEY WORDS: undergraduate research, SEA-PHAGES, bacteriophage, mycobacterium smegmatis, discovery

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## Immature Neuronal Loss in HIV-Infected Infant Primates

Presenter's Name: Aidan Charles
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Aidan Charles1, Hayley Brown1, H Carryl1, K VanRompay2, K Abel3, MW Burke1*

In the developing world, namely sub-Saharan Africa, an estimated 1,500 children under the age of 15 years become infected with HIV-1 each day. Infants are more susceptible to HIV related neurological impairments than adults with an estimated 70% of pediatric HIV-infected patients displaying neurodevelopmental abnormalities. Immature immune responses are certainly a main cause for reduced control of viral replication in infants. The non-human primate offers a valid model because infant macaques show similar immune system and neuroanatomical development to human infants. We have previously shown significant neuronal reductions in the hippocampus as well as reduced immature neurons in the dentate gyrus. The current study takes advantage of ongoing pediatric SIV pathogenesis and vaccine studies to test the hypothesis that pediatric SIV infections reduces immature neurons in the amygdala and piriform cortex.

KEY WORDS: Neurology, HIV/AIDS, Developmental Biology, Physiology, Microbiology

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### Isolation of Bacteria from Human and Kitchen Waste for Biogas Production in Bahir Dar, Ethiopia

Presenter's Name: Tsipporah Christopher
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Anaerobic digestion treatments have often been used for biological stabilization of solid wastes. Recently, anaerobic digestion of solid wastes has attracted more interest because of current environmental issues in Ethiopia, most especially those concerned with global warming and waste renewal. Classification and analyses of the microbes found within waste samples will be necessary to determine if the sludge left after digestion can be reused as fertilizer in real-world application. Analyzing three samples of human waste (HW) and kitchen waste (KW) at ratios of 100% KW preanaerobic digestion, 90% HW and 10% KW, and 10% HW and 90% KW postanaerobic digestion. I hypothesized a higher bacterial count postanaerobic digestion as opposed to pre-digestion. Culture Methods include a serial dilution, preparation of selective media, Violet Red Bile Agar (VRBA), and pour plating. Plates were incubated at 42°C to promote coliform bacterial growth. Contrary to what was predicted, the bacteria after digestion in the reactor lacked microbial growth, while the kitchen waste before digestion contained insignificant CFUs/g. Perhaps in future investigations, I can incubate the bacteria under different inoculation parameters by using a spread plate method to yield significant results. To protect human health and natural environment from waste problems in Bahir Dar and worldwide, further research needs to be done, in order to significantly prove that the sludge left after digestion can be safely used as fertilizer for crops through proper classification and analysis of microbial growth.

KEY WORDS: Biogas, anaerobic digestion, waste renewal, environmental microbiology

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### Investigating the Stroke Belt

Presenter's Name: Cameron Clarke
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Fatimah Jackson, Latifah Jackson, Bradford Wilson

The high frequency of hypertension and stroke among Carolina Coast region African Americans, even in comparison to white Americans of similar diet and socioeconomic status suggests that there may be a contributing ancestral component. This study seeks to identify the region's founding groups using ethnogenetic layering and characterize the microethnic substructure of each founding continental aggregate. The largest component (40%} of the enslaved Africans that were brought to the Carolina Coast originally came from the hinterlands of West Central Africa, a region with a very low bioavailability of salt. Ethnogenetic layering will be applied to reveal the microethnic groups of the West Central Africa hinterlands with historical links to the Carolina Coast region that maybe the sources of relevant polymorphisms contributing to the etiology of hypertension and stroke in the Carolina Coast region. Furthermore, I will identify an array of sodium conserving genes may have been selected for in West Central Africa over thousands of generations of exposure to sodium scarcity. The historically recent 400 years of the transatlantic trade in enslaved Africans from this region and their transport to the lowland Carolinas via the Middle Passage (an additional source of selection for electrolyte conservation}, exposed these forced migrants to the Americas to a diet disproportionately high in sodium. The people's ancestral background may now predispose them to an early- onset, salt-sensitive hypertension and an increased susceptibility to stroke.

KEY WORDS: Stroke Belt, Hypertension, African-American, Slavery, Salt

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### Lentiviral shRNA Knockdown of Eosinophilic Galectin-10/ Charcot-Leyden Crystals: A Novel Approach to Cancer Immunotherapy

Presenter's Name: Christine Clarke
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Clarence Lee, Paulette Furbert-Harris

Despite the discovery of promising anti-cancer immunotherapies, curative outcomes remain elusive. We have investigated eosinophils as a potential anti-cancer effector cells, and have reported the ability of their isolated granular proteins to inhibit prostate and breast cancer cell growth *in vitro*. In certain tumors, tumor-associated eosinophilia is marked by the deposition of a prominent eosinophil protein, galectin-10, better known as Charcot- Leyden crystal protein. In addition, proteome analysis has demonstrated galectin-10 expression in regulatory T lymphocytes (Treg) (cells that are major players in regulating anti-cancer immune responses); and siRNA knockdown studies, its role in maintaining Treg anergy and suppression of CD4+ T lymphocytes. However, the protein's prognostic significance, despite having been documented at nu-

merous tumor sites, remains speculative. In the present study, we have elected to create a galectin-10 knockdown eosinophil sub-line, by transfecting an eosinophilic cell line, established in our laboratory, with shRNA lentiviral transduction particles and, thereafter, conduct further studies to examine eosinophilic galectin-10's potential to increase T-cell homing to tumors. Eosinophils were transfected with galectin-10-specific lentiviral vectors; puromycin used to select stable transductants; and PCR and immunofluorescence, to determine transduction efficiency. We show that, firstly, a galectin-10-specific shRNA lentiviral particle effected 100% gene silencing; and, secondly, this eosinophil clone lacked granular and cytoplasmic protein expression. Galectin-10-knockdown-eosinophils provide a useful model for investigating galectin-10's ability to regulate T lymphocyte proliferation and traffic to tumors; and lend credence to the protein's application as a singular or combinational approach to other anti-cancer therapies.

KEY WORDS: Cancer, Eosinophil, Charcot-Leyden Crystal Protein, Galectin, Lymphocyte

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### Ecoutourism may be the help we need

Presenter's Name: Kyndal Coote
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Over the course of class discussions this semester, I have further realized how dependent society is on natural resources. Recently with the emergence of technology in the twenty-first century, advancements in technology have made life easier for many people. Unfortunately some of these advancements have catered to an increasingly selfish generation of people. If people lack a general appreciation for something it is difficult to imagine them changing their behaviors to help sustain something that is of no importance. Many Americans have developed a skewed environmental worldview due to lack of exposure because in today's society, expressing concern and appreciation for the world we live in is considered taboo. I believe through to process of redirecting the focus away from technology and towards nature can be made possible through the education of Ecotourism. In 1990 the world's first ecotourism organization known as The International Ecotourism Society was born as an expanding sector of tourism. Ecotourism is about uniting those who feel passionate about conserve natural resources, community, and sustainable travel. The idea of Ecotourism should be introduced to children, especially underprivileged children in their learning environment as early as elementary school. If children learn to love their planet they will be more likely feel obligated to protect and preserve what the planet has to offer before what we take for granted can only be explained to our great-great-great grandchildren through pictures

KEY WORDS: ecotourism environmental sustainability impact

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### The Relationship between Study Preparation and First Attempt Pass Rate on the National Physical Therapy Licensure Examination for HU Graduates from 2009 to 2013

Presenter's Name: Rosa Crawley
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Revenda Greene, Pamela Brown-White, Senora Simpson

**Introduction:** Graduates of Physical Therapy (PT) programs must pass the National Physical Therapy Examination (NPTE) in order to practice. The first attempt pass rate is important for the graduate and the academic program. This study examined the relationship between post graduate study preparation and first time pass rate on the NPTE for Howard University PT graduates. **Methods:** Pre- and post-admission grade point average and the results of a questionnaire were analyzed to identify the potential factors which were predictive of first attempt pass rate. Howard University PT graduates from 2009 to 2013 were administered the IRB approved, researcher developed, questionnaire via email. **Results:** The survey was sent to 92 graduates. There was a 47% response rate (43/92). A bivariant analysis of the survey results determined that there was not a strong correlation between the following variables: types of study material; time spent studying; types of practice tests; and number of practice tests taken, with the first attempt pass rate. The variable, hours per week spent studying, was shown to have a statistically significant relationship with passing the NPTE on the first attempt. **Conclusion:** The variable, "hours a day spent studying," was shown to have a positive and significant relationship with first attempt pass rate for the NPTE. Further research is needed to increase the statistical significance, perhaps by increasing the sample size and seeking to determine the possible impact of other variables on the ability of HU graduates to pass the NPTE on the first attempt.

KEY WORDS: Physical Therapy, NPTE, first attempt pass rate, predictors

### Investigating Mental Health Phenotypes and their underlying Genetics in African Americans using an in silico Approach

Presenter's Name: Christopher Cross
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Latifa Jackson, Ph.D. 3, Fatimah Jackson, Ph.D.2,4 and Marjorie C. Gondre-Lewis, Ph.D.1

Among American populations, African Americans represent one of the most marginalized in terms of their health seeking behavior and access to mental health care. This has led to a deficit in studies that have characterized African American mental health phenotypes and their underlying genomics. We propose to use both *in silico* and molecular genomics approaches to address the extent and amount of functional genetic variation that is contributing to mental health phenotypes in a subset of individuals from the Cobb Collection. The groups include an African American population with associated brain causes of death (abCOD), a European American population with abCOD, and a non-abCOD population for control. Using bioinformatics, candidate gene clusters have been identified which contain relevant genes for schizophrenia, depression, and bipolar disorder. We will examine these genomic clusters for mental health in the Cobb Collection subset using a newly developed technique for isolating ancient DNA (aDNA) with high purity. Once the aDNA is extracted and our gene regions of interest are sequenced we will generate a polymorphism table for each group and compute their allele frequencies. Typing polymorphisms and region will allow us to evaluate the allele frequencies which have changed in the population. We expect minor differences on the distribution of populations due to natural selection or mutation but we hope to detect significant difference due to environmental impacts on our cohort. We will statistically analyze for significance using an ANOVA/t-test comparing the groups to one another in addition to modern population data.

KEY WORDS: Genetic, Neuroscience, Mental Health, Africa American, Bioinformatics

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### Does Size Matter? Fecundity and Longevity in mcgeeSymmetrischema lavernella (Lepidoptera: Gelechiidae)

Presenter's Name: Jalyse Cuff
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Stephanie Cruz-Maysonet

*Symmetrischema lavernella* (Gelechiidae) is a phytophagous moth with two larval feeding strategies. Caterpillars adopt a budworm strategy by feeding on the anthers and ovary of a small flower bud or a frugivore strategy by feeding inside a developing fruit. Only one of these strategies is adopted by a caterpillar as only one structure is necessary to complete development. Pupal weight, which is a good predictor of adult size, is 33% greater for frugivores than budworms on average. In many insects bigger body sizes offer an advantage to adult performance. Does being bigger benefit *S. lavernella*'s adult performance? This study addressed this question by evaluating the effect of adult body weight on fecundity and longevity. Females (n=50) were allowed to mate for 48 hours and the total number of eggs laid was recorded after 5 days. Twenty six of these females and eight virgin males were followed until death to record longevity. Fecundity showed no significant response to adult female body weight and the number of eggs laid varied between 1 and 100. This large variation in the number of eggs laid suggests it may be more appropriate to measure fecundity over a female's lifespan. By the end of data collection not enough individuals had died to allow statistical analysis. For the six individuals that died, life span ranged from 16 to 25 days. Thus, further research is needed to determine the role of body size on adult performance and better understand the consequences of the budworm and frugivore feeding strategies.

KEY WORDS: Symmetrischema lavernella Gelechiidae feeding strategies

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### Determining microbiota composition and presence of Plasmodium species in Ethiopian Anopheles mosquitoes

Presenter's Name: Ennessa Curry
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Ingrid Harris, Tiffany Clinton, Chanda Macias, Winston Anderson, Meshesha Balkew, Courtney Robinson

**Background:** The female *Anopheles* mosquito transmits *Plasmodium*, the pathogens that cause malaria. The central hypothesis driving this project is that the mosquito midgut microbiota influences the ability of *Anopheles* to transmit *Plasmodium*. The work presented here contributes to testing the hypothesis that *Anopheles* that contain *Plasmodium* have different microbiota than non-carriers. **Methods:** The DNA extracted from the salivary glands and abdomens of 112 *Anopheles* mosquitoes will be used to establish microbiota structure via sequencing of the 16S rRNA gene and screened for the presence of *Plasmodium* by nested polymerase chain reaction (PCR). The initial PCR will detect the presence of *Plasmodium*. PCR products from samples that are positive for *Plasmodium* will undergo additional rounds of PCR that will detect the DNA of *Plasmodium falciparum*, *Plasmodium vivax, Plasmodium malariae,* or *Plasmodium ovale*. The presence of bands of specific sizes will indicate the presence of the *Plasmodium* species. PCR controls will include DNA extracted from cultures of the *Plasmodium* species and a water control. **Conclusions:** We are in the process of testing primer sets against known *Plasmodium* DNA and expect that 0.3-3.0% of our samples will be positive for *Plasmodium* based on published results (Animut, et al. 2013. *Malaria Journal*. 12:76-86). In addition, we will collect more *Anopheles* mosquitoes from Ethiopia in summer 2015 in order to robustly test our hypothesis.

KEY WORDS: Anopheles, Plasmodium, malaria, microbiota, Ethiopia

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## The Biochronicity of Regulatory Networks during Cellulose Fermentation in Neurospora Crassa

Presenter's Name: Miah Davis
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Dr. Justin Biffinger, Dr. Allison Cockrell, Dr. Russell Pirlo, Dr. David Babson, Dr. Kathleen Cusick, Dr. Carissa Soto, Miss Emily Petersen, Miss Miah Davis, Prof. Christian Hong, Dr. Kwangwon Lee, Dr. Lisa Fitzgerald

Ethanol is the most prevalent biofuel used worldwide, and the demand for this product is increasing rapidly. Bioethanol can be generated by processing lignocellulosic biomass, but this is a difficult process and the current treatments are inefficient. The fungus *Neurospora crassa* is a viable candidate for creating a single stage conversion system for cellulosic material into ethanol. This organism produces enzymes required for biomass decomposition, and utilizes sugars (glucose, xyulose) for fermentative pathways. Little is known about the regulation of these two seemingly independent pathways, and the intricacies of how to increase the efficiency of ethanol output from *N. crassa*. The rate of ethanol production under these conditions is much lower than in anaerobically grown *N. crassa*. This suggests a link between circadian rhythms and aerobic ethanol generation, but has not been shown experimentally due to a lack of cellular regulatory data coupling anaerobic cellulose fermentation to aerobic cellulase production. The program, therefore, was designed to correlate circadian rhythmicity, gene expression, and cellular regulatory elements to cellulose-derived bioethanol production from *N. crassa* and its mutants when cultured in chemostats with defined temperature and dissolved oxygen concentrations. My specific role within this program was to collect sufficient data from the chemostats and the use of other lab equipment to formulate a protocol for the growth of *N. crassa* and establish circadian rhythmicity.

KEY WORDS: Molecular Biology Cell Biology Biotechnology

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## Memory difficulties and sitting screen time in the elderly

Presenter's Name: Isaac Dodd
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Richard F Gillum, Julius S Ngwa, Isaac M E Dodd, Robert Solomon, Thomas Obisesan

**Background**: Lack of physical activity and exercise is associated with poorer memory and a greater risk of dementia and mortality in the elderly. Daily hours spent sitting or viewing TV is associated with adverse physical health outcome and mortality. Studies associating sitting and memory are lacking. We examined data from a national US survey to evaluate the hypothesis that increased daily sitting hours is associated with greater prevalence of difficulty with memory and confusion in persons aged 60 years and over. **Methods**: In NHANES 2005-2006 survey, participants were asked the following: (1) "{Are you/Is SP} limited in any way because of difficulty remembering or because {you/s/he} experience{s} periods of confusion?" (2) "Over the past 30 days, on average about how many hours per day did {you/SP} sit and watch TV or videos?" (3) "Over the past 30 days, on average about how many hours per day did {you/SP} use a computer or play computer

games?" TV/video and computer hours were summed to estimate sitting screen-hours. We assessed the association of sitting screen-hours and memory/confusion in persons aged 60 years and over. **Results**: Among 1,356 persons with complete data, 194 (14%) reported limitations due to memory/confusion. The median number of screen-hours was 3 per day. Among persons with memory/confusion problems, the mean screen-hours was 3.28 compared to 3.10 in others (p=0.27). In a logistic regression model controlling for age, gender, race and fair/poor health status, screen-hours was not significantly associated with memory/confusion problems: odds ratio 1.04 (95% confidence interval 0.96-1.13). Persons with >3 screen-hours per day had odds ratio of 1.16 (0.84-1.59) relative to others. **Conclusions**: In persons aged 60 and over, more hours sitting before a screen was not significantly associated with more difficulty with memory/confusion. Studies in larger samples may be warranted.

KEY WORDS: sitting, memory, Epidemiology, social and behavioral, dementia risk factors

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## Cardiac involvement in granulomatosis with polyangitis (c-ANCA Vasculitis)

Presenter's Name: Sirisha Donekal
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Charu Gandotra, MD

**Introduction:** In this case report, we present a patient with cardiac involvement of c-ANCA vasculitis. **Case presentation:** A 66 year old patient with past history of severe symptomatic bicuspid aortic valve (AV)stenosis, status post AV replacement with Carpentier Edwards Magna bioprosthetic valve 2 years ago presented with a history of chest pain, bilateral leg edema and generalized skin rash. ECG showed sinus tachycardia and nonspecific intra-ventricular conduction delay. A 2D echocardiogram showed ejection fraction of 45-50%, mild AV sclerosis without stenosis, AV area of 2.4 cm2, AV mean gradient of 8.19 mm Hg. During the hospital course, patient was diagnosed with c-ANCA positive granulomatous polyangitis with rapidly progressive crescentic glomerulonephritis requiring hemodialysis. On day 15, he developed bradycardia and complete heart block requiring permanent pacemaker insertion. Patient continued to have temperature spikes despite repeated negative blood cultures. A Transesophageal echocardiogram, performed on day 50 to exclude endocarditis as etiology of recurrent fevers in presence of immunosuppression showed moderate aortic stenosis, with additional 2-D echocardiogram images showed an AV area of 1.4 cm2, AV mean gradient of 22.3 mm Hg, consistent with moderate subacute AV stenosis, likely due to thrombosis. In this case report we discuss the unusual presentation of granulomatous polyangitis and the likely pathogenesis of aortic valve thrombosis. **Conclusion:** This is a rare manifestation of granulomatous polyangitis in a patient with bioprosthetic AV in terms of older age of onset, association with complete heart block and subacute bioprosthetic AV stenosis.

KEY WORDS: Cardiac, Polyangitis, Vasculits, Valvular abnormalities, heart block

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## Enterprise Throughput as a Measure of Efficiency in Unicondylar Knee Arthroplasty

Presenter's Name: Lawrence Enweze
Classification: Professional Student
*Presentation Type: Poster Presentation*

**Background:** Unicondylar knee arthroplasty was once thought to be an in-patient surgical procedure. However through new surgical techniques and strict pre- and post-operative protocols, surgeons have been able to release their patients the same day after surgery with minimal reports of peri- or postoperative complications. These techniques and protocols also allow for a reduction in the time that the patient is in the operative area. Increased efficiency due to a decrease in throughput time potentially leads to shorter hospital stays for the patient and a reduction of hospital expenses for a procedure. Aim: This study aims to evaluate unicondylar knee arthroplasty procedures done in an outpatient surgical center in contrast to procedures done in an inpatient hospital setting and measure efficiency through average total enterprise throughput time. Methods: Between January 2006 to May 2013, 756 patients underwent a primary medial unicondylar knee arthroplasty under Dr. J. Mandume Kerina. 255 patients underwent the procedure in an outpatient orthopaedic surgical center under the surgical center's protocol and 501 patients underwent the procedure in a community hospital under the hospital's protocol. Times were recorded of the patients entering and leaving the ambulatory surgical unit (ASU), operating room and post-anesthesia care unit (PACU). The times were used to calculate a total enterprise throughput time, which in this study was used as a measurement of efficiency.
Results: The average total enterprise throughput (TET) time was 47% longer in the hospital setting than in the outpatient surgical center. The hospital's average ASU time (68% longer) and average PACU time (94% longer) made up the vast majority of the difference in efficiency as measured by

TET. The average time in the operating room showed the most consistency, only 5% longer in the hospital setting. Conclusion: Unicondylar knee arthroplasty procedures were more efficient in the outpatient surgical center due to shorter ASU and PACU stays. The surgical center's strict pre- and post-operative protocol may have been a contributing factor in increased efficiency. Implementing the same protocol in the community hospital may lead to an increase in efficiency and potentially a decrease in the cost of the procedure

KEY WORDS: Medicine, Surgery, Orthopaedics, Hospital-Efficiency,

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### Application of the Disposition Model to Correlated Binary Outcomes in the Presence of Ignorable Missing Data: A Likelihood-based Approach

Presenter's Name: Francis Erebholo
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Victor Apprey, Paul Bezandry, John Kwagyan

The problem of incomplete data is also a common phenomenon in research that adopts the longitudinal design approach. Bonney introduced the term disposition to represent the conditional probability of the outcome of a measure of an individual given a preceding measure has the attribute of interest and constructed a full likelihood based model that starts with a random effects formulation and then utilizes the moment series representations in its construction. If incomplete observations are present in the longitudinal data structure, ignoring it could lead to bias in statistical inference and interpretation. We adopt the disposition model and extend it to the analysis of longitudinal binary outcomes in the presence of monotone incomplete data. Two separate models, for the response and missingness are assumed. The response variable is modeled using a conditional logistic model while we combined a Markov's transition model and a logistic regression model to develop the dropout process, when the non-response mechanism is ignorable. MLE methods is used for parameter estimation. Data from rheumatoid arthritis clinical trials is presented to illustrate the application of our approach.

KEY WORDS: incomplete data, Longitudinal data, missingness, ignorable, dropout mechanism,

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### A Study of Green Coffee Bean Extract on Resting and Exercise Energy Metabolism in Obese African-American Women

Presenter's Name: Micah Ernst
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Dr. Vernon Bond

**Background:** Obesity is a health disparity focus among African-American women. There are major interests in nutraceuticals that may aid weight lost programs. Green coffee bean has been reported to influence fat metabolism. **Purpose:** The aim of this study was to investigate the effects of green coffee bean extract on resting metabolic rate (RMR) and energy expenditure during exercise in obese African-American women. **Methods:** This study was a randomized crossover study on five obese volunteers. The green coffee extract dose consisted an 800 mg ingested twice a day for 7 days. A similar placebo dose was used as the experimental. Resting metabolic rate was assessed over 60 minutes and exercise energy expenditure was measured over 30 minutes. **Results:** There were no significant differences for resting energy expenditure between the control and dietary green coffee bean extract supplement (1522 ± 80 *vs*. 1484 ± 92 kcal/24 hr) (P>0.05). Similarly, net energy expenditure during 30 minutes of exercise at 50% peak oxygen uptake was not significantly different between control and green coffee bean extract condition (130 ± 4.2 *vs*. 134 ± 7.7 calories) (P>0.05). **Conclusion**: Our findings suggest that in obese African-American women, dietary intake of green coffee bean

KEY WORDS: Green Coffee Bean Energy Metabolism

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### Intracellular trafficking of KATP channels: The role of EHD2

Presenter's Name: Onyekachi Ezeibe
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Kundan R. Jana, Monique N. Foster and William A. Coetzee

**Introduction:** In the heart, opening of ATP-sensitive K+ (KATP) channels, composed of Kir6.2 and SUR2A subunits, has a protective role against ischemic insults. However, we found that the KATP channel is internalized during ischemia, which may minimize its protective role. With proteomic approaches, we found that a novel class of ATP-dependent

C-terminal EH-domain (EHD) trafficking proteins interacts with KATP channels. **Methods and Results:** We previously found that Kir6.2/SUR2A KATP channels localize to LAMP2-positive late endosomal and lysosomal intracellular vesicles. We also found that a dominant negative EHD2-G65R mutant disrupts KATP channel intracellular distribution. Moreover, EHD2-G65R enhanced the rate of endocytosis of Kir6.2/SUR2A KATP channels, whereas wild-type EHD2 stabilizes surface expression. We transiently transfected Human Embryonic Kidney (HEK) cells and Chinese Hamster Ovary (CHO) cells with Kir6.2/SUR2A cDNAs. The Kir6.2 subunit was engineered with mCherry fused to its C-terminus to facilitate detection. To examine KATP channel subcellular distribution, cells were co-transfected with markers of specific intracellular trafficking compartments: GFP-Rab5 (early endosomes), GFP-Rab7A or GFP-Rab9 (late endosomes), GFP-Rab11 (endocytic recycling compartment; ERC) or GFP-LAMP1 (lysosomes). We analyzed the co-localization of these proteins with Kir6.2-mCherry by using fluorescence and confocal microscopy. Under steady state, KATP channels were found in late endosomes and the ERC. A novel finding was that KATP channels traffic through the ERC, as evidenced by their accumulation in this compartment by a dominant-negative GFP-Rab11 construct. Interestingly, EHD2-G65R also accumulated KATP channels in the ERC, suggesting that EHD2 normally controls exit of KATP channels from the ERC on route to the plasma membrane. Ongoing studies also identified a role for EHD2 in stabilizing the surface expression of KATP channels by inhibiting their rate of endocytosis. **Conclusion:** Our findings demonstrate that KATP channel endocytic recycling is a regulated process. Moreover, our data suggest that the EHD2 protein has a stabilizing effect on surface KATP channels. These findings are likely to be highly relevant in human disease such as cardiac ischemia and diabetes, since KATP channels in the pancreatic β-cells regulate insulin secretion.

KEY WORDS: KATP, EHD2, Intracellular, Trafficking, Endocytic Recycling

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### Computational Modeling and X-Ray Diffraction Studies to Treat Epilepsy

Presenter's Name: Fortune Ezemobi
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Mariano Alexander, Anthony Wutoh, Ivan Edafiogho, Henry North, Ray Butcher

**Background:** Approximately 200,000 new cases of seizures and epilepsy occur each year with an estimated annual cost of $17.6 billion in direct and indirect costs. Epilepsy and its resultant seizures affect nearly 3 million Americans of all ages. Despite the numerous therapeutic options on the market, approximately 1.5 million individuals whose epilepsies are not adequately controlled experience adverse (and some toxic) side effects. Enaminones and their derivatives synthesized in our laboratory have played a major role in anti-epileptic activity. Enaminones are also reported to possess anti-inflammatory, antimalarial and antibacterial properties. For this study we will provide a structural comparison of enaminones using X-ray diffraction studies and computational modeling. **Methods:** Recently identified proteins and the binding model proposed by Edafiogho et al. will be used to provide a rational explanation to anticonvulsant activity. We will compare X-ray diffraction data and computational modeling properties of selected enaminone compounds. The crystal structures were examined using X-ray crystallography to identify any conformational similarities and or dissimilarities. The electronic properties of these compounds were also analyzed, using the Jaguar Computational software package. The combined data was correlated with the results from previous pharmacological studies, obtained at the National Institutes of Health. **Results:** The results suggest that structural considerations are not the main determinant for activity. Vinyl-substituted enaminones, which tend to adopt the alternate configuration, are shown to be active in animal models similar to their un-substituted counterparts. **Conclusion:** X-ray diffraction and computational modeling studies has provided interesting results in the quest for the use of enaminones in anticonvulsant therapy. The molecular electronic properties of enaminones have a significant effect on their anticonvulsant profile. Overall, these findings will assist us in providing the structural orientation and understanding the binding mechanisms.

KEY WORDS: X-Ray Diffraction, Jaguar, Computational Modeling, Anti-convulsant, Epilepsy

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### Rifampin, Pyrazinamide and Moxifloxacin-Loaded Nanoparticles for the Treatment of Sensitive and Multidrug Resistant Tuberculosis

Presenter's Name: Uchechukwu Ezeonyebuchi
Classification: Professional Student
*Presentation Type: Poster Presentation*

**Background:** Pulmonary tuberculosis (TB) is the second highest killer after HIV/AIDS worldwide with 8.7 million new infections (13% of which are co-infections with HIV)

and 1.4 million deaths in 2011 alone. Therapeutic regimen for TB is comprised of at least two to four drugs taken daily for at least six months. Resistant TB infections require longer regimes. Nanoparticles can increase drug bioavailability by delivering drugs directly to the site of action. This results in decreased duration of therapy and decreased drug-related toxicity. **Methods:** A calibration curve was plotted from high performance liquid chromatography (HPLC) data of standard solutions of each drug at concentrations ranging from 2.5μg/mL to 50μg/mL. The regression equation of the calibration curve and the correlation coefficient were determined. The W/O/W double emulsification method was used to fabricate stealth nanoparticles using poly(lactic-coglycolic acid)-co-polyethylene glycol (PLGA-PEG) as a copolymer and poly(vinyl alcohol) (PVA) as stabilizer. For drug loading studies, 10mg of drug-loaded nanoparticles was dissolved in a suitable solvent and analyzed by HPLC. **Results:** Retention times of the drugs loaded in the nanoparticles remain the same as that obtained from standard solutions of pure drugs. Retention times of 3.8, 4.7 and 0.85 minutes were observed for rifampin, pyrazinamide and moxifloxacin, respectively, in the drug-loaded nanoparticles. Drug loading for the prototype formulation was calculated to be 1.086%, 0.1%, and 0.46% for rifampin, pyrazinamide and moxifloxacin, respectively. **Conclusion:** Rifampin, pyrazinamide and moxifloxacin were all successfully loaded into the nanoparticles. The results of optimization studies and drug release studies will be presented.

KEY WORDS: Tuberculosis, nanoparticles, drug-delivery, drug-targeting, pharmacy,

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## Isolation and Purification of Anghus, a Mycobacteriophage Specific to Mycobacterium Smegmatis, from the Environment

Presenter's Name: Amoge Ezike
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

The goal of this research is to understand the diversity of mycobacteriophage populations. The phage Anghus was isolated from a soil sample collected in front of the Howard University Hospital (38.9177771°N, 77.0211945°W). A gram of the sample was enriched with water, 7H9,
AD supplement, and the host *Mycobacterium smegmatis* to increase the population of phages present in the sample. This enriched sample was filtered, plated on Lagar plates, and followed by series of spot tests, streak protocols, titer assays, an empirical test, and a fiveplate infection. A High Titer Lysate was harvested from the fiveplate infection using 80.3 μL of a 10 3 dilution. The phage isolated through these experiments produced plaques of various morphologies, with diameters ranging from 2mm to 7mm. The plaques are mostly lytic plaques, but, on two occasions, Anghus has given lysogenic plaques. In forthcoming experiments, Anghus will be observed using electron microscopy to tell, by the size of its capsid, how much genome it contains, after which its DNA will be extracted. Then, a restriction digest will be carried out, and the quality of its genome assessed.

KEY WORDS: Bacteriophage, Mycobacterium smegmatis, Anghus, SEA-PHAGES, High Titer Lysate

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## Outcomes in Bariatric Surgery Patients: The Role of Operative Time

Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Amal L. Khoury, MD, MPH; Gezzer Ortega, MD, MPH; Chijindu C. Emenari, BS; Vanessa F. Pinard, BS; Navin R. Changoor, MD; Daniel D. Tran, MD; Terrence M. Fullum, MD

**Introduction:** Bariatric surgery is a critical component in decreasing the morbidity and mortality of obese patients. An evaluation examining this high-risk population and the causes behind their post-operative complications is an important step in continuing medical care through surgical intervention. The role of operative time in venous thromboembolism (VTE) outcomes within this population is elucidated in this retrospective study. **Objective:** To evaluate the VTE outcomes of bariatric surgery patients in a national database. **Methods:** A retrospective review of the ACS-NSQIP Dataset was performed on patients who underwent bariatric surgery from 2005 to 2010. Patient characteristics including BMI, co-morbidities, and VTE risk factors were collected. The outcomes of interest were post-operative VTE and operation times. VTE rate and operative time intervals were analyzed using Pearson chi2 test and adjusted multivariate logistic regression. **Results:** Of 39,755 bariatric surgery patients, 96.0% and 4.0% underwent laparoscopic roux-en-Y gastric bypass (LRYGB) and laparoscopic sleeve gastrectomy (LSG), respectively. Most were female (79%) and had a body mass index between 40-49.9 kg/m2 (55%). The VTE rate was 0.39% for LRYGB and 0.30% for LSG. The VTE rate by operative time was 0.14%, 0.15%, 0.11%, and 0.04% for <2hrs, 2-3hrs, 3-4hrs, and >4hrs, respectively. On adjusted analysis there was a decreased likelihood of VTE as the operative time increased above 3 hours (OR: 1.87 CI: 1.23-2.84 for 3-4 hours and OR:

1.25 CI: 0.56-2.75 for 4-5 hours). **Conclusion:** Operative time plays a vital role in VTE outcomes among bariatric surgery patients. Bariatric surgeons should consider this while operating to improve VTE outcomes

KEY WORDS: surgery, bariatric, venous thromboembolism, operation, complication

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### Association of Genetic Variants in the CRYBB2 Gene with Prostate Cancer Risk in African Americans

Presenter's Name: Mezbah Faruque
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Mezbah Faruque, Rabindra Paul, Luisel Ricks-Santi, Emmanuel Jingwi, Chiledum Ahaghotu and Georgia Dunston

**BACKGROUND:** Prostate cancer (PCa) shows disproportionately higher incidence and disease associated mortality in African Americans. Human crystallin beta B2 (*CRYBB2*) gene has been reported as one tumor signature gene differentially expressed between African American and European American cancer patients. We investigated the role of *CRYBB2* genetic variants in PCa in a case-control study of African Americans. **METHODS:** Subjects comprised of 233 PCa cases and 294 controls (n=527) recruited from the Urology Clinic and Cancer Center of Howard University Hospital. Nine haplotype-tagged single nucleotide polymorphisms (SNPs) in and around the *CRYBB2* gene were selected for genotyping and association studies. Genotyping was performed by pyrosequencing. Association analyses were performed for PCa with adjustment for age and prostate-specific antigen (PSA), under an additive genetic model. **RESULTS:** Out of the nine SNPs examined, rs9608380 was found nominally associated with PCa (OR=2.619 [95%CI, 1.156-5.935], *P*=0.021). rs9306412 was in strong linkage disequilibrium with rs9608380 that showed an association *P* value of 0.077. Using ENCODE data, we found rs9608380 mapped to a region annotated with regulatory motifs, such as DNase hypersensitive sites and histone modifications. **CONCLUSIONS:** This is the first study to show an association between genetic variation in *CRYBB2* gene with PCa. rs9608380, associated with PCa is a potentially functional variant. Additional studies are warranted to further confirm the association as well as to examine its role in PCa biology.

KEY WORDS: Prostate cancer, African Americans, single nucleotide polymorphism, CRYBB2, genetic association

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### The Role of ABCG2 in Prostate Cancer

Presenter's Name: Carina Felix
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Neha Sabnis, Dr. Wendy Huss

ABCG2 (ATP Binding Cassette transporter G2) is a member of the ATP binding cassette super family of transporters. It is the molecular determinant of Side Population which enriches for stem cells. ABCG2 effluxes xenobiotics, steroids, hormones and chemotherapeutic drugs out of the cells, thereby protecting cells from the cytotoxic effect of a wide range toxic insults. ABCG2 is a marker of cancer stem cells, which have been proposed to play a central role in tumorigenesis and metastasis. In the prostate ABCG2 expressing cells constitute ~1% of the basal cell population. ABCG2-expressing cells not only survive Androgen Deprivation but Castration Resistant Prostate Cancer (CRPC) is associated with elevated ABCG2 expression. Preliminary studies in our lab have demonstrated that inhibition of ABCG2 leads to increased intracellular retention of radiolabelled DHT. We hypothesize that ABCG2-expressing prostate cells maintain their undifferentiated state by effluxing androgens. We propose that inhibiting the ABCG2 transporters increases the intracellular androgen levels; this increase in the intracellular androgen levels causes the increased nuclear translocation of the Androgen Receptor (AR), and an eventual reduction in the cell growth response mediated by AR. In order to test this hypothesis, ABCG2-expressing cells were separated by magnetic separation and intracellular androgen levels were analyzed by Thin Layer Chromatography (TLC). Nuclear translocation of AR was studied by immunofluorescent staining and ABCG2 mediated reduction of cell growth response was studied by sphere forming assay. Real time PCR was done to determine the m-RNA levels of differentiation markers such as CK8, CK18 and PSA.

KEY WORDS: prostate, cancer, androgens, ABCG2, therapy

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### Uncovering putative interactions of the inhibitory kinase WEE-1.3 in C. elegans

Presenter's Name: Lourds Fernando
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Anna Allen

**Background:** The *Ceanorhabditis elegans* Myt-1 ortholog, WEE-1.3, is an inhibitory kinase that regulates meiosis by providing inhibitory phosphorylations on CDK-1, a component of Maturation Promoting Factor (MPF). Inactivation of MPF leads to oocyte meiotic cell cycle arrest at prophase I, a process needed for the developmental competency. Depletion of WEE-1.3 causes precocious oocyte maturation and generates fertilization-incompetent oocytes. A large RNAi screen by Allen *et al*. identified 44 genes that when co-depleted with *wee-1.3*(RNAi) suppressed the *wee-1.3(RNAi)* infertility phenotype. Elucidating potential interactions between WEE-1.3 and the identified suppressors may lead to identifying novel regulators of the cell cycle. To begin to determine mechanism, we have asked whether the down regulation of individual suppressors via RNAi alters the previously characterized WEE-1.3 localization pattern. **Methods:** RNA interference, standard brood analysis and confocal live imaging. **Results:** The live imaging data indicates two of the identified suppressors, *snr-1* and *cdk-1*, show alterations in the localization of WEE-1.3. Animals depleted of SNR-1 show aberrant nuclear expression of WEE-1.3 in embryos and *cdk-1(RNAi)* animals completely lack WEE-1.3 expression in embryos. **Conclusion:** SNR-1 is a snRNP that may be involved in perinuclear localization of WEE-1.3 in developing embryos. Absence of CDK-1 affecting WEE-1.3 localization implies a potential reciprocal relationship where CDK-1 can regulate WEE-1.3 in a comparable manner to how WEE-1.3 regulates CDK-1. Further analysis of WEE-1.3 localization patterns of the remaining suppressors will aid in elucidating interactions of WEE-1.3.

KEY WORDS: WEE-1.3, Oocyte maturation, fertility, suppressor, snRNP, RNAi, Confocal live imaging

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### Molecular determinants of the human Î±2C-adrenergic receptor temperature-sensitive intracellular traffic.

Presenter's Name: Catalin Filipeanu
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Ashok Pullikuth, Jessie Guidry

Human α2C-AR is localized intracellularly at physiological temperature. Decreasing the environmental temperature strongly stimulates the receptor transport to the cell surface. In contrast, rat and mouse α2C-AR plasma membrane levels are less sensitive to decrease in temperature, whereas the opossum α2C-AR cell surface levels are not changed in these conditions. Structural analysis demonstrated that human α2C-AR has a high number of arginine residues in the third intracellular loop and in the C-terminus, organized as putative RXR motifs. Although these motifs do not affect the receptor subcellular localization at 37oC, deletion of the arginine clusters significantly enhanced receptor plasma membrane levels at reduced temperature. We found that this exaggerated transport of the human receptor is mediated by two functional arginine clusters, one in the third intracellular loop and one in the C-terminus. This effect is mediated by interactions with COPI vesicles, but not by 14-3-3 proteins. In rat α2C-AR, the arginine cluster from the third intracellular loop is shifted to the left, due to three missing residues. Reinsertion of these residues in the rat α2C-AR restored the same temperature-sensitivity as in the human receptor. Proteomic and co-immunoprecipitation experiments identified pontin as a molecule having stronger interactions with human α2C-AR compared to rat α2C-AR. Inhibition of pontin activity enhanced human receptor plasma membrane levels and signaling. Our results demonstrate that human α2C-AR has a unique temperature-sensitive traffic pattern within the GPCR class due to interactions with different molecular chaperones, mediated in part by strict spatial localization of specific arginine residues

KEY WORDS: GPCR, intracellular traffic, molecular chaperones, Raynaud Phenomenon

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### Analyzing DNA from "Relyks" a Phage That Infects Mycobacterium smegmatis

Presenter's Name: Skyler Ford
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

The study of phages is important in today's scientific research study because it can be used in genetics for cloning, mutation and genome analysis. The purpose of SEA-PHAGES is to extract, isolate and purify a phage that infects *Mycobacterium smegmatis*. The soil sample was collected from the Administration Building at Howard University. First phages were enriched from the environment sample by growing in a liquid culture of *M. smegmatis*. Then a pure phage was isolated by repeated cycles of streaking until plaques of uniform

morphology were obtained. The plaques obtained were lytic as indicated by the clear plaques they produced and averaged about 2 mm in diameter. The purified phage was named Relyks. The phage was used to make a Medium Titer Lysate of pure phage. Next, a High Titer Lysate was generated and used as a source of phage for electron microscopy and for extraction of phage DNA. After DNA extraction, restriction enzyme digestion and gel electrophoresis was used to characterize the phage DNA. DNA of one phage per each PHAGES Honors laboratory section was sequenced. The phage sequence is being annotated to identify its gene products and their probable functions by comparison to similar genes of known functions found in databases.

KEY WORDS: Phage, DN Extraction, Mycobacterium smegmatis, Bacteria

## Finding Phage Bobbinson

Presenter's Name: Isis Fuller
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

**Background:** The SEAPHAGES program at Howard University researches bacteriophages that infect *Mycobacterium smegmatis*. A bacteriophage is a virus that infects bacteria; they have two life cycles in which the phage either replicates and lyses the bacterium (lytic) or they incorporate their DNA into the host's before entering the lytic life cycle (temperate). **Methods:** The bacteriophage, later named Bobbinson, was isolated from a soil sample collected in front of the Harriet Tubman Quadrangle on Howard University's campus. Spot testing, streaking, and filter sterilization was used to isolate and purify this phage. Serial dilutions, phage titer calculations, and empirical testing was used to obtain a High Titer Lysate (HTL) which was then used to extract DNA. **Results:** Bobbinson originally produced plaques 3mm in diameter and later formed plaques with a diameter of 1mm. DNA Extraction resulted in a sample that was 123.75 ng/μL. **Conclusion:** It is likely that Bobbinson is a lytic phage based on its plaque morphology. The next steps are to prepare the DNA for a restriction digest and then gel electrophoresis. In addition, the phage will be examined via electron microscopy to determine the morphology. All information will be uploaded to phagesDB.org, the international Mycobacteriophage database.

KEY WORDS: Mycobacteriophage; M. smegmatis; Mycobacterium smegmatis; SEA-PHAGES; virus

## Curcumin Inhibits Cell Signaling and Cell Adhesion in Dictyostelium discoideum: Putative Role of Glutathione S-transferases

Presenter's Name: Mamatha Garige
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Glutathione *S*-transferases (GST), in addition to their role in detoxification, are implicated to have important functions in signal transduction, development, and differentiation in eukaryotic cells. The eukaryotic model organism *Dictyostelium discoideum*, utilizes cAMP to transition from unicellular to multicellular growth and morphogenesis during its life cycle. Recent studies show that glutatione (GSH) depletion alters stage-specific development in this organism, and the role of GSH-mediated enzymes is poorly understood. The genome of *D. discoideum* encodes five GST isozymes (α1-α5 class) whose functions are uncharacterized. Here, we report that *GST*α transcripts are highly expressed during vegetative growth in *D. discoideum*, but are reduced during development/differentiation. Mass spectroscopy confirmed the present of three isozymes (α3, α1, α2) that were expressed in vegetative amoeba. Curcumin, a nutritional plant polyphenol, alters GSH and GST enzyme activity in mammalian cells. In *D. discoideum,* curcumin induced GST activity that correlated the inhibition of multicellular aggregate formation. Western blotting revealed that curcumin altered expression of cell signaling regulatory factors associated with chemotaxis, cell adhesion, and differentiation. Curcumin reduced the expression of discoidin (developmental marker), ACA (adenylate cyclase), and CsA (a cell adhesion protein), by 50%, 40%, and 90%, respectively. These findings suggest new roles for GST enzymes in eukaryotic cell signaling and development. Coordinate studies of curcumin in the *Dictyostelium* model will help elucidate the therapeutic efficacy of curcumin's ability to affect cell signaling, chemotaxis, metastasis, tumorigenesis, and inflammatory response in mammals.

KEY WORDS: Cell adhesion, cell signaling, glutathione S-transferases, morphogenesis, chemotaxis

### Disruption of CNS and Craniofacial Development in Human Trisomy 18 with Cyclopia and Holoprosencephaly: A 3-prongued imaging study

Presenter's Name: Temitayo Gboluaje
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Trisomy 18 (T18), also known as Edward syndrome is a chromosomal anomaly in which cells contain an extra copy of the entire chromosome 18 or parts thereof due to nondisjunction during oogenesis meiosis or post-zygotic mitosis. One of the phenotypic manifestation of T18 is holoprosencephaly which ensues from the incomplete separation of the forebrain during gestation. We studied the phenotypic manifestation of trisomy 18 in a 28 weeks fetus with HPE compared to a normal fetus of similar gestational age (29wks). We used state-of-the art Magnetic Resonance Imaging, Computed Tomography with 3-dimensional reconstructions, and Gross anatomical dissections to determine development of the central nervous system, and associated craniofacial skeleton and blood vessels. The findings indicate a near-complete absence of the cerebral cortex, and disproportionate enlargement of midbrain and hindbrain. Severe defects in midline structures such as fusion of the eyes and cranial nerve 2, and absence of nasal and pharyngeal structures. We discuss these findings and other craniofacial anomalies resulting from this chromosomal anomaly.

KEY WORDS: Holoprosencephaly, Trisomy 18, Craniofacial anomaly, Cyclopia

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### Gender and the Association of Smoking with Sleep Quantity and Quality in American Adults

Presenter's Name: Yonis Geberemariam
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Richard F. Gillum, MD, MS, Alem Mehari, MD

**Background:** Smoking and gender are known risk factors for sleep disorders. Studies of samples from Norway and japan have suggested a stronger association between smoking and disrupted sleep in women, therefore, we examined, gender differences in the US population. **Methods:** We examined data from the 2005–2006 National Health and Nutrition Examination Survey. We examined the associations between smoking and self-reported measures of sleep disorders (i.e., snoring, short sleep, long sleep, poor sleep and health care provider diagnosis of sleep disordered breathing (SDB)) using multivariate logistic regression with odds ratios (OR) and 95% confidence intervals (CI) as measures of association; we assessed whether the association varied by gender using a gender x smoking interaction model. **Results***:* Compared to non-smokers, current smokers had significantly higher odds of self-reported snoring (OR= 2.0; 95% CI=1.56-2.56), short sleep (OR 1.68; 95% CI=1.35-2.10) and poor sleep (OR= 1.38; 95%CI=1.09-1.74). A dose-response relationship was observed between the amount smoked and sleep symptoms. In multivariate analyses, no significant gender x smoking interaction was observed for snoring, short sleep or poor sleep. **Conclusions**: Current smoking was similarly independently associated with increased odds of snoring, short sleep and poor sleep in women and men among US adults.

KEY WORDS: Gender, Epidemiology, smoking, sleep disordered breathing

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### Is there any disparity in prevalence of Barrett's Esophagus in African Americans? Learning from EGD cases

Presenter's Name: Sahar Geramfard
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Sahar Geramfard, Edward Lee, Babak Shokrani, Armana Saeed, Temitayo Ogundipe, Anahita Shahnazi, Ali Afsari, Mehdi Nouraie, Hassan Brim, Hassan Ashktorab

**Background:** Barrett's esophagus (BE) is considered to be a disease of white males. Esophago-gastroduodenoscopy (EGD) perform for BE detection. The prevalence of BE in African American is not known but, it is assumed to be low. Several factors are associated with Barrett's esophagus including, GERD (Gastro Esophageal Reflux Disease), age, sex, race, BMI, visceral obesity, hiatal hernia, food preferences, lifestyle, esophageal acid clearance and delayed gastric emptiness. However it seems infection with Helicobacter Pylori in African American is a protective factor regarding Barrett. **Aim:** To determine the prevalence of BE in African Americans undergoing EGD. **Methods:** We reviewed pathology and medical reports of 1253 symptomatic patients who underwent EGD at HUH from January 2004 to December 2014. Demographic, clinical and pathological data including; GERD, Barrett, esophageal adenocarcinoma (EA), esophageal squamous adenocarcinoma (EA), hiatal hernia and infection with Helicobacter Pylori were collected. **Results:** The median

(IQR) age was 61 years (52-70) and 49% were male. The frequency of GERD, Barrett, esophageal adenocarcinoma (EA) and Squamous cell carcinoma (SCC) were 1.4%, 0.6%, 1.0% and 2.9%, respectively. The frequency of GERD or Barrett was not significantly different by gender, but the frequency of both EA (P = 0.05) and SCC (P = 0.002) was higher in males. The frequency of esophageal polyp was 2.2%. The SCC frequency increased significantly in older patients (>61; P<0.001). **Conclusion:** This study shows that GERD, Barrett and EA are significantly low in African Americans. As such, race maybe a major factor in their etiology.

KEY WORDS: GERD, Barrets, EGD, Esophageal Adenocarcinoma, Squamous Cell carcinoma

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### Maternal separation and post-weaning housing conditions affect depressive-like behaviors in rats.

Presenter's Name: Yaminah Gilles
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Polston, Eva K.

**Background**: Depression is a leading cause of disability worldwide. Psychosocial stressors such as early maternal separation may increase the risk of depression later in life. We employed maternal separation (MS) and post-weaning isolation in rats to investigate the impact of developmental stress on adult behavioral patterns. **Methods:** To test the hypothesis that MS, singly housed animals would exhibit depressed-like behaviors when compared to non-MS or group housed animals, eight pregnant Sprague-Dawley rats were ordered for simultaneous delivery of pups. Litters were cross-fostered and culled to yield equal numbers of males and females, and half the litters were maternally separated for 4 hours each day until weaning. At weaning, pups were housed singly or in same-sex groups, generating four experimental conditions: 1. maternally separated/single housed, 2. maternally separated/ group housed, 3. non-maternally separated/single housed, 4. non-maternally separated/group housed (10 males and 10 females per group, total n=80). Rats were tested in adulthood for depressive-like behaviors using the forced swim test (FST) and the sucrose preference test (SPT). **Results:** In the SPT, MS females drank less sucrose solution than non-MS females or males. Immobility during the FST was most affected by post-weaning housing; singly housed animals were more immobile during the FST than group housed animals. **Conclusion:** Neonatal and post-weaning social stressors differentially affect behavioral measures of depression. Our future studies will investigate the link between these depressive-like behavioral patterns and altered neurochemical profiles.

KEY WORDS: Depression, Maternal Separation, Social Housing, Behavior, Rat

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### Trend in Racial/Ethnic Disparity in Emergent versus Elective Colon Resection Among Patients with Colon Cancer: Is the Gap Closing?

Presenter's Name: Genelle Gittens-Backus
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Genelle Gittens-Backus , Patrick Liam, Augustine C Obirieze MBBS MPH, Samuel Onyewu MBChB, Lori Wilson MD Adeyinka Laiyemo MD MPH,

**Purpose**: To investigate the trend in racial/ethnic disparity in emergent colon resections among patients with colon cancer. **Methods**: We utilized the Nationwide Inpatient Sample databases 2001-2010. Using appropriate ICD-9-CM procedure and diagnosis codes, adult patients aged ≥18 years primarily diagnosed with colon cancer and underwent colon resection were identified. We used generalized linear models to assess the odds of undergoing emergent versus elective colon resection comparing white and black patients over time, adjusting for age, sex, primary payer, co morbidity index, income quartile, type of neoplasm, surgical approach, percent of black patients treated at a single hospital, hospital teaching status, location), and state variation. **Results**: The 134,309 patient records that met all criteria comprised 115 293 (85.8%) white patients and 19 096 (14.2%) black patients. Most were ≥ 60 years (76.3%), and had malignant disease (76.5%). Overall, black patients were more likely to be younger than 60 years of age (46.5% vs. 19.9%; p<0.001), be in the lowest income quartile (51.9% vs. 16.3%; p<0.001), and have benign disease (36.5% vs 21.4%; p<0.001). **Conclusions**: Using a nationally representative database of patients in a recent decade, our study demonstrates persisting racial disparities among colon cancer patients in the likelihood of undergoing emergent versus elective colon resection.

KEY WORDS: racial disparity, colon cancer, resection

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### Analysis of Egusi Seed Oil

Presenter's Name: Apre Gleaves
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Jonathan Onuegbu

This project analyzed the Egusi seed which is a food native to West Africa. Oil was extracted from the seeds using hexane. The percent oil was about 40% weight. The oil was then hydrolyzed with sodium hydroxide. The fatty acid obtained was analyzed using IR and LCMS. The fatty acid was esterified and further analyzed using the GCMS.

KEY WORDS: Extraction and Analysis of Egusi Seed Oil

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### Social Support and Sleep Disordered Breathing in a National Sample

Presenter's Name: Clarence Glenn, III
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Y. Odeyemi, A. Mehari, RF Gillum

**Background:** Social support has been linked to longevity. We investigated the relationship between social support and sleep symptoms associated with sleep disordered breathing (SDB). **Methods:** Using the 2005–2006 National Health and Nutrition Examination Survey, we used five parameters of social support: emotional (yes/no), financial (yes/no), close friends (>=5/<5), church attendance (>=weekly/<weekly), and marital status (married/other) to compute a social support score (SSS, range 0-5). Eligible participants (n=2,497) were 40 years or older and not missing data on emotional support, sleep duration or BMI. Outcomes were SDB symptom frequency (snort, gasp, or stop breathing while asleep) and number of hours of sleep per night (<= 6 />6). **Results:** The majority (55%) of subjects reported SSS>3. SDB symptoms were reported 5 or more times per week in 7%. Frequent SDB symptoms were more common in males and obese persons, but did not vary by age or race/ethnicity. Short sleep duration occurred in 39% of subjects. SSS was not significantly associated with SDB symptoms. However, short sleep duration was more common (40%) in those with low social support (SSS <3) than in those with high levels (SSS=5) (35%, p=0.03). **Conclusion:** Low social support was associated with higher prevalence of short sleep duration but not more frequent symptoms of SDB in a national sample

KEY WORDS: sleep psychiatry internal medicine NHANES

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### Evaluating the Specificity of Laser-Cutting Microdissection of Lymphocytes, Acinar and Ductal Cells from Human Minor Salivary Glands

Presenter's Name: Lauren Gordon
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Ilias Alevizos, Paola Perez Riveros, Mayank Tandon

Sjögren's Syndrome (SS) is an autoimmune disorder. It affects exocrine glands, especial salivary glands (SG) and lacrimal glands causing destruction and hyposecretion. Common symptoms of the disease include dry mouth and eyes, accelerated caries, altered sense of taste, burning and dysphagia. Of the 4 million Americans affected by SS, approximately ninety percent are women. There are three main cell types present in SG of SS patients: lymphocytes, Acinar and Ductal cells. Inflammatory infiltration, fibrosis and abundance of cell types vary with each patient. Studies have shown that inflammation alone does not cause the salivary hypofunction in SS. In the past, whole gland tissue samples have been used to analyze genetic material and proteins. In order to increase the specificity of data collected and allow for comparisons between cell type specific behaviors, a technique is needed to isolate homogeneous samples for the various SG cell types. It is the objective of this experiment to establish an effective technique for the isolation of pure cell type samples when using Laser-Cutting Microdissection (LCM) on human minor salivary glands of Sjögren's Syndrome patients. The three different cell types were first identified and cut out using LCM Software. The extraction of RNA and its amplification was necessary before quantifying and analyzing the purity of each sample using the TaqMan Gene Expression Assay. Our acinar cell maker, AQP5, showed to be ten times higher in the acinar sample as compared to the lymphocytes. The three lymphocytic markers ranged from 3 to 35 times higher in the lymphocyte samples when compared to the acini. From these results, we have concluded that this technique is effective in isolating specific SG cell types with minimal contamination by undesired cells.

KEY WORDS: Microdissection, salivary, glands, Sjögren's Syndrome

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## Perceived Stress and Somatic Symptoms in Predominately African American College Students

Presenter's Name: Danyella Greene
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Keri Kirk, Rita Okolo, Lisa Pegram

In the past two decades research has shown the deleterious role stress can have on both psychological and physical components of the body. Known as the "silent killer", chronic stress has often been a strong predictor of health disparities in African Americans. Since the inception of the biopsychosocial model, findings have shown significant relationships between chronic psychological stress and risk for diseases such as Diabetes, Obesity, and Heart Disease. This study examined whether levels of perceived stress were associated with the manifestation of somatic symptoms (i.e. elevated heart rate, dizziness, etc.). An anonymous cross- sectional survey was administered to college students in the DMV area (N= 193). Seventy-four percent of students were female while eighty-seven percent were African American. A one-way between subjects ANOVA was conducted to compare the effect of Perceived Stress levels on the Anxiety (Somatic Symptoms) Subscale of the Depression Anxiety Stress Scale (DASS) for low stress, medium stress, and high stress groups. There was a significant effect of perceived stress level on the degree of somatic symptoms for all three stress groups $F$ (2, 192) = 16.30, $p$ = .000. Post hoc analyses using the Tukey HSD criterion for significance indicated that the mean score for the low stress group (M = 16.41, SD= 4.97) was significantly different from both the medium stress (M = 21.45, SD = 8.25) and high stress (M= 26.20, SD= 11.74) groups. Furthermore, these results suggest that students with moderate to high levels of stress are exhibiting somatic symptoms such as elevated heart rate, increased perspiration, dizziness, and occasional trembling at severe and chronic levels.

KEY WORDS: chronic stress, psychosomatic symptoms, heart rate, perceived stress, anxiety

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## Prevalence and anatomical evidence of Treponemal Infection in the Cobb Collection

Presenter's Name: Nicholas Guthrie
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Christopher Cross and Fatimah Jackson, PH.D

Understanding the health of our ancestors can give us a viewpoint to understand present-day health conditions. The relationship of African American (AA) ancestry to infectious disease status has not been extensively studied. This study aims to characterize AA health by osteologically investigating the microbial effects of Treponema palladium (TP) bacteria on AAs who died in the greater DC metropolitan area from 1930 to 1969. The gram-negative, spiral shaped bacteria has four pathogenic subspecies; pallidum, pertenue, endemicum, and carateum, causing syphilis, yaws, endemic syphilis, and pinta, respectively. To confirm TP infection, we will use the Cobb Collection autopsy and clinical records in conjunction with scientific methods of microscopic analysis, microbial analysis, and various imaging techniques. Our expected results will yield better understanding of the pathology of TP and its contribution to AA morbidity and mortality during the era of overt racial segregation to the present day.

KEY WORDS: Biological Anthropology, Infection, Syphilis, African American, Health

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## Pulmonary Complications of HIV: Autopsy Findings C55-HIV-Associated Lung Diseases and Infections

Presenter's Name: Yordanos Habtegebriel
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Vijay Kodadhala MD; Navdeep Singh MD, Alicia Thomas, MD; Davis Wayne, MD; Vishal Poddar MD; Alvin Thomas MD; Alem Mehari, MD

**Background:** HIV associated pulmonary diseases remain a major cause of morbidity and death in HIV worldwide. Noninfectious conditions may become more common in the current era of the AIDS epidemic, particularly in those with access to HAART. However, studies comparing pulmonary autopsy findings both in pre HAART and post HAART era. are limited. **Objectives:**
To understand the current trends and emerging HIV associated pulmonary complications as compared to the pre HAART era. **Methods:** We reviewed the medical records and autopsy reports of a total of 182 [Pre HAART (n=123) and Post –HAART (n=59)] patients with HIV/AIDS deceased between 1985 and 2012. Demographic data, risk factors for HIV transmission, cause of death and pulmonary findings at autopsy were abstracted. Baseline characteristics, Pre HAART and Post HAART autopsy findings were examined using chi square tests and logistic regression analyses. **Results:** Of the 182 decedents, 68.6 % (n=125) were males and 98.9%

(n=180) were African Americans. The mean age at death was 39±10 vs. 45±10yrs; p<001 in the pre and post HAART respectively. Smoking remains prevalent 59% vs.57.6%; p=0.86 and the most common reported route of HIV acquisition was intravenous drug use. Compared to the pre HAART, emphysema 23% vs. 43%; p= 0.01, pulmonary embolism 25%vs. 45%; p<0.001; pulmonary hypertension vascular pathology 5%vs. 27%; P< 00.1 was increasingly reported in post HAART era. Interstitial pneumonitis 31.9%vs.19%; p= 0.03 and pulmonary fibrosis 44%vs.29%; p=0.02 decreased in the post HAART. Pneumonia was prevalent 81.9% in the pre and 76% in the post HAART, however; pneumocystis jiroveci pneumonia (PJP) as a cause has significantly dropped in the post HAART 12% vs 26%; p=0.03 and bacterial pneumonia was similar 35% vs. 41%; p=0.31in the pre and post HAART respectively. The number pulmonary malignancy in the in pre and post HAART was 30.1% (n=37) vs. 36.2% (n=21) ; p= 0.31, interestingly, however the majority of malignancy in the pre HAART 75.5% (n=28) were AIDS-defining predominantly Kaposi and in the post HAART 71.4% ( n=15) were histological adenocarcinomas. **Conclusion:** Currently, none infectious diseases such as emphysema, pulmonary embolism, pulmonary arterial hypertension, and lung cancer appear to be increasing in the post HAART at autopsy. Further studies are needed to elucidate the pathobiology of the increasing none infectious pulmonary complications of HIV.

KEY WORDS: HIV,AIDS, Pulmonary complications, HAART, Non Infectious

## Determining the Effect of Graphene Oxide on Pseudomonas aeruginosa Growth

Presenter's Name: Terinney Haley
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Kalah Ozimba

*Pseudomonas aeruginosa* is a common bacterium that can cause disease in animals and humans. It is found in soil, water, and most man-made environments. The bacterium can grow as either planktonic cells or biofilm cells. Biofilms are the cells that adhere to surfaces as slimy, glue-like substances. The free floating bacteria in suspension during growth are the planktonic cells. Nanoparticles are utilized for a variety of tasks in today's society. Graphene oxide (GO), for instance, has been explored as one of the most promising nanomaterials with biomedical applications. Thus far, properties of graphene oxide have been useful in the fields of advancing drug delivery systems, therapeutics, and much more. With this research, we are trying to elucidate the impact of GO on bacterial growth. *P. aeruginosa* growth as monitored by measuring optical densities and fluorescence of biofilm and planktonic cells. Our data suggests graphene has properties that limits the growth of *P. aeruginosa*. Elucidating the effects of GO nanoparticles on bacterial growth may have significant relevance in understanding the environmental and biological impacts of these new nanomaterials.

KEY WORDS: Nanoparticles affects on bacteria

## Autism in the Cobb Collection

Presenter's Name: Jayla Harvey
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Dr. Fatimah Jackson, Christopher Cross

1 in 88 children in the United States are diagnosed with autism; this number has grown exponentially over the past couple of years, primarily due to raised awareness of this disorder.
The definition of autism as we know it today didn't come about until 1980. Prior to that, autism was defined as schizoid personality disorder attributed fundamentally to a lack of maternal warmth. Mental health issues, in general, in African Americans have not been extensively studied and are frequently underdiagnosed. Differential expression of mental disease likely stems from the multigenerational inhumane effects of the transatlantic slave trade, segregation, racism, and discrimination. As a result, the literature is scant on explicit descriptions of autism for the African American population. However, new scientific advances are suggesting that autism is genetically linked by clusters of DNA markers. Since African American's rich diversity is not widely represented in either genetic or behavioral studies, this research will look for evidence of mental disease in specific individuals in the Cobb Collection try to develop a bridge between the behavioral expression of mental disease and the presence of genetic susceptibility genes for autism. This study will focus on African American adults from the District of Columbia, Maryland, and Virginia area who died in either the 1930s, 40s and 50s and for whom clinical reports and other clinical and demographic clues suggest evidence of mental disease. Advanced bioinformatic approaches will be used to identify likely autism gene clusters in the targets of study.

KEY WORDS: Genetic, Neuroscience, Mental Health, Autism, Epigenetics

## Colonic Neoplasia in IBD and Non-IBD/Noninfrctious Colitis among Minority patients

Presenter's Name: Sally Hassan
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Sally Hassan, Hassan Ashktorab ,Mansour Paydar, Tahmineh Haydari, Babak Shokrani, Edward Lee, Adeyinka O. Laiyemo, Mehdi Nouraie, Hassan Brim

**Background:** Inflammatory Bowel Diseases (IBD) and other colon inflammations are thought to be risk factors for colon cancer and potentially increase the likelihood of colon oncogenic transformation. Aim: To determine the incidence of colorectal adenoma in IBD patients and compare with patients with Non-IBD/Non-Infectious Colitis (NIC). **Patients & Methods:** In this retrospective study, we evaluated pathology and medical records of 1045 IBD cases and 1665 NIC cases between 2004-2012 at Howard University Hospital. Logistic regression analysis was applied to estimate the risk of adenoma in patients with ID compared to those with NIC after adjusting for age and gender. A subgroup analysis was performed in African-American patients to characterize the association between IBD and risk of adenoma in this population. **Results:** The IBD and NIC groups had similar age and gender distribution. Adenoma prevalence was 19% in IBD patients and 11% in the NIC patients ($p < 0.001$). Left sided adenomas were more frequent in the IBD group (15%) than the NIC group (7%) ($p<0.001$). The median age (IQR) of adenoma/IBD patients is 55 (45-66) while for adenoma/NIC it is 55 (49-64) ($p= 0.7$). In both analysis, AAs alone or all studied population, the risk of left sided adenoma was higher in IBD patients (OR=2.8 in AAs and 2.4 in all patients, respectively). The anatomic distribution of adenoma and colitis show that adenoma occur predominantly in the same location of colitis, for both IBD and NIC (Table 3a and 3b). As such, colon adenoma collocated with the IBD in 54%, 43%, 50% and 71% in the ascending, descending, transverse and rectosigmoid respectively. The adenomas located in different section of colon in 5%, 2%, 3% and 11% of IBD cases for the same colon sections above. For NIC cases, the adenomas collocated with the colitis in 46%, 9%, 40% and 75% and away from the colitis site in 5%, 2%, 3% and 5% for the ascending, descending, transverse and rectosigmoid respectively. **Conclusion:** Our data shows that adenoma risk is higher in IBD patients compared to NIC. This effect is more pronounced in the left side of the colon. Within the IBD group, UC patients had a higher rate of adenomas than CD patients. Regardless of the colitis type, the adenomas tend to develop on the same location as the colitis. Both IBD and NIC patients had adenomas developed in the inflammation field effect. Apparently, left colon IBD has a localized neoplastic effect while right side IBD seems to have a pancolonic effect.

KEY WORDS: Inflamatory bowel disease , Non-IBD/Non-Infectious Colitis

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## Ag/BSA Nanoparticles Loaded Collagen Grafted PHBV Scaffold: Antimicrobial and Cytotoxicity Evaluation

Presenter's Name: Samantha Hawthrone
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Rotimi Bakare, John Stubbs III, Dharmaraj Raghavan

The formulation of nanoparticles loaded PHBV matrix based on electrostatic interaction is novel and can be potentially useful in the triggered release of nanoparticles from the matrix for successful treatment of bacterial infection in the vicinity of an infected bone fracture. Thus, the primary objective of this study is to formulate Ag/BSA NPs loaded collagen grafted PHBV film, and test the loaded scaffold for antimicrobial efficacy and cytotoxicity. In this regard, we report modification of poly (3-hydroxylbutyrate-co-3-hydroxylvalerate) (PHBV) with 2-hydroxylethylmethacrylate (HEMA) followed by collagen immobilization to yield collagen grafted PHBV film and subsequent loading of Ag/BSA nanoparticles. Spectroscopic (FTIR, XPS), physical (SEM-EDX), and thermal (TGA) techniques were used to characterize the functionalized PHBV films. The amount of collagen covalently attached to PHBV film was quantified by the Bradford Method, while the amount of Ag/BSA NPs loaded on collagen grafted PHBV film was measured by atomic absorption spectrometry (AAS) and anodic stripping voltammetry (ASV). Our results showed that the retention of Ag/BSA NPs on grafted PHBV film is influenced by the chemistry of the functionalized PHBV film, the molecular weight of collagen grafted, the pH of the Ag/BSA NPs suspension, and the concentration of Ag/BSA NPs solution. The antibacterial efficacy of nanoparticles loaded collagen grafted PHBV film against *Escherichia coli*, *Staphylococcus aureus*, and *Pseudomonas aeruginosa* was measured by standard microbiological assay, while cytotoxicity of the scaffolds towards *MCTC3-E1 osteoblast cells* was determined by MTS assay. Results from colony forming unit and optical

density measurements of loaded PHBV film showed broad bactericidal activity. Ongoing studies will utilize MTS to investigate the biocompatibility of Ag/BSA NPs loaded collagen grafted PHBV film with *MCTC3-E1* cells.

Acknowledgements: NSF-MRSEC DMR-082050

KEY WORDS: PHBV, Silver Nanoparticles, Cytotoxicity, Bacterial Inhibition

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### Effects of Different Environmental Storage Conditions on aDNA Degradation: Implications for aDNA extraction from the Cobb Collection

Presenter's Name: J' Aron Heard
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Kalifa Shabazz, Brianna Moses, Christina Ahme

Deoxyribonucleic acid (DNA) is the genetic material of every living organism on earth. The structural properties of ancient DNA (aDNA) folding and melting into single stranded have been extensively questioned. Degradation of aDNA at different temperatures and environments varies. When a DNA degrades at different temperatures, covalent bonds are broken; however, this has not been thoroughly investigated in past research projects. Here, our research group will take bone samples from a single individual and expose them to different environmental conditions in order to measure the amount of aDNA degradation. Each fragment will be exposed to different conditions such as submersion under water, exposure to a cold temperate environment, exposure to a warm temperate environment, submersion under soil, and boiled and retained under controlled room temperature conditions. A control fragment will remain untreated. All samples will be subjected to the same aDNA recovery method. Samples will be treated for 60 days. Variation in the quantity and quality of a DNA remaining in the experimental bone fragments will provide valuable insight into the potential for finding adequate aDNA in the human skeletal remains of the Cobb Collection

KEY WORDS: Ancient DNA, degradation, environmental storage, DNA extraction, quantitative analysis

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### Cellular Processes and Synaptic Interactions in Nuclei of the Amygdala

Presenter's Name: Thomas Heinbockel
Classification: Senior Faculty
*Presentation Type: Poster Presentation*

**Background:** The amygdala is a core structure of the limbic system and a key site for emotion, anxiety, fear, learning and memory. Anatomically, the amygdaloid complex comprises ~13 nuclei in the midtemporal lobe. A pressing issue in the organization and operation of the amygdala is the functional significance of modulatory input from various signaling systems and the plasticity of its neural networks. The goal of our studies is to determine (a) the role of signaling molecules and their receptors for nerve cell signaling and information processing in the amygdala and (b) the influence of these signaling systems on learning and memory processes in the amygdala. **Methods:** In rat brain slices, we used sharp-electrode recordings in an interface chamber to determine physiological and synaptic parameters of amygdala neurons. Neurons were labeled intracellularly and digitally reconstructed to correlate structure and function. **Results**: In lateral amygdala neurons, we revealed synaptic responses that comprised several postsynaptic components involving slow and fast glutamatergic and GABAergic transmission, possibly reflecting excitatory input from thalamic and cortical structures as well from two major populations of GABAergic neurons, local GABAergic interneurons and paracapsular GABAergic intercalated cell masses. Projection neurons revealed complex morphologies with numerous spiny dendrites. **Conclusion:** These studies determine the functional significance of neurotransmitter systems and provide new insights into network properties of the amygdala. Furthermore, the results could help to explain and suggest treatments for pain, anxiety, eating disorders, phobias and other neurological conditions associated with amygdala networks. **Support:** NIH (MD007597) and NSF (IOS-1355034) to TH.

KEY WORDS: brain, emotion, synapse, limbic system, electrophysiology

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## Varying Sensitivity to Cocaine Seeking in a Rat Model of Binge Eating Behavior

Presenter's Name: Allison Hester
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Chelsea O. Nnebe, Dr. Kimberlei A. Richardson

**Background:** Recent studies have shown that individuals diagnosed with a binge eating disorder also have a higher propensity for drug addiction. The cause for this co-occurrence is unknown, but similar neurochemical mechanisms may be involved in both disorders. A rodent model of binge eating was used to identify differences in acquisition, extinction, and reinstatement of cocaine self-administration. **Methods:** Female Sprague Dawley rats (n= 9/group, freely cycling, 250-300g) underwent intermittent feeding tests to characterize their consumption of palatable pellets. The rats were assigned to either binge eating prone (BEP), binge eating resistant (BER) or binge eating neutral groups (BER and BEP rats were used for self-administration). Once BEP and BER rats were identified, they were trained to self-administer cocaine using operant lever responding using a fixed ratio-1 (FR-1) schedule. Once stable operant responding was established, extinction training was done to diminish the responding for cocaine. After extinction, both groups underwent cue-induced cocaine reinstatement. **Results:** There was no significant difference in FR-1 training and extinction rats; however, there was a dose dependent difference in lever pressing and cocaine infusions in BEP versus BER rats. BEP rats showed a significant increase in cocaine sensitivity at lower doses of cocaine versus BER rats ($p<0.05$). Additionally, BEP rats showed a significant increase in cue-induced drug reinstatement versus BER rats ($p<0.05$). **Conclusion:** The data demonstrate that BEP rats are more sensitive to cocaine and to environmental cues associated with cocaine. Future experiments will explore neurochemical systems that may cause increased drug sensitivity exhibited by BEP rats. Support: PHS grant K01DA030444 (KAR), Howard University College of Medicine SOAR-Health Program (AKH), and NSF: HRD-1000286 (CON),

KEY WORDS: Binge Eating, Drug Addiction, Self-Administration, Reinstatement, Orexin

## The Impact of Colorism: Bullying, Substance Usage, Eating Disorders, and Psychological Functioning among African American Adolescents

Presenter's Name: Charnel Hollier
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Donnesha E. Gibson, M.Ed; Nichole G. Hawkins, MS; Shatevia S. Stone MA; Kamilah M. Woodson, Ph.D

Bullying is considered to be a common and widespread form of violence. Vaughn (2010) defines bullying as a forceful act of behavior used to continuously harm or threaten others with less power. Research also has shown that minority youth report more instances of bullying due to their race/ethnicity compared to their non-minority counterparts (Lai and Tov 2004). For instance, within each minority group, students often valorize their lighter-skin peers in terms of beauty, brains, and social status. This process of discrimination that privileges light-skinned individuals of color over their dark-skinned counterparts is called "colorism" (Hunter, 2007). To explain in further detail, colorism embodies the preference and desire for light skin as well as other Eurocentric physical features such as hair texture (e.g. straight or loosely curled hair with a silky texture) and facial features (e.g. thin lips, thin nose). Studies suggest that African American women who are discrepant from these "preferences" are more likely to have a poor psychological functioning as well as increased anxiety, depressive symptoms and lower self-esteem (Grills & Ollendick, 2002; O'Moore & Kirkham, 2001). These psychological internalizations are all trajectories that can lead to disordered eating (Polivy & Herman; 2002, Lazar et. al; 2011, Hilbert, Hartman, Czaja, Schoebi; 2013) as well as substance abuse (Vaughn, M. et al. 2010). Our presentation uses a theoretical model to explain the relationship between colorism, bullying, psychological functioning, eating disorders and substance usage among African American adolescents. Lastly, our presentation will discuss future implications for practitioners.

KEY WORDS: colorism, bullying, substance use, psychological functioning

### Angiotensin II hypertension increases urine lipid peroxidation, gp91phox expression in the heart and kidneys of Peroxisome proliferator-activated receptor-Î± knockout mice.

Presenter's Name: Kellie Hunnicut
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Joanne Allard, Ph.D. and Dexter L. Lee, Ph.D.

**Background:** NOX-4, a Nicotinamide Adenine Dinucleotide Phosphate (NADPH) oxidase subunit, increases reactive oxygen species (ROS) during hypertension. gp91phox is the most widely distributed NADPH oxidase subunit that is localized to both intracellular and plasma membranes. Peroxisome proliferator-activated receptor-α (PPAR-α) agonist attenuates hypertension through the suppression of ROS. Angiotensin II (Ang II) increases ROS by stimulating NOX-4 and gp91phox. We tested the hypothesis that the absence of PPAR-α would increase NOX-4 and gp91phox expression and increase ROS in mice kidneys and hearts during Ang II hypertension. **Methods:** Male (10 - 12 weeks old) PPAR-α knockout (KO) mice and their wild type (WT) controls were implanted with biotelemetry devices and infused with a slow pressor dose of Ang II (400 ng/kg/min) for 12 days. Kidneys and hearts were collected and homogenized for western-blot analysis. Day 12 urine samples were collected to measure lipid peroxidation. **Results:** On day 12 of Ang II, mean arterial pressure (MAP) was 152 ± 7 mmHg in KO and 131 ± 6 mmHg in WT mice. Kidney NOX-4 expression was decreased in both Ang II-treated KO (50 ± 5%) and WT (30 ± 5%) mice. Heart gp91phox expression was increased in Ang II-treated KO (22 ± 2%) and WT (10 ± 1%) mice. Day 12 urine lipid peroxidation was increased in Ang II-treated KO mice. **Conclusion:** Our data suggests increased heart gp91phox expression in KO + Ang II mice and increased urine lipid peroxidation contributes to an increase in MAP during Ang II hypertension.

KEY WORDS: Hypertension, kidney, heart, NOX-4, gp91phox

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### RNA and DNA Yields from 10-Year Old Formalin Fixed Paraffin Embedded Anal Cancer Tissues

Presenter's Name: Aliza Ibad
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Aliza N. Ibad, Georgia M. Dunston, PhD., Beyene Desta, PhD., Tammy Naab, MD., Muneer Abbas, PhD., Luisel Ricks-Santi, PhD.

Ninety percent of the anal cancer cases are pathogenetically linked to HPV condylomas. At one end of the HPV disease spectrum are anal warts and mild dysplasia. At the other end of the spectrum are moderate dysplasia and severe dysplasia. And at the extreme is Carcinoma in Situ. FFPE tissue of individuals affected with anal warts, dysplasia, and anal cancer can provide clues about the biology of this disease. RNA extraction is quite challenging: the fixation process causes cross-linkage between nucleic acids and proteins, and covalently modifies RNA. Therefore, a reliable method is required for extraction of RNA from the cross-linked matrix. In this study, we proposed to isolate RNA and DNA from 10-year old tissues using 3 different methods: (1) The well-known Phenol-Chloroform method, (2) a newer method utilizing AllPrep DNA/RNA Mini kit, and (3) AllPrep DNA/RNA FFPE Kit. DNA and RNA were isolated from FFPE tissue samples using the aforementioned 3 methods and was quantified using the Nanodrop. The results were compared and the statistical Analysis was performed using program Quick-R. The findings demonstrated an efficient DNA and RNA extraction using AllPrep DNA/RNA FFPE Kit and comparable results using AllPrep DNA/RNA Mini Kit and Phenol-chloroform method. The quality was also comparable between the three methods. The excellent quality DNA and RNA can now be used in prospective studies to identify biomarkers associated with anal cancer progression and transformation

KEY WORDS: dna, rna, extraction, cancer, ffpe

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### Investigation of dengue replicon-based vaccine for HPV-associated oral cancer

Presenter's Name: Tumare Iqbal
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Israel Saintil, Xiaowu Pang

Vectors based on self-replicating RNAs (replicons) of positive strand RNA viruses are becoming powerful tools for gene expression in mammalian cells and for the development of novel antiviral and anticancer vaccines. Flavivirus replicons showed great potential as vaccine vectors: the replicons are naturally non-cytopathic, induce strong cellular immune responses and can be incorporated into virus-like particles. Dengue virus is a mosquito-borne flavivirus including four serologically related viruses known as dengue-1 to dengue-4. Dengue infection induce strong immune response and secondary infection with different serotype is able to produce even stronger immune reaction because the antibody-dependent enhancement of the virus infection. The enhancement of secondary viral infection could greatly improve the effectiveness of dengue virus-based therapeutic vaccine when repeat booster challenges are necessary. Here, we reported the development of dengue pseudoinfectious virus as a therapeutic vaccine candidate for HPV-positive cancers. The pseudoinfectious virus was produced by incorporation of dengue replicon into viral particles in high efficient packaging cells. The replicon was constructed by replacing the viral structural genes with HPV E6-E7 oncogene. Packaging cells were developed for inducible expression of viral structural proteins C-prM-E. When the replicon was introduced into the packaging cells, the viral protein C, prM and E were process by replicon-encoded viral protease and cellular signalase. Coordinate replicon replication and expression of viral structural proteins led to the incorporation of replicon into viral particle to produce PIVs.

KEY WORDS: Dengue replicon, HPV, oral cancer, vaccine, immunization

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### Isolation, Purification, and Characterization of Phages Iyee and MissyE

Presenter's Name: Ngodoo Iye
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Adebisi Adenupebi

**Background:** The purpose of SEA-PHAGES is to study bacteriophages (phages), a class of viruses that only infect bacteria. Bacteriophages are studied because of their potential to inject medicine into bacteria that have developed antibiotic resistance. **Methods:** To isolate phage from the environment, a soil sample was taken from The Yard at Howard University. Once collected, the soil sample was enriched using the host *Mycobacterium smegmatis*. To confirm plaques on the bacterial lawn contained phage particles, a spot test was conducted. After confirmation of plaques, a streak test was performed multiple times to purify a single phage population from a mixed population. **Results:** The phage Iyee isolated from the environment gave rise to multiple populations which range from 0.7cm to 0.9cm in diameter. This phage has a cocci morphology. **Conclusion:** The morphology of these phages indicate that they are temperate. Future experiments will further characterize these phages**.** To obtain a concentrated stock of phage, a high titer lysate will be reached through empirical testing. When enough phage DNA is present, genomic DNA will be extracted. Restriction enzymes will be used to help identify classes of mycobacteriophage. Additionally, the phage will then be characterized by its physical makeup using electron microscopy.

KEY WORDS: phages, bacteriophage, bacteria, DNA, characterization

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### Neuropeptide Regulation of Maladaptive Feeding Behaviors

Presenter's Name: Devon Jackson
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Amber D. Kimble, Dr. Kimberlei A. Richardson

**Background:** Binge eating disorder (BED) is characterized by repeated episodes of highly palatable food (PF) consumption and a loss of control over eating. BED is more common in adult females than males, therefore, adult female Sprague Dawley rats (250-300g, n=28) were used to determine binge eating phenotypes. Since activation of neural mechanisms may best explain this maladaptive feeding behavior, double label immunohistochemistry was used to determine the number of Fos-activated orexin cells within a major brain region associated with feeding. The orexin system, specifically orexin-A, in the lateral hypothalamus has been linked to feeding behavior. **Methods:** A series of feeding tests to analyze palatable food (PF) consumption were used to identify three

different phenotypes – binge eating prone (BEP), binge eating neutral (BEN), and binge eating resistant (BER). After the final feeding test, rats were perfused and brains processed for Fos and orexin-A immunohistochemistry. **Results:** On feeding test days, BEP rats consumed significantly more PF than BER rats. In contrast, BER rats consumed significantly more normal chow than BEP rats on test days. Quantification of double labeled (Fos-activated, orexin) cells from hypothalamic regions in BEP, BER, and BEN rats is underway. **Conclusion:** It is anticipated that topographical and activational differences in double labeled cells from BEP, BER, and BEN groups will be observed and those differences will correlate with the consumption of PF.

Support: PHS grant K01DA030444 (KAR), Howard University College of Medicine SOAR-Health Program (DLJ), and NSF: HRD-1000286 (ADK)

KEY WORDS: binge eating, orexin, neuropeptide, hypothalamus, immunohistochemistry

## Research Priorities and Direction for the Cobb Research Laboratory

Presenter's Name: Fatimah Jackson
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

The Cobb Research Laboratory houses two important collections, the W. Montague Cobb Collection and the New York African Burial Ground. Taken together, we have representative bioskeletal and soil samples on African Americans from the 17th, 18th, 19th, and 20th Centuries. Traditionally, the study of these materials have been limited to the fields of biological anthropology and bioarchaeology; however, scientific breakthroughs in molecular biology, genetics and bioinformatics will allow us to advance these collections and apply next generation science for evidence-based historically contextualized studies. Therefore we plan to utilize computational biology and bioinformatic approaches, in addition to developing highly nuanced databases for the Cobb Research Laboratory. These advancements will promote novel findings and new science standards for future studies of other human skeletal collections.

KEY WORDS: next generation science, historical research, African Americans

## Genomic Analysis of Blood-mediated disorders in African Americans

Presenter's Name: Latifa Jackson
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Ceylan Tanes, and Fatimah Jackson

African-American populations are disproportionately affected by stroke, hypertension, skeletal diseases and renal disorders. This increased disease prevalence is thought to arise, in part, from population specific genetic variation at genes involved in disease phenotypes. We have developed a method of identifying the significant underlying genetic polymorphisms curated from NCBI gene sets. The resulting literature curated gene sets can be used to identify modules and pathways mediating the intersection of stroke, hypertension, renal disease, and skeletal diseases. Stroke, hypertension, renal disease, and skeletal diseases gene sets(N= 2521 genes), obtained from NCBI Gene, were projected onto the genome, annotated with their gene ontology categories and cellular pathways to draw a bioinformatics portrayal of the overlap between these diseases with disproportionate effect in African American populations. Hotspot regions were then identified in the Human genome diversity panel populations and further characterized in HapMap populations. Mapping addiction genes onto the human genome resulted in eight gene clusters, with at least 15 disease genes (Range: 15-31 genes, pV <0.005) within a 1.5Mb contiguous distance along the genome. Hotspot genes were involved in blood circulation, cell migration, and regulation of phosphorus. Analysis of Human genome diversity panel populations with Sub-Saharan African ancestry showed population differences to non-African populations. We found eight regions of the genome that are strongly involved in complex disorders overrepresented in African American populations. Functional annotation of these hotspots identifies new candidate genes previously uncharacterized in the literature. Comparisons of polymorphism data point to 10 strong candidate variants that merit further characterization.
NCBI: National Center for Biotechnology Information

KEY WORDS: Bioinformatics, Genomics, African-Americans, Health Disparities

### Something Borrowed, Something New: Ancient African and Today's Medical Treatments

Presenter's Name: Samantha Jeffrey
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

The discipline of medicine is not exempt from the old adage, "Nothing is new under the sun." While the conventional wisdom of the American public states Hippocrates to be the father of medicine, human medicine truly dates back far before Hippocrates's birth in 460BC. The true fathers of medicine were ancient doctors in Egypt, Nigeria, South Africa, and other countries on the African continent. These practitioners of holistic medicine first developed many treatments still used today, including vaccination, autopsy, limb traction, broken bone setting, brain surgery, installation of false teeth, abortion, and Caesarean section. They also treated different afflictions with natural medicines including the use of aspirin, kaolin, shea butter, and pygeum. A more simple and holistic treatment of medicine, like that of the ancient Africans, could help put today's medical problems into better perspective.

KEY WORDS: ancient African medicine holistic health

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### Collecting, Isolating, and Purifying a Bacteriophage using Mycobacterium Smegmatis

Presenter's Name: Whitney Jenkins
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

A bacteriophage, or phage, is a virus that infects and replicates within a bacterium; they are comprised of proteins that encapsulate a DNA or RNA genome. The purpose of this research is to capture, isolate, and purify a unique phage from the Howard University campus. Phage was isolated and purified from soil samples. *Mycobacterium smegmatis* was the host bacterium in which the phage was grown. The steps taken to purify the phage in this experiment include the spot test to prove that plaques contain viable phage, streak plates to isolate plaques with clonal populations of phage, phage-titer assays to determine the concentration of phage plaque form units, and the preparation of a high titer lysate to provide sufficient phage for electron microscopy and for purification of phage DNA which will be analyzed by restriction digestion and other molecular biological methods.

KEY WORDS: Mycobacterium smegmatis, phage, capture, isolate, purify

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### Impaired pulmonary macrophage migration in HIV-1 transgenic mouse model of LPS-associated lung disease

Presenter's Name: Marina Jerebtsova
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Namita Kumary, Xiaomei Niu, Sergei Nekhai

**Introduction:** Circulating microbial products (LPS), derived from GI microbial translocation, are significantly increased in HIV-1 positive individuals. Circulating LPS stimulates chronic innate immune activation and leads to development of multiple organ pathologies. HIV-1 is an independent risk factor for development of noninfectious chronic obstructive pulmonary disease (COPD). The mechanism leading to COPD and its progression in HIV-1 positive individuals is unclear. **Material and Methods:** We established a mouse model of COPD using intra-peritoneal LPS administration in HIV-Tg26 transgenic mice. Immunostaining of activated macrophages (Mϕ) and neutrophils (Ne) was performed. Expression levels of HIV-1 genes were analyzed by qRT-PCR. Plasma cytokines level was determined by Bio-Plex Pro Mouse group1 Th1 panel kit. One way ANOVA was used for statistical analysis. **Results:** LPS administration significantly increased mortality and lung inflammation in HIV- Tg26 mice comparing to WT. Ne lung infiltration was increased in HIV-Tg26 mice. In contrast, Mϕ alveolar infiltration was significantly lower in HIV-Tg26 mice with significant accumulation of Mϕ in the lung capillaries. HIV-1 genes expression was increased in lung Mϕ. Previously, we demonstrated that high oxygen stimulated HIV-1 expression in Mϕ. Administration of novel inhibitor of HIV-1 transcription (1E7-03) significantly reduced lung Ne infiltration, prevented Mϕ accumulation in the capillaries, and reduced inflammation in HIV-Tg26 mice. **Conclusions:** Lung-specific high oxygen environment stimulates HIV-1 expression in LPS-activated Mϕ that reduces their ability to migrate and contain activated Ne. Supplementation of ART with HIV-1 transcription inhibitors may be beneficiary for treatment of non-infectious lung disease in HIV-1 positive individuals.

KEY WORDS: HIV-1, lung disease, innate immunity, macrophages, inhibitor of transcription

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## Atypical Presentation of Adenocarcinoma of Lung with ALK gene mutation

Presenter's Name: Ganji Jhansi
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Haseena Mazhar Ali MD, Farhan ahmed Khan MD, Faisal Mukhtar MD, Adriana Medina MD, Vijay Kodadhala, MD

**Background:** Adenocarcinoma is the most common lung cancer in non-smokers. The incidence is significantly higher, in young and is more common in females. Anaplastic Lymphoma Kinase (ALK) mutation is a rare genetic mutation of adenocarcinoma of the lung. **Case:** A 58-year-old African American Male presented with a complaint of progressive shortness of breath and right-sided chest pain for three day duration. CT chest with contrast revealed a small speculated mass in the right lung apex suspicious for neoplasm, with involvement of mediastinal lymph nodes. MRI brain revealed multiple brain metastases. A PET-CT scan revealed a 2.5-cm malignant neoplasm of the right upper lobe with metastatic disease to the mediastinum and skeleton. A biopsy of lung mass revealed a moderately differentiated adenocarcinoma of the lung. FISH results were positive for ALK rearrangement, partial deletion of 5 prime (paroxysmal) portion of the ALK. Patient was diagnosed to have clinical stage T4, N3, M1b carcinoma of the lung. The patient received radiation treatment to thoracic spine and brain. The patient was started ALK inhibitor, crizotinib and responded well. **Discussion:** ALK gene was first reported in 1997 via the cloning of the t (2:5) (p23:q35) translocation found in a subset of anaplastic large cell lymphoma. Its association with NSCLC was reported in 2007. Targeting ALK+NSCLC has resulted in better outcomes. ALK inhibitor Crizotinib is recognized as the standard of care in chemotherapy-pretreated ALK-positive NSCLC. Undiagnosed cases of this rare mutation was associated with poor outcome.

KEY WORDS: non smoker, Lung, cancer, gene mutation, critinib

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## mtDNA variation in African Americans across four centuries

Presenter's Name: Brittany Johnson
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

In humans, mitochondrial DNA (mtDNA) can be described as the smallest chromosome coding for 37 genes and containing approximately 16,600 base pairs. 16% of the entire human genome is represented in mtDNA. Human mitochondrial DNA was the first significant part of the human genome to be sequenced and has been used extensively in maternal ancestry determinations. The New York African Burial Ground represents some of the earliest African American populations of the 17th and 18th centuries while the Cobb Collection contains individuals who lived during the 19th and 20th centuries. DNA has been preliminarily assessed in 40 individuals of the New York African Burial Ground. To date, no mtDNA has been evaluated in the individuals of the Cobb Collection however it is known that 83% of these individuals identified as being of recent African descent. It is not known to what extent their social identities correlate with their mtDNA haplotype data. We hypothesize that in the Cobb collection, as in the New York African Burial Ground, mtDNA variations are derived primarily from African lineages of the megahaplogroup L. We present data on the distribution of mtDNA haplotypes in contemporary African Americans and where possible, compare these with the mtDNA data observed amongst individuals of both the New York African Burial Ground and the Cobb Collection,

KEY WORDS: mtDNA, genome, AA Burial Ground, haplogroup, Cobb, extract

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## Feeding and Ovoposition Responses of Insect Herbivores to Ni-hyperaccumulating Plants

Presenter's Name: Nia Johnson
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Chandler Puritty, Sharon Strauss, Mary McKenna

Hyperaccumulation of heavy metals from soils may be advantageous for plants if it reduces damage from herbivory. *Alyssum murale* and *Alyssum corsicum* (Brassicaceae) are Ni-hyperaccumulating plants that also produce glucosinolates as chemical defenses, as well as trichomes (hairs) as physical defenses. This Honors Thesis explores insect herbivory

and ovoposition behavior on *Alyssum* in soils with varying degrees of Ni-availability. Studies were done with two insects that primarily feed on plants in the Brassicaceae: *Murgantia histrionica* (Pentatomidae), a stinkbug native to Central America that is currently invading North America, and *Pieris rapae* (Pieridae), a Eurasian butterfly that is widespread in North America. This study explored the following question: Does variation in soil Ni levels deter herbivory or ovoposition on *Alyssum* hyperaccumulators? Herbivory by *Murgantia* and ovoposition by *Pieris* were monitored after releasing single *Murgantia* or *Pieris* adults into controlled environments containing *Alyssum* grown with varied concentrations of soil Ni. *Murgantia* shows a significant preference for visiting plants without Ni (p=0.000), suggesting that it can discriminate between plants in different soil environments. However, the presence of Ni does not prevent herbivory by *Murgantia*, since it spent an equal time feeding on visited plants with and without Ni. Ovoposition by *Pieris* was generally low, but there was a trend for more egg deposition on *A. corsicum* grown on soil with a high Ni level. These studies suggest that Ni-hyperaccumulation influences herbivore behavior, but *Alyssum* is likely to require a host of defenses (elemental, chemical and physical) to resist herbivory in natural communities.

KEY WORDS: herbivory, ovoposition, Ni-hyperaccumulator, Pieris, Murgantia

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## Pediatric Imaging: How did the Image Gently campaign affect imaging trends in children with appendicitis?

Presenter's Name: Sydney Johnson
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Margaret McGuire, Gezzer Ortega, Faisal G. Qureshi

**Introduction:** The Alliance for Radiation Safety in Pediatric Imaging was formed in 2006 with a goal to promote radiation protection for children undergoing imaging. In 2007, the alliance started the Image Gently campaign, which promoted lower dosages and practice changes. We studied the impact of the campaign on imaging trends in children with appendicitis. **Methods:** The Pediatric Health Information System (PHIS) database was queried for all cases of appendicitis from 2004-2013. Imaging type used and severity of appendicitis was collected. **Results:** 104,006 cases were identified with 41% perforated. There was an increase in total imaging over time for all cases (59.46% in 2004 to 65.53% in 2013). Computed Tomography (CT) use reduced from 37.97% in 2004 to 25.47% in 2013 for all patients. Concomitantly ultrasound (US) use increased for all cases from 26.88% in 2004 to 52.2% in 2013. Total imaging in perforated appendicitis trended downward (82.43% in 2004 to 65.20% in 2013). CT scan use also decreased in perforated appendicitis from 49.60% in 2004 to 19.34% in 2013 while US increased from 38.93% in 2004 to 52.15% in 2013. There was increased CT use in all groups from 2004 to 2007 before plateauing and dropping especially in perforated appendicitis. **Conclusion:** Total Imaging has increased in children with appendicitis, with an increasing use of US and reduced use of CT. CT scan use first increased and then decreased after 2007. The reduction in CT use and increase in US use may be related to the Imaging Gently program.

KEY WORDS: pediatric imaging, appendicitis in children, Image Gently

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## Isolation, Purification, and Characterisation of Nifemi, a Mycobacteriophage Specific to Mycobacterium Smegmatis

Presenter's Name: Mufutiat Jokomba
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

**Background:** The wet lab uses procedures in microbiology and molecular biology, to characterize a mycobacteriophage, a type of virus that infects known to have mycobacteria. Specifically, we study phages that *Mycobacterium smegmatis*. **Methods:** A soil sample was collected at 38.917778°N and 77.02111°W. A gram of this was enriched to yield a larger number of phage particles than naturally found in the soil. The remainder of the soil sample was flooded, filtered, and used to infect *Mycobacterium smegmatis*. The resulting plaques were spot tested and streaked to isolate a single phage population. A high titer lysate (HTL) was generated from the single population of phage. This HTL was used to isolate and purify the phage genomic DNA. Restriction digests with five endonucleases were performed to determine the phage DNA's restriction pattern. **Results:** The isolated phage, Nifemi, produces clear 1mm plaques. The restriction enzyme HaeIII made numerous cuts on Nifemi's DNA, meaning it contains the sequence 5'GGCC3' and 3'CCGG5' in abundance. **Conclusion:** Nifemi is likely a lytic phage because of the complete lysis of cells in the plaques. The next step will be to compare the results with others to determine if a potential phage has been discovered. Research on mycobacteriophages is important because of the insight it provides into the genetic diversity of phages. If the

process by which phages lyse bacteria is understood, it can be replicated artificially to replace antibiotics to which many pathogens are developing a resistance.

KEY WORDS: Mycobacteriophage, Mycobacterium smegmatis, Nifemi, HUH, Isolation

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### Epigenetic changes in human cells in response to chronic citalopram treatment

Presenter's Name: Riya Kanherkar
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Riya R. Kanherkar and Antonei B. Csoka

To test the hypothesis that commonly-used pharmaceutical drugs might cause epigenetic changes, Human HEK-293 cells were cultured in the presence of 10 $\mu$M citalopram for 30 days and genome-wide epigenetic analysis was subsequently performed using Illumina's Infinium HumanMethylation450 BeadChip arrays. Numerous DNA methylation changes were detected in various genes and non-coding regions compared to controls.

KEY WORDS: epigenetics, citalopram, SSRI, microarrays, Human embryonic kidney cells

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### Maxilla, Mandible and Teeth in a Partial 18q Trisomy

Presenter's Name: Manjot Kaur
Classification: Professional Student
*Presentation Type: Oral Presentation*

Coauthors: Manjot Kaur, Rachel Koshy, Paramjeet K. Sagoo, Marie Fidelia-Lambert, Marjorie Gondre-Lewis and Martha I. Dávila-García

Trisomy 18 or Edwards syndrome is a chromosomal disorder that occurs in 1 of every 3600 to 1 in 8500 live births, with a mean survival rate of 14.5 days. Cranial and brain tissue abnormalities are common in trisomy 18, however, the literature is very scarce on reports of intraoral findings and tooth structure. Here we describe the maxilla, mandible and the teeth characteristics of a 28-gestational week stillborn fetus diagnosed with the trisomy 18 syndrome with cyclopia. The fetus presented with the karyotype 46, XX, 18p-, 18q+, which makes it a rare partial trisomy 18. This subject had very characteristic facial features which included: a webbed neck, microstomia, micrognathia, triangular mandible, cyclopia, lack of nasal structures with a resulting increase in upper facial height, and abnormal low set ears compared to a normal 29 day old fetus. On CT scan the cranium looked fragmented. Histologic and cephalometric techniques were used to study the oral structures. Although both maxilla and mandible were hypoplastic and morphologically abnormal, the subject presented with apparent normal histology of bone and tooth germ. The abnormalities in maxilla and mandible are attributable to the underlying chromosomal involvement, however, it appears that chromosome 18 is probably not related to tooth development.

KEY WORDS: dysmorphology, cyclops, Trisomy 18

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### Outcomes After Bariatric Surgery in Black Male Patients

Presenter's Name: Dineeta Kubhar
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Gezzer Ortega, MD, MPH, Vanessa Pinard, BS, Eddie Bauer, BS, Dineeta Kubhar, BS, Chijindu Emenari, BS, Sam Onyewu, MD, Neh Molyneaux, MPH, Ololade Ogundimu, BS, Sylvonne Layne, MPH, Navin Changoor, MD, Daniel D. Tran, MD, Terrence M. Fullum,MD

**Introduction:** Black males have among the highest rates of morbid obesity and represent the lowest percentage receiving bariatric surgery. **Objective:** Our study aims to evaluate the effectiveness of bariatric surgery among Black male patients at an urban academic institution. **Methods:** A retrospective review of prospectively collected data was performed on patients who underwent bariatric surgery from August 2008 to June 2013. Data was collected on 284 patients of whom 90% identified themselves as African American. Data collected included BMI and co-morbidities. Outcomes of interest included mean BMI and resolution of co-morbidities. **Conclusion:** Black male patients receiving bariatric surgery have an overall decrease in BMI and resolution of co-morbidities. Bariatric Surgery utilization among Black males is a viable option for the treatment of morbid obesity.

KEY WORDS: morbid, obesity, BMI, bariatric, surgery

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### Inhibition of EBOV with Novel Phenyl-1-pyridin-2yl-ethanone (PPY)-based Iron Chelators

Presenter's Name: Namita Kumari
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Namita Kumari, Colette Pietzsch, Dmytro Kovalskyy, Andrey Ivanov, Alexander Bukreyev and Sergei Nekhai

Previously, EBOV transcription was shown to be inhibited through the activation of heme oxygenase-1 (HO-1). Infection with EBOV-like particles also reduced levels of IKBα and induced NF-ϰB leading to upregulation of cytokine production including IL-6. We recently developed novel phenyl-1-pyridin-2yl-ethanone (PPY)-based iron chelators that showed antiviral activity against HIV-1 with a minimal cytotoxicity. We observed potent induction of HO-1 and IKBα by PPYeT iron chelator and therefore hypothesized that it may also exhibit an anti-EBOV activity. The PPYeT iron chleator inhibited replication of EBOV in infected Vero-E6 cells at the 3 $\mu$M concentration, but demonstrated some toxicity. Previously, similar DpT-based iron chelators were shown to be toxic because they were able to scavenge electrons from heme-bound iron *in vivo*. We were able to reduce the toxicity by introduction of an additional benzene ring to the chelator, which created a bulkier PPYeT homologue with a similar chelating efficiency. The optimized PPYeT analog is being tested against EBOV.

KEY WORDS: Ebola, Heheoxygenase, NFKB, Iron Chelator

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### Quantum Entanglement in DNA: From Information Storage to the Holographic Genome

Presenter's Name: P Kurian
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: G Dunston, J Lindesay

Several biological systems—in organisms as diverse as bacteria, plants, flies, birds, and humans—have been examined for their exhibition of macroscopic quantum effects. The largest class of restriction enzymes, orthodox type II endonucleases, recognize four-to-eight base pair sequences of palindromic DNA, cut both strands symmetrically, and act without an external energy source such as ATP. What remains unclear is the mechanism by which cutting occurs in concert at the catalytic centers. We propose that collective electronic behavior in the DNA helix generates coherent dipole-dipole oscillations (quantized through boundary conditions imposed by the endonuclease) providing the energy required to break two phosphodiester bonds. Such quanta may be preserved in the presence of thermal noise through the exclusion of water and ions surrounding the helix, with the enzyme serving as a decoherence shield. Clamping energy imparted by the decoherence shield is comparable with zero-point modes of the oscillations in the DNA recognition sequence. The palindromic symmetry should conserve parity during the process. Experimental data corroborate that symmetric bond-breaking ceases when the symmetry of the endonuclease complex is violated, or when environmental parameters are perturbed far from biological optima. Serving as hallmarks for DNA double-strand breakage, similar palindromic complexes have been implicated in HIV integration, immunodiversity, and meiotic recombination. Persistent correlation between states across longer spatial separations—a characteristic signature of quantum entanglement—may be explained by such a physical mechanism. That the human genome gives rise to brain microtubules manifesting quantum consciousness leads us to the conceptualization of the holographic genome.

KEY WORDS: quantum entanglement, DNA, enzyme catalysis, synchronization, double-strand breakage

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### Differential Epigenetic Alterations and Prostate Cancer Disparity

Presenter's Name: Bernard Kwabi-Addo
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Joseph Devaney, Songping Wang, Bi-Dar Wang and Norman Lee

There is increasing evidence to suggest that aberrant epigenetic changes may contribute to prostate cancer (PCa) ethnic disparity. We used Illumina 450K array to comprehensively interrogate DNA methylation patterns in PCa disparity. We found very good concordance of the methylation levels between β-values provided by the Illumina array and pyrosequencing for 25 promoter-associated novel CpG sites most differentially methylated by race in PCa. Gene expression analysis using qRT-PCR in gene subset after treatment with 5-aza-2'-deoxycytidine and/or trichostatin showed up-regulation of gene expression in PCa cells. Quantitative analysis of 4 genes, *SNRPN*, *SHANK2*, *MST1R* and *ABCG5*

in matched normal and PCa tissues derived from AA and Cau PCa patients demonstrated differential promoter methylation and concomitant differences in mRNA expression in prostate tissues from AA versus Cau. Regression analysis in normal and PCa tissues as a function of race showed significantly higher methylation prevalence for *SNRPN* (P= 0.012), *MST1R* (P = 0.038) and *ABCG5* (P < 0.0002) for AA versus Cau samples. We selected *ABCG5* and *SNRPN* genes and verified their biological functions by western blot analysis and siRNA gene knock-out effects on cell proliferation and invasion in 2 AA and 2 Cau patients-derived PCa lines. Knockdown of either ABCG5 or SNRPN resulted in a significant decrease in both invasion and proliferation in Cau PCa cell lines but we did not observe these remarkable loss-of-function effects in AA PCa cell lines. Our study demonstrate how differential genome-wide DNA methylation levels influences gene expression and biological functions in AA and Cau PCa.

KEY WORDS: prostate cancer, disparity, gene expression, methylation, ethnic group

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## Purification and Isolation of Bacteriophage "Patricia's" DNA

Presenter's Name: Edene Shirley Lakpa
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

A bacteriophage is a parasitic virus that injects its DNA into a bacterial cell to reproduce itself, ultimately killing the host by lysis. The purpose of this research, conducted in the PHAGES Honors General Biology laboratory sections, was to isolate and purify a bacteriophage from a soil sample, then characterize its structure by electron microscopy, and analyze its DNA by restriction digestion as well as by other molecular biological methods. One phage DNA from each of the four Honors sections was submitted for DNA sequencing. The phage sequence is being annotated to identify its gene products and their probable functions by comparison to similar genes in data bases of known function. Studying bacteriophage genomes and the role of the phage genes in the lytic cycle may identify novel treatments and improve current bacteriophage-based therapies. The bacterial host in the isolation of phage "Patricia" was *Mycobacterium smegmatis*. *Mycobacterium* is useful in laboratory experiments because it is fast growing and non-pathogenic. The phage was isolated from soil enriched with *Mycobacterium smegmatis*. After the samples were isolated from their natural environment, the samples were purified and a pure lysate was collected. Phage "Patricia", approximately 0.2 centimeters in diameter, forms clear circle plaques indicating that "Patricia" is a virulent phage.

KEY WORDS: bacteriophage, isolation, purification, DNA,

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## Type 2 Diabetes Management and Effects of Plant-Based Diet on Diabetic Patients: A Pilot Study

Presenter's Name: Leticia Lamour
Classification: Professional Student
*Presentation Type: Poster Presentation*

**Purpose:** To assess the management and effects of a plant based diet on diabetic patients at Howard University Hospital (HUH). **Background:** Type 2 Diabetes is one of the rapidly growing diseases that are directly related to nutrition and preventable. Research findings show that diabetes affects 29.1 million people, 9.3% of the U.S. population, as of 2012. In ages 20 years and older that are diagnosed and undiagnosed, 28.9 million have the disease. And of that age group of 20 years and older, 12.8% are Hispanic and 13.2% are Non-Hispanic Blacks. Control over glucose, blood pressure, and blood lipids level will decrease and prevent the complications of diabetes. **Methods**: Black and Hispanics from age 20 will be recruited from diabetic center and family practice, HUH. Fifty participants will be grouped in two, 25 participants per group. One group will be placed on whole plant-based diet while the other will not. Exclusions will be non-Black and non-Hispanic male and female under the age of 20. Institutional Review Board (IRB) approval and consents will be obtained from the participants prior to recruitment and Health Belief Model will be used as a conceptual framework.
**Results**: After six-months of high fiber and low fat diet, participants who are placed under the plant-based diet will have a significant reduction of HbA1c, blood pressure and lipids which lead to diabetes complications. **Conclusion:** Type 2 Diabetes could be managed through a whole plant-based diet with minimal use of pharmaceutical agents, therefore managing the disease complications to non-existence.

KEY WORDS: Type 2 diabetes, Complications, Management, Plant-based, Diet

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## Differential Exposure to Chronic vs Acute Palatable Food Intake on Rat Renal Orexin Receptor 1 and NOX-4 Liver Expression

Presenter's Name: Dexter Lee
Classification: Senior Faculty
*Presentation Type: Poster Presentation*

Coauthors: Jasent Walker, Simi Adeleye, Tamaro Hudson, Ph.D., Kimberlei Richardson, Ph.D.

**Background:** Orexin peptide A, a neuropeptide, binds to Orexin receptor 1 and stimulates appetite and arousal. Orexin receptor 1 is found throughout the different organs and peripheral tissues. Nicotinamide Adenine Dinucleotide Phosphate Oxidase Subunit -4 (NOX-4) is a member of the NOX family of NADPH oxidases. NOX-4 generates superoxide and is released in response to stress and its expression is increased during hypertension. We hypothesize that chronic high caloric intake causes a greater increase in both renal orexin receptor 1 and NOX-4 expression versus acute intake. **Methods:** Kidneys were obtained from female Sprague Dawley rats (n=9) that consumed a high fat, high sugar diet, either long-term or short-term. Western-blots were performed to determine the expression of orexin receptor 1 and NOX-4 in liver and kidney homogenates. **Results:** Orexin receptor 1 expression in the kidneys was 0.81 ± 0.1 and 1.4 ± 0.31 (relative units) for chronic and acute feed animals, respectively. NOX-4 expression in the kidneys was 1.32 ± 0.1 and .80 ± .21 for chronic and acute feed animals, respectively. NOX-4 expression in the liver was 1.76 ± 0.1 and 0.93 ± 0.30 for chronic and acute feed animals, respectively. The results indicate that there is a higher expression of orexin receptor 1 in the kidneys of acute PF intake rats. Conversely, NOX-4 expression is higher in the kidneys and liver of chronic PF intake rats. **Conclusion:** Our results may suggest mechanisms how chronic and acute high caloric intake can cause health issues such as hypertension.

KEY WORDS: Orexin, NOX-4, liver, kidney, hypertension

## Targeted cancer gene sequencing identifies potential causative novel candidate mutations in colon carcinogenesis

Presenter's Name: Edward Lee
Classification: Senior Faculty
*Presentation Type: Poster Presentation*

Coauthors: Edward Lee, Michael Nickerson, Sudhir Varma, Pooneh Mokarram, Fakhraddin Naghibalhossaini, Hassan Brim, Hassan Ashktorab

Much of the sporadic colorectal cancer's (CRC) underlying genetic 'cancer driver' mutations are unknown in patients from specific ethnic groups. Here, we report the identification of distinct novel variants from adenoma and CRC patients in mismatch repair (MMR) genes MHS3 and MSH6, and in PIK3CAand APC. We developed a panel of 20frequently altered colon cancer genes comprised of *ACVR2A, APC, ARID1A, BRAF, FAM123B, FBXW7, KRAS, MSH2, MSH3, MSH6, NRAS, PIK3CA, POLE, PTEN, SMAD2, SMAD4, SOX9, TCF7L2, TGFBR2,* and*TP53*for targeted sequencing in 65 colon tissues, comprised of 1 normal tissue sample, 2 adenomas, and 63 tumors. Multiplex PCR and Ion Torrent sequencing was used to examine 98.8% of the targeted exons and splice junctions at a depth of sequencing that allowed for high confidence variant calling (most bases were covered by ≥ 500 reads). After alignment and variant calling, we annotated the variants with information from the 1000 Genomes Project, COSMIC, Polyphen2, and PFAM domain and transcription factor motifs. Excluding synonymous SNVs, 3 variants in adenoma, and 692 variants in tumors were detected. Two were known pathogenic variants (MSH6 p.R965H andAPCp. R1432X). Novel variants (286, 244, and 115) were found in MMR genes (MSH6 and MSH3), APC, and PIK3CA, respectively. Most of the MMR (n=98), APC (n=128), and PIK3CA (n=43) variants are deleterious. Notably, among the 63 CRC cases, [(29/61=46%) 46%) for MSH3, MSH6] [(19/63=30%) (30%) for PIK3CA] [31/63=49%) (49%) for APC)] carried likely deleterious MMR,PIK3CA and APC mutations, respectively, suggesting the value of a broad cancer gene panel. These finding further highlight the relevance of APC, PIK3CA genes in CRC onset but also the potential underestimation of the MSI-H in sporadic CRC as many of the novel mutations in MMR gens detected here were of a deleterious nature.

KEY WORDS: colon, sequencing, novel

## Osteological Markers of Advanced Pulmonary Tuberculosis in the Cobb Collection

Presenter's Name: Atila Libutsi
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Christopher Cross M.S.; Fatimah Jackson PhD

Pulmonary tuberculosis is a common chronic infectious pathogen that is caused by *Mycobacterium tuberculosis*. When left untreated by an aggressive drug therapy, pulmonary tuberculosis is commonly fatal. This study analyzes observations of skeletal tuberculosis of deceased individuals dating back to the 1930's. The manifestation of skeletal tuberculosis is rare, accounting for only 10 - 35% of clinical cases of advanced tuberculosis, although it can be distinctly observed through various bone lesions and bone decay caused by osteomyelitis (bone infection). Using established anatomical methodology and pathological reports, we aim to analyze the osteological markers of pulmonary tuberculosis (e.g., the characteristic lesion) to generate individual case studies for the tuberculosis-affected individuals, and prepare for subsequent biomolecular DNA analysis.

KEY WORDS: Tuberculosis; Comparative Anatomy; Case Study

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## Fabrication of a Microfluidic Device for Generating Liposomal Nanoparticle as Drug Delivery Vehicle

Presenter's Name: Stephen Lin
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Zhenjiang Zhang, Paul Wang

**Background:** One of the major challenges in cancer diagnosis is detection of early tumors. Targeted nanoparticles are increasingly being investigated for use as a vehicles to deliver diagnostic agents to tumors. It has been shown that the dynamic uptake of the nanoparticles depends on the nanoparticle size. In order to study this, nanoparticles must have a narrow size distribution. Using a microfluidic device, liposomes can be generated with a very narrow size distribution. **Methods:** A blank mold of photoresist laminated on a glass slide was photopatterned using UV light through a laser-plotted mask to create a mold with microfluidic channels. The microfluidic device was cast in polydimethylsiloxane (PDMS), which was then plasma bonded to a glass slide. Liposomes were generated by infusing with a lipid and buffer. Liposome size and size distribution was measured with dynamic light scattering. **Results:** The device was tested with a lipid formulation consisting of DPPC, cholesterol and DSPE-PEG. A 1:10 infusion ratio resulted in a Z-average size of 139.9nm and a polydispersity index (PDI) of 0.128. With a 1:20 ratio, the Z-average size was 91.4nm with a PDI of 0.163. **Conclusion:** A microfluidic device designed for the generation of liposomes was successfully fabricated. The device allows easy control of the liposome diameter by modifying the ratio of the infusion flow rate of the lipid and buffer, and by modifying the lipid formulation. Early tests show the PDI is comparable to established extrusion-based technique. Further refining of the technique is expected to improve the size distribution.

KEY WORDS: Cancer, Nanomedicine, Liposome, DCE-MRI, Microfluidics

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## Synthesis of Less Degradable Dental Restorative Resins

Presenter's Name: Hang Liu
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Tongxin Wang, Laurence C. Chow, James W. Mitchell, Oladapo Bakare

**Background:** Restorative dental composite is a common dental material for dental defection restoration. However, current widely used resins, such as BisGMA, UDMA, and TEGDMA, have some defaults including volume shrinkage during polymerization, lower adhesive strength and degradation in oral cavity. **Methods:** In order to reduce the degradation of dental resins, a number of novel monomers, in which the conventional methyl acrylates were replaced by less degradable moieties, were designed. These monomers were prepared with facile synthesis no more than two steps, identified by NMR, MS, and preliminarily evaluated in the aspect of polymerization using BPO/AIBN as initiator. **Results:** (1) A series of monomer with either allyl groups or reversed acrylate moieties have been designed and synthesized; (2) The structures of the monomers have been confirmed by NMR and MS; (3) The monomers could easily polymerize and form strong cross-linked networks. **Conclusions:** A series of easy polymerizable resins with less degradable structures were developed. These unique polymeric materials can be utilized as promising dental restorative resin. Further studies focused on their mechanical properties and degradation are being continued.

KEY WORDS: restorative dental composite, polymer, resin, degradation

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## A conceptual model on evaluating disadvantaged population's access to social benefits

Presenter's Name: Meirong Liu
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Desiree Spencer

The extent to which various types of social services and other public benefits have been available to general populations, and especially to disadvantaged groups, has received considerable research attention. A literature has emerged on "barriers" to receipt, as well as on disparities in the characteristics of persons who do or do not receive benefits. These studies collectively have resulted in the elaboration of diverse systemic and individual factors that restrict access.
Despite the importance of such issues to policy planners, analysts, advocates, and researchers, attempts to conceptualize access more generally have been limited and imprecise. This article addresses these problems, with an emphasis on developing a conceptual framework for assessing access to a wide array of social benefits. After first discussing selected overarching issues that complicate the evaluation of service access, we present a conceptual framework that categorizes the mechanisms through which persons potentially in need of benefits are eliminated from service receipt. We will rely primarily on the U. S. child care subsidy system to provide examples of access issues in the categories we present, but argue that the framework pertains to most other social benefits as well. We conclude by discussing how the suggested framework can guide human services administrators and policymakers as they consider potential difficulties in access to services and related ways of improving policies and administrative practices. We also argue that the framework can be used to guide empirical research that more precisely assesses the importance of various types of access problems.

KEY WORDS: conceptual model, social benefits, access

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## RyhB and FnrS small regulatory RNAs stimulate expression of the Escherichia coli anti-sigma Factor RseA

Presenter's Name: Laricca London-Thomas
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Laricca London-Thomas, Karl Thompson

Small regulatory RNAs are non-coding RNAs in bacteria that range in size from 50-500 nucleotides. These sRNAs generally act on their targets through a direct interaction that results in stimulation or inhibition of translation or mRNA stability. The sRNA encoding portion of the *E. coli* genome is thought to be approximately 1-2% and the full regulatory function of all *E. coli* sRNAs are not know. RseA is an anti-sigma factor that plays a central role in the envelope stress response in *E. coli*. The *rseA* gene is in an operon downstream of its target sigma factor gene, *rpoE*. One of three *rseA* promoters is within the *rpoE* gene (*rseA*P3) and its transcription is RpoE-dependent. The *rseA*P3 transcript has a 228 long 5' untranslated region (UTR). Long 5' UTRs are frequently indicative of potential post-transcriptional regulation. There is no information on the post-transcriptional regulation of the RseAP3 transcript. We constructed a genetic tool to screen for post-transcriptional regulators of the RseAP3 transcript and screened a library of approximately 30 *E. coli* sRNAs for RseA regulation. We picked up RyhB and FnrS sRNAs as potential stimulators of RseAP3 translation. Taken together, our results suggest that RyhB and possibly FnrS stimulate RseA translation through direct base pairing.

KEY WORDS: Bacterial Genetics, Small RNAs, Noncoding RNAs, Iron metabolism, Anaerobiasis

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## Isolation and Purification of Phage found in Environment

Presenter's Name: Dana Lougheed
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

**Background:** The purpose of this experiment is to isolate, purify and identify the structure and genome of a mycobacteriophage found in the local environment. A mycobacteriophage is a virus that specifically infects bacteria that belong to the *Mycobacterium* genus. Methods: The bacteriophage was isolated using as enrichment method to increase the number of phages in the sample, and purified by streaking and titering. A high titer lysate (HTL) was generated in order to visualize the phage particles using transmission electron microscopy and extract phage DNA. The DNA was extracted using chemical techniques that involved centrifuging the HTL and resin to uncoat the phage particles. Lastly, the DNA was treated with restriction enzymes and visualized using gel electrophoresis to better characterize the genome of the phage. Results: The results showed that the plaques obtained were small, about 1 nm in diameter. The DNA extracted from the bacteriophage has a concentration of 86.6ng/mL. Calculations were conducted to increase the amount of DNA so that there was a viable

amount to perform a restriction digest on. The visualization of the DNA using gel electrophoresis showed that the DNA was cut by all the restriction enzymes used. **Conclusion:** Substantial digestion by HaeIII indicated that the phage DNA contained multiple repetitions of GGCC. Also, conducting and visualizing a restriction digest allows scientists to compare the genomes of multiple bacteriophages.

KEY WORDS: Mycobacteriophage, gel electrophoresis, electron microscopy, restriction digest, restriction enzymes

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### Patient Attitudes toward the Use of Tablet Computers in Orthopaedic Outpatient Centers

Presenter's Name: Stephanie Maestre
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Augustine Obirieze MBBS, MPH, Robert H. Wilson MD, Marc Rankin MD

Recently, the U.S. health care system has been implementing Health Information Technology (HIT) to improve the quality of documentation and cost-efficiency of health care. There is a widespread adoption of computers in clinics and patient rooms over the past few years, specifically tablet computers (which include tablet laptops and iPads) for their portability and integration into the clinical workflow. Previous studies on patients' attitudes toward computers suggest that patients have mixed opinions. Even though there are more studies revealing positive patient perception towards the use of computers, only a limited number of studies have analyzed the patient's attitudes toward the use of new-computer technology in a clinical setting. The field of orthopaedic surgery has been noted for its cutting-edge technology in the operating room, but no study has been done to examine the patients' attitudes toward the use of computers in orthopaedic outpatient centers. The objective of this study was to determine the patient's attitudes toward the use of tablet computers in an orthopaedic outpatient center. We administered an exit questionnaire to patients at Rankin Orthopaedic and Sports Medicine Center located in Providence Hospital in Washington, DC during July 2013. The questionnaire was adapted from a previously published and validated study addressing patient attitudes toward physician use of tablet computers in a primary care clinic. However, three additional questions were added to the validated questionnaire. The results showed that patients had positive attitudes towards the use of tablet computers during their patient visit, regardless of several socioeconomic factors. With positive attitudes toward the use of computers in an orthopaedic outpatient center, more orthopaedic surgeons will utilize tablet computers in their practice. The success of redesigning the practice of orthopaedic surgery outpatient care will rely on further evaluation on implementation strategies of these new devices.

KEY WORDS: Tablet computers, patient attitudes, computers, patient visit, minorities

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### Patient characteristics associated with obesity related hypertension and one year post-operative hypertension resolution in African American patients undergoing Rou en Y gastric bypass surgery: A single center study

Presenter's Name: Ankit Mahajan
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Charu Gandotra MD, Julius Ngwa Phd, Ankit Mahajan MD, Gezzer Ortega MD, Chijindu C. Emenari BS, Akere C. Atte, Pharm.D., Neh D. Molyneaux, MPH, Sylvonne A. Layne, MPH, Monique Turner, Daniel Tran MD, Terrence M. Fullum

**Background:** Obesity predisposes to hypertension, thereby increasing cardiovascular morbidity and mortality. African American population is disproportionately affected by obesity and hypertension. Rou-en-Y gastric bypass (RYGB) surgery is performed to treat obesity and obesity related co morbidities such as hypertension. However, there is paucity of data about the patient characteristics associated with obesity related hypertension in African American patients undergoing RYGB surgery. In this retrospective study we examine the characteristics of obese hypertensive AA patients presenting for RYGB surgery at the Howard University Center for Wellness and Weight Loss Surgery (HUCWWLS). **Methods:** A retrospective review of a prospectively maintained database from January 2007 onwards at HUCWWLS was performed. Clinical characteristics of study participants with and without preoperative hypertension were compared. Also, preoperative characteristics of participants who experienced hypertension resolution at one year after RYGB surgery were reviewed. **Results:** One hundred eighty one patients met the inclusion criteria; of which 133(73%) patients had preoperative hypertension. Patients with preoperative hypertension were older than patients without preoperative hypertension (47 years vs. 38.5 years; $p < .0001$); had higher prevalence of diabetes (45.83% vs. 9.46%; $p < .0001$) and dyslipidemia (42.3% vs. 10.8 %; $p < .0001$). Preoperative body mass index and number of preoperative hypertension

medications were significantly associated with hypertension resolution at one year after RYGB surgery. **Conclusions:** Future studies are needed to validate characteristics associated with hypertension in obese African American patients and with hypertension resolution after RYGB surgery to refine patient selection criterion for bariatric intervention to affect primary and secondary cardiovascular disease prevention.

KEY WORDS: Hypertension; Obesity; Bariatric surgery; Afro-American; Roux-en-Y gastric bypass

## An untold story: the important contributions of Muslim scholars to the discovery of human anatomy and the history of evolutionary thinking

Presenter's Name: Aamina Malik
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Malak A. Alghamdi, Janine M. Ziermann, Rui Diogo

**Background:** Evolutionary and anatomical textbooks tend to neglect or only briefly mention the contributions of Muslim scientists to the discovery of human anatomy and to the history of evolutionary theory. This negligence is a result of complex historical biases, has profound implications, creates several misconceptions, and denies teachers, students and researchers in the scientific community a more complete understanding of the true history of anatomical and evolutionary discovery. **Methods:** For an original project at one of the most historical American universities Howard involving graduate students, faculty members, and their colleagues from other institutions, we conducted an extensive literature review of ancient texts written during the Islamic Golden Age in various languages. We focused specifically on literature before the lifetimes of Andreas Vesalius (about human anatomy) and Charles Darwin (about evolutionary theory), but also included more recent sources on the subject. **Results:** Here we present, for the first time, the outcome of this review in a discussion of medieval Muslim scholars whose relevant contributions to these scientific fields were unfortunately forgotten over time, particularly in the West. **Conclusions:** Howard University's Research Day is an ideal event at which to present this untold story, both symbolically and pragmatically, due to its relevance to not only students and professionals of evolutionary biology and anatomy, but also to the general public.

KEY WORDS: Muslim scholars, history of science, biases, evolution, anatomy

## Sarcoidosis Associated Pulmonary Hypertension: Effects on Functional Capacity and Mortality

Presenter's Name: Ahmar Malik
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Navdeep Singh, Alicia Thomas, Wayne Davis, Alvin Thomas, Vishal Poddar, Octavius Polk, Alem Mehari

**Purpose:** The prevalence, hemodynamics, and the effects of sarcoidosis associated pulmonary hypertension on functional capacity and mortality are not well delineated. **Methods:** In this cross-sectional study, we included patients with pulmonary sarcoidosis (n=113) who were being followed up at outpatient chest clinic from 01/01/2001 to 11/01/2014. We reviewed demographic data; CXR stage, Doppler echocardiography, PFTs and 6minute walk tests of all patients and the available right heart catheterization results. Pulmonary hypertension (PH) was defined as either estimated pulmonary artery systolic pressure (PASP) > 40mmHg on Doppler echocardiography or mean pulmonary artery pressure (mPAP) ≥ 25mmHg on right heart catheterization (RHC). We obtained all-cause mortality data from both medical records and social security death index. **Results:** On Doppler echocardiography, 38(33.6%) patients were found to have estimated PASP > 40mmHg. The mean estimated PASP was 51.0±17.4 vs. 26.2±9.8mmHg; p<0.001 in those with and without PH respectively. Eight out of these 38 patients underwent RHC; and PH (mPAP≥25mmHg) was confirmed in all with mean pulmonary artery pressure (mPAP) of 51±12.3mmHg, mean pulmonary artery wedge pressure (PAWP) 15±10.1mmHg, mean trans pulmonary gradient (TPG) 36±7.1mmHg, mean diastolic pulmonary gradient (DPG) 17±4.4mmHg, mean cardiac index (CI) 2.4±1.1L/minute/m2, and mean pulmonary vascular resistance (PVR) of 8±4.5wood units. The mean age (56±11yrs vs. 58±10yrs), PFT results and CXR stage did not differ between those with PH and those without PH. Those with PH had significantly reduced functional capacity in terms of 6-minute walk distance 220±81 vs.314±113meters; p=0.036; compared to those without PH. A total of 13 patients died during the study period. The PH group had significantly higher mortality 9(23.7%) vs. 4(5.3%) in non-PH group; p=0.009. **Conclusions:** PH associated with sarcoidosis is prevalent and severe, 33.6% based on ECHO and 21% by RHC in this study. The presence of PH was associated with poor functional capacity and increased mortality but not with the CXR stage or PFT disease severity. **Clinical Implications:** Patients with sarcoidosis should be promptly screened for PH. Studies exploring the pathophysiology and therapeutic options for sarcoid associated PH are urgently needed.

KEY WORDS: Sarcoidosis, Pulmonary-HTN, Functional Capacity, Mortality

### A Clustering Algorithm for Complex Traits in the Human Genome

Presenter's Name: Aaron Malveaux
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Latifa Jackson, Todd Shurn

The ability to explore complex phenotypic traits has been a central question in biomedical science. The observation that many traits share genomic variation contributors has both complicated and elucidated this area of genomic interest. Currently, we have few analytical mechanisms to describe the role that genes and genetic variation location play in disorders. We sought to develop a computational algorithm to cluster genes identified as participating in complex disorder traits such as alcohol addiction, hypertension and prostate cancer with respect to their genomic location. These clusters can be used to identify single complex traits or to identify combinations of complex phenotypes that may share some genetic architecture of disease relationship between genes that are in proximity of one another. Using this clustering algorithm on a hypertension data set representing 669 genes associated with disease and renal function, we identified 22 number of clusters located on chromosomes 1 - 8, 10, 19, 22 and X. This systems biology approach has broad application to understanding complex traits.

KEY WORDS: clustering, computational biology, genes, chromosome, traits

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### Historical Investigation of Rumex plant species in the DC Metropolitan Area

Presenter's Name: Janet Mansaray
Classification: Undergraduate Student
*Presenttion Type: Poster Presentation*

Coauthors: Janelle Burke

The ability to explore complex phenotypic traits has been a central question in biomedical science. The observation that many traits share genomic variation contributors has both complicated and elucidated this area of genomic interest. Currently, we have few analytical mechanisms to describe the role that genes and genetic variation location play in disorders. We sought to develop a computational algorithm to cluster genes identified as participating in complex disorder traits such as alcohol addiction, hypertension and prostate cancer with respect to their genomic location. These clusters can be used to identify single complex traits or to identify combinations of complex phenotypes that may share some genetic architecture of disease relationship between genes that are in proximity of one another. Using this clustering algorithm on a hypertension data set representing 669 genes associated with disease and renal function, we identified 22 number of clusters located on chromosomes 1 - 8, 10, 19, 22 and X. This systems biology approach has broad application to understanding complex traits.

KEY WORDS: Rumex, botany, DMV, flora, DC

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### Comparative Lower Limb Anatomy in the Cobb Collection and Among Contemporary Age and Sex-Matched Individuals

Presenter's Name: Eric Mayes
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Andrew Pryce

This project seeks to compare and contrast anatomical patterns of individuals in the Cobb collection and an anonymous set of individuals in the Howard University Hospital (HUH) due to a set of varying factors. The osteological focus will be derived from the bones of the lower extremities; most notably the femur, tibia and their articulation. Over an extended period of time; strenuous to extreme physical activity, diet and systematic physiological irregularities can be manifested into musculoskeletal disorders. The likely determination of this study will be that more historic individuals in the Cobb lab will reveal indications of greater debilitative and degenerative musculoskeletal conditions versus their more contemporary counterparts and today□s individuals. This is due to the possibility in the drastic differences in physical activity these two groups experienced for example; intense labor related jobs. Inadequate access to healthcare and dietary restrictions will also be major considerations. Working collaboratively with HUH's department of Orthopedic Surgery and Rehabilitation, key features of the lower extremities will be measured, analyzed and distinctive features noted. MRI scans will be obtained of the anonymous individuals; comparing those in the Cobb laboratory within specific criteria such as gender, age and height. Reasonable assumptions of health status and the presence of conditions such as osteoporosis and arthritis will be noted.

KEY WORDS: Anatomy, Musculoskeletal system, Orthopedics, Debilitations, Kinesiology

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### Enviornmental Degradation of the Black Community

Presenter's Name: Elexus Mays
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Elexus Mays

There are a few environmental issues plaguing African Americans today. The first being climate change. Climate change affects them because most black people live in low income communities and when the weather changes drastically they have to pay more for utilities. Also it's been shown that areas where most minorities live are areas that retain more heat. During a heat wave communities of color are subjected to greater heat related stress and illnesses and some even die because of heat waves. Pollution is also a big deal in the rural areas. Poor air quality contributes to many health issues. Breathing in too much polluted air can cause high blood levels, eye problems, and even asthma. Asthma is triggered by high quantities of particulate matter. Black are three times more likely to die from asthma than white people. Along with the air pollution there is also pollution in the water. The water that they drink and the water they swim and bathe in. Most urban and city areas are home to people of color and also home to poor water quality. High levels of contaminated water can cause premature births, learning disabilities and tooth discoloration. It also contributes to kidney failure. As a woman of color, I think there should definitely be a call to action. Schools, especially historically black colleges that want us to be well versed about the state of the world we are inhabiting, should teach us the important subject of the environment. African Americans are very quick to join in and lend a hand on racial issues or social injustices. We need to reach out on environmental issues that affect our community as well.

KEY WORDS: environment black community pollution illness

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### Behavioral Ecology of Sceloporus jarrovii (Yarrow's Spiny Lizard); Habitat Preference

Presenter's Name: Earyn McGee
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: George Middendorf

My study examines patterns of microhabitat use by Yarrow's spiny lizard, *Sceloporus jarrovii*, in a .5 km stretch of Cave Creek Canyon in the Chiricahua Mountains of southeastern Arizona. The study branches from an ongoing, multiyear study looking at population demographics of several sympatrically occurring lizards. Data collected from the ongoing multiyear study, includes population density, population demographics, annual changes in the lizard community structure, and changes in the distribution of lizards in their summer territory locations. Examination of historical data suggest that lizard are non-randomly distributes. The microhabitat structure, particularly the location of exposed shale outcrops, logs, and large boulders, strongly affects patterns of lizard distribution within the canyon. Because the distribution of these structures varies little from year to year, lizard patterns have been fairly consistent from year to year. Data collected for my study includes, canyon direction, streambed width, aspect, and slope for every 5 m of the 0.5 km length of the study site. The purpose of this study was to collect data on patterns of lizard distribution, and compare these to historical data to determine the role of microhabitat on distribution patterns

KEY WORDS: Lizard, Sceloporous, jarovii, arizona, swrs

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### Racial/Ethnic Differences in Stage at Diagnosis Among Premenopausal Breast Cancer Patients

Presenter's Name: Cheyenne McLaughlin
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Namita Akolkar, Augustine C. Obirieze, Gezzer Ortega, Maryam Sarraf-Yadzy, Sara L. Horton, Jacquelyn Dunmore-Griffith, Kelly M. Bolden, Robert L. DeWitty, Wayne A. Frederick, Lori L. Wilson

BACKGROUND: Literature shows racial/ethnic disparities in breast cancer survival rates. Advanced stage diagnosis portends to worse prognosis. We endeavored to determine whether there are racial/ethnic disparities in breast cancer diagnosis stage among premenopausal women.
METHODS: We conducted a retrospective analysis using 1996-2006 data from the Surveillance Epidemiology and End Results database. Premenopausal (≤50 years) women with primary diagnosis of breast cancer were identified using appropriate ICD-O-3 codes (C500-C509). Using White patients as reference, and comparing racial/ethnic groups, multivariate logistic regression was used to assess the odds of late-stage

(III or IV) versus early-stage (I or II) diagnosis at presentation, adjusting for prognostic factors, tumor characteristics, and year differences. RESULTS: 86,570 women met our inclusion criteria: 56,811 (65.62%) White, 10,789 (12.46%) Hispanic, 9,896 (11.43%) Black, with the majority between 41-50 years old (74.6%) when diagnosed and having stage II breast cancer (46.3%), invasive ductal histology (93.2%), 1.1-3cm (57.3%) in size, poorly differentiated (45.2%), without distant metastasis (96.5%). Multivariate analysis revealed that Blacks had 58% greater odds (OR: 1.58; 95% CI: 1.49-1.68) and Hispanics had 37% greater odds (OR: 1.37; 95%CI: 1.29-1.46) of late-stage breast cancer diagnosis than Whites. Cancer-specific mortality rates were 10.1% for Whites, 21.1% for Blacks, and 13.4% for Hispanics. (p value <0.001). CONCLUSIONS: Utilizing SEER, our study showed Black and Hispanic women have greater odds of late-stage diagnoses and higher cancer-specific mortality rates than Whites. Pre-menopausal Black and Hispanic women represent a high-risk group that will benefit from identification of factors contributing to late-stage breast cancer presentation.

KEY WORDS: Disparity, Breast cancer, Stage, African-American, Pre-menopausal

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### Effects of Flow Shear Rate and Nutrient Concentration on the application of Antibacterial Agents to Staphylococcus aureus biofilms

Presenter's Name: Abiye Mekonnen
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Patrick Ymele-Leki

Biofilms occur when microorganism attach to a surface and form a bio-layer which acts as a single organism. Adhesion to a surface provides significant advantages such as protection against antimicrobial agents. According to the NIH about 60% of infections are related to biofilms. *Staphylococcus aureus* is one of the most common causes of bacterial biofilm infections. This project aims to determine the combined effects of media concentration and shear rate that are optimal for maximizing the efficacy of antibacterial drugs. We hypothesize that the combined effect of media concentration and shear rate applied to the bacterial biofilm has statistically significant influence on the ability of antimicrobial drugs to degrade bacterial biofilms. To test this hypothesis, biofilms were grown under different media concentrations (2X, 1X, 0.5X, 0.1X) of TSB and fluid shear rates (ranging from 10 s-1 to and 300 s-1) conditions in the presence or absence of known antibacterial agents. Our preliminary data suggest that, at lower shear rates, biofilm growth curves overlap in the early stages of growth, regardless of media concentration. Data also reveal that biofilms exposed to low media concentration continue to grow for much longer periods of time (> 2 hours) than biofilm grown with higher media concentration. We anticipate that these differences in biofilm characteristics will significantly impact the action of a given antimicrobial agent. As such it would be very crucial to investigate thoroughly the role played by these variations in the application of antimicrobial agents.

KEY WORDS: biofilms antimicrobial

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### Effects of Poly-Ethylenimine Dynamics on DNA Nanoparticle Packing

Presenter's Name: Paul Millard
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Danielle Miller, Preethi Chandran

Poly-Ethylenimine (PEI) has been demonstrated as an alternative vector of gene delivery to targeted cells. Its cationic properties are effective in neutralizing the anionic properties of DNA and causes the DNA to be compacted into nanometer size particles. In this compact form, DNA can easily be transported into the cells for molecular biology studies, drug delivery applications and possibly genetic therapy. Since PEI is a hydrophobic weak-base polyelectrolyte, it switches between regimes of inter-chain and intra-chain charge repulsion as a function of salt and polymer concentrations. Its hydrophobic nature also causes aggregated phases to co-exist in solution.
It is not known how the PEI polyelectrolyte regime alters its interactions with DNA and therefore the packing of DNA-PEI complexes. We investigate the effect of PEI polyelectrolyte dynamics on the coarse packing of DNA-PEI complexes by complementary solution studies with varying concentrations of sodium chloride and Dynamic Light Scattering (DLS) techniques.

KEY WORDS: Poly-Ethylenimine, DNA, Nanoparticle, DLS, DNA-PEI complex

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### The Effects of History of Falls on Confidence Among Older Adults' Participation in Basic and Instrumental Activities of Daily Living

Presenter's Name: Sheresa Mills
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Lauren Cotton, Sharise Jones, Thierry Lienou

**Objective:** History of falling has a detrimental effect on older individuals and can result in increased fear of falling impacting participation in functional activities. The purpose of this study is to determine the correlation between older adults with a history of falling and how their confidence level is impacted following their fall when participating in ADLs and IADLs. **Methodology:** The study will be completed using a correlation research design. Subject criteria will include a randomized selection with a total of 30 male and female participants who are 60 years of age and older with a history of falls. The setting for conducting this evidence-based research will be located at the Samuel J. Simmons NCBA Estates, a senior residential facility located in Washington, D.C. Subjects must be in good health, alert, and no more than mildly cognitively impaired. Subjects will first complete a research consent form acknowledging understanding of the research study. Participants will complete a falls risk questionnaire. A Timed Up and Go assessment and Fall Efficacy Scale survey will then be used to collect further data and measure functional mobility. The data collected from both the questionnaire and assessments will be analyzed utilizing the SPSS V22 Binomial Test of Proportions.

KEY WORDS: Falls, older adults, prevention, participation, confidence

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### Toxicogenomics of Persistent Organochemical Exposure: Pathway to Predictive Biomarker(s) for Disease Risk

Presenter's Name: Partha Mitra
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Somiranjan Ghosh, Sisir K. Dutta

**Background and aims:** The effect of manufactured complex low-grade chronic organochlorine, Persistent Organic Pollutants (POP) exposures to human are associated the complex disease, e.g., metabolic disorders including obesity and diabetes, neurodevelopmental, cardio vascular, cancer, etc., and has now been established through many epidemiological studies. Nearly all diseases result from a complex interaction between an individual's genetic make-up, and the environmental agents (Gene Environment Interaction-**GxE**) that he or she is exposed to. It demands a clear knowledge of molecular mechanism in toxicogenomic effect upon these chemical exposures to understand the disease risk of an individual. **Methods**: The global gene expression analysis on the peripheral-blood mononuclear blood mononuclear cells (PBMCs) from the blood samples of POP-exposed population from a well-defined study cohort in Slovakia using microarray technology performed, followed by Ingenuity Pathway Analysis (IPA®) to intrigue into underlying biological processes. **Results**: The gene expressions data indicated the organ specific toxicities e.g., Cardiotoxicity, Hepatotoxicity, and Nephrotoxicity etc., that played a key role towards the development of diseases and disorders process including the risk of cancer. A panel of genes (LPR12, BCL2, MYC, TRAP1, ATP1B1, CYP2C9) potentially in association with cancer molecular pathways/mechanism were also identified. The *in vitro* experimental results were also corroborated our findings with exposed population. I**nterpretation**: This work, in post-genomic era of personalized medicine, is in line with the Tox21 program (NIH, EPA and FDA consortium) goal. Our work is also, in aligning with the GxE, may be regarded as a plausible approach, that needs larger population validation.

KEY WORDS: Toxicogenomics, Microarray, Pop, Biomarker, Gene Expression

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### The Main Reasons for Excluding Articles from Systematic Review and Meta-Analysis

Presenter's Name: Nima Moradi Majd
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Mohammad Jafar Eghbal, Hamed Homayouni, Sareh Aflaki

**Background:** Systematic reviews and meta-analysis aim to facilitate access to higher level of evidence for busy practitioners, but a quick glance at these articles shows that they usually exclude most articles identified in their primary searches. The objective of this study was to evaluate the endodontic systematic review and meta-analysis studies, which have been published in three endodontic journals, and determine and analyze their reasons for excluding articles.
**Methods:** The systematic reviews and meta-analysis that had

been published from 2001 to 2013 in 'Journal of Endodontics', 'International Endodontic Journal' and 'Australian Endodontic Journal' were evaluated, and their reasons for excluding articles were categorized. **Results:** Evaluation of published systematic review and meta-analysis studies demonstrated that on average, 93.5% of all articles, which had been identified for preliminary analysis were excluded during their data extraction process. The reasons for excluding articles were categorized into 9 groups. These are the reasons from most to least common, 1) being low-quality Randomize Clinical Trial (RCT); 2) the studies were not RCT; 3) being irrelevant to the main subject; 4) the designed protocols were different from the traditional one; 5) outcome evaluation methods were different; 6) loss of quantitative data; 7) repetitive Publications; and 8) language limitation. **Conclusion:** Neglect of the Consolidated Standards of Reporting Trials (CONSORT) statement requirements leads to exclusion of a considerable amount of articles from systematic review and meta-analysis studies.

KEY WORDS: Systematic review; Meta-analysis; excluding reason; Randomized Clinical Trial; RCTs

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## R-Loops Cause Replication-Independent DNA Damage and Trigger a DNA Damage Response (DDR)

Presenter's Name: Kulsoom Naqvi
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Carlos Cedeno, David Goodrich, PhD.

**Background:** Studies suggest that around half of all prostate cancers are caused by R-loop-instigated chromosome translocations (3, 6). R-loops, byproducts of transcription, form when the nascent transcript hybridizes with the template DNA strand, displacing the non-template DNA strand into a single-strand loop (1). Upon colliding with replication forks, R-loops cause DNA strand breaks that can create oncogenic chromosome translocations (3, 5). However, most cells in our bodies are not actively replicating, suggesting that R-loops may cause replication-independent DNA damage. **Methods:** Thoc1-ribonucleoprotein depletion (2) and Camptothecin treatment (4) instigated R-loop accumulation in genetically engineered mouse embryonic fibroblasts. Aphidicolin pre-treatment blocked DNA replication. Immunofluorescence assays were used with γH2AX as a DDR marker. Overexpression of RNaseH1, which degrades RNA:DNA hybrids in R-loops, was used to ensure that the elicited DDR was caused by R-loop accumulation. **Results:** Both methods triggered a DDR as measured by γH2AX-immunopositive nuclear foci. In cells pre-treated with Aphidicolin, Camptothecin still induced a significant increase in the percentage of γH2AX-immunopositive cells, consistent with replication-independent DNA damage. RNaseH1 overexpression significantly reduced the extent of replication-independent DNA damage. **Conclusion:** These findings suggest that R-loops, accumulating as a byproduct of transcription, can induce DNA damage and possibly genome instability, independent of DNA replication. This new insight, with further research, can enhance our understanding of cancer etiology and aid in the development of new therapies to treat and prevent R-loop-instigated cancers.

KEY WORDS: R-loops, DNA Damage Response, Camptothecin, Thoc1, Aphidicolin

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## Protein Phosphatase-1 as a Target for Antiviral Small Molecules against Ebola Infections

Presenter's Name: Sergei Nekhai
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

Coauthors: Tatiana Ammosova, Andrey Ivanov, Philipp Ilinykh, Dmytro Kovalskyy, Bersabeh Tigabu, Tania Garron, Namita Kumari, Yasemin SaygideÄŸer Kont, Aykut Ãœren, Andrey V. Ilatovskiy, Michael Petukhov, Alexander Bukreyev and Sergei Nekhai

The largest Ebola virus (EBOV) outbreak in West Africa underscores the need for novel antiviral therapeutics. EBOV polymerase complex includes NP, VP35, L, and VP30 proteins. It can mediate both genome replication and transcription. VP30 phosphorylation switch the virus from transcription to replication. We show that protein phospahtase-1 (PP1) controls VP30 phosphorylation in cultured cells. Expression of a PP1-binding peptide, cdNIPP1, increased VP30 phosphorylation, and overexpression of SIPP1, a cytoplasm shuttling regulatory subunit of PP1, decreased VP30 phosphorylation and increased EBOV transcription, suggesting that cytoplasmic accumulation of PP1 induces EBOV transcription. We recently developed novel PP1-targeting small molecules that interacted with a non-catalytic site of PP1. We identified a tetrahydroquinoline derivative, 1E7-03 compound that showed no toxicity and displayed a half-life greater than 8 hr when administered to mice. 1E7-03 bound to PP1 *in vitro*, increased EBOV VP30 phosphorylation, blocked transcription, and effectively suppressed EBOV replication. Proteomic analysis

of EBOV virions showed phosphorylation not only at the VP30 N-terminal serine clusters identified previously, but also at the threonine residues at positions 143 and 146. Mutations of VP30's Thr143 and Thr146 significantly inhibited EBOV transcription and strongly induced VP30 phosphorylation in the N-terminal Ser residues 29-46 suggesting a novel mechanism of regulation of VP30 phosphorylation. Overall, our findings suggest that targeting PP1 with small molecules is a feasible approach to achieve dysregulation of the EBOV polymerase activity. This novel approach may be used for development of antivirals against EBOV and other filovirus species.

KEY WORDS: Ebola; small molecule inhibitors; transcription; protein phosphatase-1

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### Behavior modification in chronic disease, disparity between African American and Caucasian

Presenter's Name: Seyed Mehdi Nouraie
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

**Introduction:** Life style modification improve the outcome of chronic disease (CDs). Race is a predictive factor for CDs and their risk factors. In this study we aim to measure if CD related behavior modification is different between in African American (AA) and Caucasian (CA). **Methods:** Data from National Survey of Drug Use and Health (2013) extracted for AA and CA adults. We assessed the effect of CDs on smoking or alcohol cessation by General linear models. P value of interaction between race and CDs estimates the race disparity. Results: Among 26,121 participants, 17% were AA. The yearly prevalence of high blood pressure, diabetes, depression, asthma, and heart disease in AA ranged from 15% to 1% and in CA from 12% to 2%, respectively. Among all participants, 90% (82% of AA and 92% of CA) have used alcohol and 69% (53% of AA and 72% of CA) smoked cigarette in lifetime. Among them, 47% (40% of AA and 48% of CA) quitted smoking and 13% (15% AA and 13% CA) quitted drinking in last year. Both hypertension and heart disease were associated with significant cigarette and alcohol quitting in both races. Diabetic AA quitted smoking more (P of disparity= 0.002). Depression in CA (not AA) was associated with higher smoking frequency and 1.3 fold reduction in alcohol usage ($P < 0.001$). Asthma did affect neither smoking nor alcohol. **Conclusion:** Being diagnosed with cardiovascular disease has similar effect on quitting smoking or alcohol in both races. Diabetes diagnosis is more effective in smoking cessation in AA. Table 1- Prevalence ratio (P value) of quitting smoking and alcohol in patients with chronic disease vs. without disease by race*.

KEY WORDS: Disparity, Life modification, Chronic disease

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### The Use of Molecular Modeling to Design a Safe and Effective Drug for Chagas Disease

Presenter's Name: Charles Ogindo
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Yayin Fang, Oladapo Bakare, William Southerland

We have created a 3D homology model of *Trypanosoma cruzi* (*T. cruzi*) tubulin dimer using PDB ID 1JFF as template, and located the binding pocket for a class of tubulin polymerization inhibiting compounds using the tools in MOE platform. The binding pockets location and validation using SiteFind and docking studies was performed. Ligand-receptor stabilization were calculated using London dG scoring function, incorporating the enthalpy and entropy terms.
The validated binding site was used for the interactive drug design, using such tools as pharmacophore feature consensus editor to create a pharmacophore query used to search linkers. The ligands were modified in their optimal poses either by scaffold replacement or R group additions with pharmacophore query constraint. We incorporated validated QSARs models integrated in the MOE to filter linkers to give compounds with SlogP values between -4 and 8, and those predicted to be non-toxic and synthetically reasonable. The compounds in our output set were sorted according to calculated Gibbs free energy of binding and were inspected for ease of synthesis. Further refining of these output compounds and subsequent docking availed drug candidates. Finally, we docked the compounds in our human tubulin dimer model to screen for active molecules that had least interactions with the human tubulin model as drug candidates that we propose to be effective in treating Chagas disease, and yet remain safe to the host in their mode of action.

KEY WORDS: Molecular Modeling, American trypanosomiasis, Chagas Disease, Tubulin, Homology Modeling

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## Bariatric Surgery Outcomes in Black Patients with Super Morbid Obesity

Presenter's Name: Ololade Ogundimu
Classification: Professional Student
*Presentation Type: Oral Presentation*

Coauthors: Samuel C. Onyewu, MBChB, Gezzer Ortega, MD, MPH, Edward S. Bauer, BS, Chijindu C. Emenari, BS, Neh D. Molyneaux, MPH, Sylvonne A. Layne, MPH, Navin R. Changoor, MD, Daniel D. Tran, MD, Terrence M. Fullum, MD

**Background**: Morbid and super morbid obesity affects all ethnic groups, and is associated with significant co-morbidities affecting both longevity and quality of life. While medical treatment and dietary modification have not proven sufficiently beneficial, bariatric surgery is an emerging modality that has improved outcomes; yet, a paucity of data exists regarding the outcomes of bariatric surgery among super morbid obese Black patients. Our study aims to evaluate the reduction in excess weight, body mass index (BMI) and resolution of co-morbidities following bariatric surgery among super morbid obese Black patients at an urban academic institution. **Methods**: A retrospective review of prospectively collected data was performed on patients who underwent bariatric surgery from August 2008 to June 2013. Data collected included BMI and co-morbidities on patients with a BMI greater than or equal to 50 $kg/m^2$. Outcomes of interest included mean BMI, percent excess weight loss, and resolution of co-morbidities. **Results**: 97 patients met our inclusion criteria. Patients were 92% Black and 88% female. 79% had laparoscopic roux-en-y gastric bypass (LRYGB) and 19% had laparoscopic sleeve gastrectomy (LSG). The mean pre-operative BMI was $57kg/m^2$ (LRYGB) and $56kg/m^2$ (LSG). BMI after 12 months was $38.9kg/m^2$ (LRYGB) and $44.4kg/m^2$ (LSG). Resolution of co-morbidities at 12 months for hypertension was 43% (LRYGB) and 46% (LSG). Resolution for dyslipidemic patients was 89% (LRYGB) and 82% (LSG), while diabetics had 84% (LRYGB) and 60% (LSG) resolution after 12 months. **Conclusion**: Super-morbid obese Black patients receiving bariatric surgery have a significant reduction in BMI and resolution of co-morbidities.

KEY WORDS: Super morbid Obesity, Sleeve gastrectomy, Roux-en-Y gastric bypass, Blacks, Comorbidities

## Lymph nodes' evaluation in relation to colorectal cancer staging among African Americans

Presenter's Name: Temitayo Ogundipe
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Andrew Sanderson, Anahita Shahnazi, Adeyinka O. Laiyemo, Hassan Brim, Mehdi Nouraie, Hassan Ashktorab

**Background:** Lymph nodes' examination in colorectal cancer (CRC) resection specimens is an important determinant that aids in the accuracy of CRC staging and treatment outcomes. Current guidelines call for the examination of at least 12 lymph nodes (LN) in resected specimens in order to establish accurate staging. **Aim:** To investigate lymph nodes' examination protocol as it relates to accurate CRC staging. **Methods:** We reviewed 216 CRC patients from 1996-2013 who underwent CRC resection and met inclusion criteria for this study. The number of retrieved LNs, length of resected specimens, tumor grade, stage, location, size and histology were examined. **Results:** The cohort study was made of 49% males, median age was 63 years and 45% of patients were at stage III and IV. The median (IQR) number of examined LNs was 15 (10-22) and the rate of patients with more than 12 examined LNs was 64%. There was a gradual increase in the percentage of patients with adequate number (>12) of examined LNs during the study period ($P = 0.014$). Adequate LNs resection was neither associated with shift of stage from II to III ($P = 0.3$) nor with the changes from stage IIIa to IIIc ($P = 0.9$). Metastatic LNs were observed in 8% of samples with adequate number of examined LNs (>12) vs. 13% of samples with less than 12 examined LNs ($P=0.1$). Patients that had pre-surgical treatment (chemotherapy and radiotherapy) before surgery had less than 12 LNs examined. There was also a trend of having more examined lymph nodes in large tumors and specimens cases, although this difference was not statistically significant. **Conclusions:** Our study shows that there has been an increase in the number of lymph nodes examined in colon cancer resections since the advent of the current quality initiative. However this increase does not seem to affect the stage or percentage of metastatic lymph nodes' detection in CRC patients.

KEY WORDS: Colorectal Cancer, Lymph Nodes, African Amercicans

### Testing Possible Treatments for Androgenic Alopecia in a Cell-Based Assay System

Presenter's Name: Linda Ogwuazor
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Androgenic Alopecia is a condition affecting 60-70% of the population worldwide. It is characterized by hair loss and hair thinning in the scalp, and while it does affect women, it is far more prevalent in men. It is caused by the enzyme 5αreductase converting the androgen testosterone into its far more potent form, 5αdihydrotestosterone. The dermal papilla is a small coneshaped projection at the bottom of the hair follicle. It contains the germinal matrix which is where mitosis to produce keratin cells, the building blocks of hair, occurs. It is here that excess 5αdihydrotestosterone disrupts hair growth and causes alopecia. Research prior to this study determined that an extract of the plant *Avicennia marina* known as Avicequinone C inhibited 5αreductase 48% at 10 μg/ml. This experiment extrapolates on that research using Avicequinone C as the basis for synthesis and testing. The compounds chosen were related to the structure of this molecule, and they were tested to see if they could inhibit this reaction better than current market treatments like minoxidil and finasteride which only have 35% and 48% success rates respectively. This part of the project was preliminary and was focused mainly on developing the means to test effectiveness of the chemicals through thin layer chromatography.

KEY WORDS: Androgenic Alopecia hair-loss balding treatment

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### Isolation, Purification, and Characterisation of a Mycobacteriophage Naij

Presenter's Name: Precious Okereke-Mba
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Anjolaoluwa Bolaji

Soil sample was collected in front of the Harriet Tubman Quadrangle in Howard University, 38º55' 19.63"N and 78º58' 54.52"N, to isolate the phage. By enrichment procedure, one gram of the soil sample was added to 5ml of mycobacterium medium, 7H9, 40 ml of sterile water and 5 ml of *Mycobacterium smegmatis* culture, supplemented with 0.5 ml of 100mM CaCl2 and AD supplement. The culture was incubated aerobically at 37ºC for 24 hours. This was then plated and the resulting plaques were streaked onto agar plates and top agar/bacteria mixture was dispensed onto the plate. Different phage morphologies were observed with plaques ranging from 2mm to 4mm in diameter. Phage titer assay was conducted to obtain a max web plate, which was flooded to obtain a Medium Titer Lysate (MTL). The MTL was spot tired and a titer of 4.0×1011 PFU/ml was obtained. Empirical test was carried out based on this result and the High Titer Lysate (HTL) was obtained. DNA was extracted from the HTL and digested with restriction enzymes. The purified phage was fixed for electron microscopy. Further characterization of the phage genome by annotating DNA sequence is in progress.

KEY WORDS: Bacteriophage, Naij, Mycobacterium smegmatis, Harriet Tubman, Isolation

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### Length of stay of inpatients HIV/AIDS with mental and behavioral disorders: 2007 vs 2010 discharges in U. S

Presenter's Name: Priscilla Okunji
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Daniel Johnnie

About 1.1 million Americans are living with HIV, and 21% of these persons do not know they are infected. African Americans are 8.6 times more likely to be diagnosed with HIV infection, as compared to the White population in 2008. Women account for a 25% of all new HIV/AIDS cases, with approximately 65% having contracted the infection via heterosexual contact. People with mental and behavioral disorders are at increased risk for HIV/AIDS. Current nation-based statistics of factors that affect the outcomes of inpatients HIV/AIDS admitted to non-federal hospitals is lacking. A retrospective data analysis of discharges was conducted from the 2007 and 2010 Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS). Statistical Analysis involved the use of crosstab, and multiple regression for patient measures (age, gender, ethnicity, income, insurance, patients' co-morbidities, admission types, treatment procedures); hospital measures (teaching status, ownership, location, region, size) and length of stay (LOS). The result of this study showed that the patient demographics age, gender, ethnicity, insurance, location, size or region of the hospitals were not the most critical variables that made the patients stay longer on admission to non-federal hospitals. These findings highlight the conversation that sicker patients with more comorbidities are usually admitted to teaching hospitals where more Registered Nurses (RNs) are employed full time for a more positive and

satisfactory patient outcomes. Finally, the result confirmed the relationship between the RNs FTEs and LOS. This has clinical implications in hiring, retention and expectations as it regards to inpatients HIV/AIDS outcomes.

KEY WORDS: HIV/AIDS, Schizophrenia, Bipolar, Depression, Length of stay

## Arterial Compliance in Young Adult African-American Females With and Without Parental History of Hypertension

Presenter's Name: Oluwatosin Olaitan
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Oluwatosin Olaitan, Brielle Matthews, Onaje Artist, Dr. Vernon Bond

**Background:** Hypertension in African Americans (AA) is a major public health problem. **Purpose:** Arterial hypertension is associated with structural and functional changes in the cardiovascular system. The present study examined arterial compliance in young adult African-Americans with and without parental hypertension. **Methods:** Eight AA's served as study volunteers (4 without and 4 with parental history). Arterial compliance was calculated as the integrated area, starting at the nadir of the incisura of the dicrotic notch to the end of diastole of the radial artery pulse wave. Blood pressure was measured using the Vasotrac device. After five minutes of seated rest, blood pressure was recorded for five minutes. Data collection with the APM250 monitor was interfaced with the BioPac MP-100 data acquisition recorder and sampled at 1000 Hz. **Results:** Resting blood pressure, Peak oxygen uptake and body composition (% fat) values were similar between groups ($P>0.05$). Arterial compliance of the positive parental history group tended to be lower in comparison to the negative parental history group ($16.2 \pm 3.6$ vs. $23.2 \pm 3.8$ mm Hgs) ($P>0.05$). **Conclusion:** Observation of the data trends appear to suggest in young adult African Americans with a parental history of hypertension portray differences in arterial compliance compared to similar African Americans without a parental history of hypertension. This alteration may be an antecedent marker of disease valuable in the detection of degenerative cardiovascular processes in individuals at risk.

KEY WORDS: African American hypertension arterial compliance

## Neural signaling in the olfactory bulb through activation of metabotropic glutamate and cannabinoid receptors

Presenter's Name: Brian Oliver
Classification: Professional Student
*Presentation Type: Oral Presentation*

Coauthors: Paul Austin, Thomas Heinbockel

**Background:** Protecting neurons in the brain against excitotoxicity and neuronal death is critical during traumatic experiences such as stroke. Brain-produced endogenous cannabinoids (eCBs) are prime candidates for a self-defense mechanism because of the known neuroprotective effects of exogenously applied cannabinoids. Δ9-tetrahydrocannabinol (THC), the bioactive ingredient of marijuana, activates cannabinoid receptors (CB1R) in the brain in the same manner as eCBs. Main olfactory bulb (MOB) neurons express high levels of CB1R. Glutamate acts on ionotropic as well as metabotropic glutamate receptors (mGluRs) in the brain. In the MOB, mitral cells express high levels of mGluRs (mGluR1). We study how these two neuromodulator systems interact to regulate activity of mitral cells by potentially exerting neuroprotective or neurotoxic effects. METHODS: In mouse brain slices, we used whole-cell patch-clamp recordings to study how CB1R and mGluRs regulate mitral cell activity. RESULTS: Mitral cells respond with potent membrane potential depolarization and increased action potential firing in response to activation by group I mGluR agonists. mGluR1 antagonists block this effect and reduce the firing activity. CB1R agonists evoke increased action potential firing, while a CB1R antagonist reduces firing. Novel effects are observed when receptor blockers for both CB1 and mGlu1 are combined. Rather than reducing mitral cell activity as observed individually, the combination of both antagonists results in excessive action potential firing leading to cell death. CONCLUSION: CB1Rs and mGluRs regulate mitral cell activity. Inhibition of both receptor systems leads to neuronal overstimulation of mitral cells, but could have neuroprotective effects when both systems are activated.

**Support:** BTO is supported through the Howard University College of Medicine Medical Student Summer Research Program, 2014. PTA is supported through The Advanced Research Training Corps: A Novel Initiative for URM Students, NIH-NIGMS [GM101997]. TH is supported by NIH [MD007597] and NSF [IOS-1355034].

KEY WORDS: biology, neuroscience, anatomy, electrophysiology, olfactory

### The t6A37 tRNA modification is necessary for efficient RpoS translation in Escherichia coli

Presenter's Name: Morenike Olu
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Morenike Olu, Joseph Aubee, Bamsa El Yacoubi, Valerie de Crecy-Lagard, and Karl Thompson

tRNA modifications play vital roles in the promotion of efficient translation with the cell. There is increased evidence that tRNA modifications may even act as genetic or physiological switch, regulating various physiological processes in prokaryotic and eukaryotic cells. We previously demonstrated that the $i^6$A37 tRNA modification is necessary for the full expression of the stationary phase sigma factor RpoS in *E. coli*. We have previously screened several tRNA modification mutants for an effect on RpoS expression. The $t^6$A (threonylcarbamoyladenosine) tRNA modification is located at residue 37 of AXX decoding tRNAs. 5 essential genes TsaB, TsaC, TsaD, and TsaE catalyze the biosynthesis of the t6A modification. Using Anhydrotetracycline-regulated alleles of TsaC and TsaD, we show that $t^6$A depletion leads to defective translation of RpoS. This result, in addition to our previous observation that $i^6$A37 is necessary for RpoS expression suggests that tRNA modifications are important for RpoS expression, particularly at A37 of tRNAs. Furthermore, tRNA modifications may play a broader role in global gene control in *E. coli*.

KEY WORDS: tRNA modifications, RpoS, Bacterial Genetics, Gene Expression, E. coli, mRNA translation

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### Aggrecan: unusual polyelectrolyte biophysics and interactions conferred by the bottlebrush structure.

Presenter's Name: Tiffany Omokanwaye
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Dr. Preethi Chandran

Aggrecan is a negatively-charged proteoglycan with a bottlebrush structure present in the cartilage matrix. Its chief function is to maintain a self-repelling charged atmosphere within the cartilage matrix that attracts waters and exerts a swelling pressure (Chandran and Horkay, 2011). In this study we use Atomic Force Spectroscopy and Dynamic Light Scattering in complementary ways to study the polyelectrolyte biophysics of the aggrecan bottlebrush. We describe how the bottlebrush dynamics and interactions depart from that of linear polyelectrolytes, and discuss the implications for cartilage diseases and tissue-engineering solutions.

KEY WORDS: Aggrecan, Polyelectrolyte, Bottlebrush, AFM, DLS

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### Nigeria's Public Health Response to the Ebola Outbreak: Critical Lessons for Health Systems Strengthening in Africa

Presenter's Name: Oluwatosin Omole
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Ngozi Egu-Okoronkwo,MD

**Introduction:** Ebola spread from Liberia to Lagos, Nigeria in July 2014 and an uncontrolled Ebola outbreak would have been disastrous in Lagos, a city of 20 million people. Nigeria succeeded in containing Ebola through a "quick and forceful" rapid public health response. 19 people were affected and 7 died. While there has been extensive international aid to help Ebola affected countries, few efforts have been targeted to building up their health systems. The Ebola outbreak is a huge health crisis but also a wakeup call for immediate sustainable and scalable health systems strengthening. **Methods:** From a focused literature review, an onsite visit to Nigeria this paper suggests methods for health systems strengthening by seeking answers to critical questions 1) Why was the response from African countries to Ebola slow and uncoordinated? 2) Was Nigeria prepared or lucky? 3) What steps had Nigeria taken in the past to inadvertently prepare for Ebola and what can other countries learn 4) How can African countries move from short term public health measures to long term initiatives and what are the next steps? **Results:** African countries need a long and broader view in responding to health challenges including: Better accountability, improved health governance, improved access, quality improvement, effective health worker training and retention, and patient centered care. **Recommendations:** African countries must embrace strategic and pragmatic thinking as innovative solutions are sought for challenging public health problems.

KEY WORDS: Ebola, Health Systems strengthening, Community Health, Quallity, Global Health

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## Selective loss of catecholaminergic neurons in the ventral tegmental area of a transgenic murine model of Alzheimer's disease

Presenter's Name: Jahn O'Neil
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Amy Drew, Kebreten Manaye

**Background:** The neuropathology of Alzheimer's disease (AD) includes amyloid beta (Aβ) plaques in cortical tissue and neuronal loss within the locus coeruleus (LC), ventral tegmental area (VTA), and pyramidal and granule layers of the hippocampus. Using a transgenic murine model of AD (APP+/PS1+) we investigated AD-type changes. APP+/PS1+ mice accumulate Aβ plaques and undergo neuron loss in LC and CA regions of the hippocampus as in AD; however, neuropathology in the VTA that project from the ventral midbrain to the neocortex has not been fully established. **Method:** We analyzed male APP+/PS1+ mice in two different age groups, middle-age (7-13 months) and aged (18-24 months), along with age-matched controls. Mice were perfused with aldehydes, brains removed, cryoprotected, and sectioned at 40 μm. Sections were sampled and immunostained with tyrosine hydroxylase (TH) to identify dopaminergic neurons in the VTA. Total number and mean cell size of TH-positive neurons in VTA was quantified using stereology. **Results:** There is a significant loss of TH-positive neurons in the older group of APP+/PS1+ mice compared to age-matched controls. The younger group did not reach statistical significance ($p < 0.10$), while no differences in cell sizes were observed for either age group. Thus, both patients with AD and older APP+/PS1+ mice undergo significant loss of dopaminergic neurons in VTA. **CONCLUSION:** This finding validates the neuropathology of AD and supports the use of APP+/PS1+ mice for the development of novel therapeutic strategies.

KEY WORDS: Alzheimer's disease, dtg APP/PS1 mice, ventral tegmental area, cathecholamines, stereology

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## The Isolation, Purification and Characterization of the Bacteriophage Ayana

Presenter's Name: NaTazah O'Neil
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Nichelle Jackson

**Background:** This study examined the diversity of bacteriophages (phages) by isolating a *Mycobacterium smegmatis* specific bacteriophage. Once isolated characteristics of Ayana were compared to other known bacteriophages. Methods: A soil sample was obtained from 6th Street and Georgia Avenue underneath the Howard University Sign. Enrichment plating was used to obtain a plaque. To isolate a single phage population streaking and spot assays were performed aseptically. A high titer assay was performed to obtain a concentrated phage stock. This stock was used to further characterize the phage through DNA analysis. Restriction enzymes were used to cleave the DNA into manageable pieces for sequencing for electrophoreses. Results: Through various techniques a single phage population was obtained. The phage Ayana is lytic and produces round transparent plaques approximately 1cm in size. Conclusion: This bacteriophage is lytic because it lyses the bacterium, rather than integrating genetic material into the genetic material of its host and remaining latent. Phage Ayana differs from other phages because the plaques that were obtained were bigger and more round, while others were flatter and turbid. Further characterization of Ayana will include gel electrophoresis and electron microscopy.

KEY WORDS: Phage, Bacteriophage, Mycobacterium, smegmatis, soil

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## The Effect of Enrichment on Hippocampal Cognition in a Rat Model of Malformation of Cortical Development

Presenter's Name: Michael Onwukaeme
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Michael Onwukaeme, Amanda E.Hernan, Rod C. Scott

Pediatric patients with indications of cognitive impairments, often display malformation of cortical development (MCD). We hypothesized with prior pre-training and/or exposure to such tasks, these conditions can steadily improve over time. In our lab, we investigate learning and memory disorders that may or may not be caused by epilepsy, with a general focus in pediatrics. For decades, many believed that epilepsy had a direct correlation to learning impairments but never knew the etiology behind this reasoning. This is proven to a certain degree but not entirely unerring. We show this by performing cognitive tests on adult Sprague-Dawley rats that have cortical malformations. This is done by injecting a

pregnant dam with Methylazoxymethanol acetate (MAM) leading to malformation in the hippocampal region of the brain in the pups. Water maze test are performed using MAM and control rats to view and compare their behavior in the realms of learning and memory. Our results suggest that pre-training did not improve spatial deficits. We divided control and MAM exposed Sprague-Dawley rats into enriched (pre-trained) and non-enriched (untrained) groups and tested their overall performance. The pre-trained group underwent prior delayed non-match to sample (DMNS) testing. The goal of our study is to know if pre-training can enhance the performance of rats in a spatial memory test. By doing so, we can target the areas where cortical malformations might have occurred in the brain and improve hippocampal cognition through cognitive pre-training in other task. Ultimately, with this data, this can lead us to be able to evaluate the substrate of the seizures or the etiology that causes these seizures in pediatrics.

KEY WORDS: Epilepsy, Pediatrics, Neuroscience, Hippocampus, Learning/Memory

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## Discovering the Bacteriophage Morizzled23: From the Soil to the Lab

Presenter's Name: Morinne Osborne
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

**Background:** The HU SEA-PHAGES program is funded by the Howard Hughes Medical Institute to conduct research on bacteriophages that infect the bacterium *Mycobacterium smegmatis* MC$^2$ 155. Bacteriophages are viruses that infect and reproduce within certain bacterial cells. The purpose of this project is to isolate and characterize a novel bacteriophage from the environment, isolate DNA and ultimately annotate the genome. **Methods:** A phage, later named Morizzeld23, was isolated from soil near the Howard University football field at 38.924851 N, 77.020584 W. The enrichment method was used to stimulate the growth and replication of the phage. A purified phage population was generated after a several rounds of streaking and other infection based methods. DNA was extracted and the genome was analyzed using the restriction enzymes BamHI, ClaI, EcoRI, HaeIII, and HindIII. Additionally, the DNA was submitted to the Pittsburgh Bacteriophage Institute for sequencing on the Illumina platform. **Results/ Conclusion:** The plaques that Morizzled23 yielded were 1mm in diameter and were clear, suggesting that the phage is highly virulent. The bacteriophage has been characterized as a cluster C phage under the sub cluster of C1. Cluster C is categorized as myoviral morphologies; this particular phage has a morphotype of Siphoviridae. The size of the genome was exactly 155,131 base pairs long. The restriction pattern will be used to compare the genome of Morizzled23 to those of phages not selected for sequencing. Additional future experiments include the annotation of the Morizzled23 genome using Etude, DNA Master, and BLAST.

KEY WORDS: Morizzled23, bacteriophages, Mycobacterium smegmatis, enrichment, Cluster C

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## Determining the Effect of Graphene Oxide on Pseudomonas aeruginosa Growth

Presenter's Name: Kalah Ozimba
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Terinney Haley

*Pseudomonas aeruginosa* is a common bacterium that can cause disease in animals and humans. It is found in soil, water, and most man-made environments. The bacterium can grow as either planktonic cells or biofilm cells. Biofilms are the cells that adhere to surfaces as slimy, glue-like substances. The free floating bacteria in suspension during growth are the planktonic cells. Nanoparticles are utilized for a variety of tasks in today's society. Graphene oxide (GO), for instance, has been explored as one of the most promising nanomaterials with biomedical applications. Thus far, properties of graphene oxide have been useful in the fields of advancing drug delivery systems, therapeutics, and much more. With this research, we are trying to elucidate the impact of GO on bacterial growth. *P. aeruginosa* growth is monitored by measuring optical densities and fluorescence of biofilm and planktonic cells. Our data suggests graphene has properties that limits the growth of *P. aeruginosa*. Elucidating the effects of GO nanoparticles on bacterial growth may have significant relevance in understanding the environmental and biological impacts of these new nanomaterials.

KEY WORDS: Nanoparticles affects on bacteria

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### Identification of the DNA double strand break sensor complex as a novel functional partner of RECQ1 helicase

Presenter's Name: Swetha Parvathaneni
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Xing Lu, Furqan Sami, Sudha Sharma

**Background:** Mutations in three of the five RecQ homologs (RECQ1, RECQ4, RECQ5β, BLM and WRN) causes rare genetic diseases of pre-mature aging and cancer susceptibility. Our earlier work demonstrated that loss of RECQ1 is sufficient to cause DNA double strand breaks (DSB) and chromosomal breaks. Cell-based assays indicated that RECQ1-depletion reduces nonhomologous end joining of DSBs, whereas the homology directed repair of a site-specific DSB was unaltered. A key determinant of DSB repair pathway choice is the extent of 5'-end resection to generate recombinogenic single strand DNA overhangs. Mre11-Rad50-Nbs1 (MRN) complex begins initial DSB processing; however, processive end resection likely involves additional helicases. **Methods:** Consistent with the cellular phenotypes of RECQ1-deficiency, we utilized proteomic, biochemical, cell-based, and genomic approaches to identify RECQ1 as a modulator of DSB resection through interaction with MRN complex. **Results:** A directed proteomic approach identified proteins involved in DSB repair as novel partners of RECQ1. We identify RECQ1 as a binding partner of DSB sensor complex MRN, and demonstrate its recruitment in vivo to a DSB in a manner that is dependent on catalytic activities of key proteins of homologous recombination and nonhomologous end-joining pathways of DSB repair. Complementary in vitro experiments suggest a role of RECQ1 in DNA end resection through functional protein partners. **Conclusion:** Our results provide insight into how concerted actions of multiple interacting proteins regulate DSB repair that is important for human cells to maintain genomic stability. This knowledge is significant to cancer etiology and treatment.

KEY WORDS: DNA repair mechanism

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### The effects of Peroxisome proliferator activated receptor-alpha on T lymphocytes, total circulating leukocytes and T cell activation marker during Angiotensin II hypertension

Presenter's Name: Shazzanne Pennant
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Paul Marvar, PhD and Dexter L. Lee, PhD

**Background:** Previous results from our laboratory demonstrate that Peroxisome proliferator activated receptor –α (PPAR-α) activation attenuates in inflammatory markers such as plasma levels of Interleukin-6 (IL-6), renal monocyte chemoattractant protein-1 (MCP-1), renal expression of intracellular adhesion molecule-1 (ICAM-1) and cyclooxygenase-2 (COX-2). Our current goal is to determine whether T lymphocytes (CD3+), total circulating leukocytes (CD45+) and T cell activation marker CD69 are increased in PPAR-α knockout (KO) during Angiotensin II (Ang II) hypertension. We tested the hypothesis that CD3+, CD45+ and CD69 are increased in Ang II–treated PPAR-α KO mice when compared to Ang II-treated wild-type mice. **Methods:** Male (10 - 12 weeks old) PPAR-α KO mice and their wild-type (WT) controls were implanted with biotelemetry devices and infused with a slow pressor dose of Ang II (400 ng/kg/min) for 12 days. Kidneys and hearts were collected and analyzed for changes in CD3+, CD45+ and CD69 by flow cytometry. **Results:** Baseline mean arterial pressure (MAP) was not different between WT and PPAR-α KO mice. On day 12 of Ang II, mean arterial pressure (MAP) was 145 ± 6 mmHg in WT and 161 ± 6 mmHg in PPAR-α KO mice. Kidney CD3+, CD45+ and CD69 were not different between Ang II-treated WT and PPAR-α mice. **Conclusion:** Our data suggests that a 12-day model of Ang II hypertension in WT and PPAR-α mice does not cause significant changes in T lymphocytes, total circulating leukocytes and the T cell activation marker.

KEY WORDS: T lymphocytes, circulating leukocytes, hypertension

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### Mannobiose functionalization on solid surfaces by physical adsroption and covalent attachment

Presenter's Name: Komitige Hashanthi Perera
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Saswati Basu, Preethi Chandran

The aim of this project is to functionalize mannobiose on a solid surface. Physical adsorption of bovine serum albumin (BSA)-mannobiose conjugates to mica and covalent attachment of mannobiose to Au Nano particles (NPs) via a thiolated linker were used to achieve this goal. Characterization of both physical adsorption and covalent attachment were achieved by using atomic force microscopy (AFM) and dynamic light scattering (DLS).

KEY WORDS: Mannobiose functionalization, atomic force microsope, dynamic light scattering

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### Plaque? Or no plaque? That is the question.

Presenter's Name: Melisa Philogene
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

**Background:** Bacteriophages are a class of viruses that infect bacteria. Phages are studied because of the vast ways they can be applied as tools in scientific research. The goal of this project was to isolate and analyze a bacteriophage that infects *Mycobacterium smegmatis*. **Methods:** To isolate phage, a soil sample was collected from an area near Carnegie Hall, on the campus of Howard University. The enrichment method was used to provide an optimal environment for bacterial growth in order to facilitate phage propagation. Next, the phage was confirmed using a spot test. Next, a series of three rounds of streaking was performed in order to purify the phage population. A high titer lysate was used to Isolate and purify the phage genomic DNA. **Results:** As a result of experimentation, the bacteriophage "Shalonda" was discovered. "Shalonda" has a single bulls-eyes plaque morphology. **Conclusion:** Shalonda's bull's eye morphology suggests that it is a temperate phage. In the future, restriction digest, gel electrophoreses, and evaluating genomic DNA quality and sending DNA to a sequencing center will occur.

KEY WORDS: Bacteriophages, Mycobacterium Smegmatis, Illumina, Shalonda, Virus

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### Comparative Lower Limb Anatomy in the Cobb Collection and among Contemporary Age- and Sex-Matched Individuals

Presenter's Name: Andrew Pryce
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Fatimah Jackson, Ph.D. Christopher Cross M.S.

This project will seek to compare and contrast anatomical patterns of individuals in the William Montague Cobb laboratory and an anonymous set of individuals in the Howard University Hospital due to a set of varying factors. The bones of particular focus will be derived from the lower extremity; most notably the femur, tibia and their articulation. It is known that over an extended period of time; extreme physical activity, diet and systematic physiological irregularities can be manifested into musculoskeletal issues. The likely determination of this study will be that more historic individuals in the Cobb lab will show signs of greater debilitative and degenerative musculoskeletal conditions such as: osteoporosis and arthritis versus their more contemporary counterparts and today's individuals. This is due to the likelihood in the drastic differences in physical activity these two groups experienced for example slavery and intense labor related jobs. Less access to proper care and diet will also be major considerations. I will collaborate with the hospital's department of orthopedic surgery and rehabilitation where I intend to gain useful direction in decoding key features of the aforementioned bones and direction in analyzing measurements and distinctive features. MRI scans will be obtained of patients; comparing those in the Cobb laboratory within specific criteria such as gender, age and height.

KEY WORDS: comparative, specific, criteria femur, tibia

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### Exploring Plant Defenses against Herbivory in the Brassicaceae: Trade-Off or Joint Defense?

Presenter's Name: Chandler Puritty
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Nia Johnson, Sharon Strauss, Mary McKenna

Plants in the Brassicaceae family have evolved a variety of defenses against herbivores, including chemical defenses, physical defenses such as trichomes (hairs), and elemental defenses (accumulating toxic elements from the soil into plant tissues). This Honors Thesis explores the relationship between an elemental defense (Ni) and organic chemical defenses (glucosinolates) among Ni-accumulators and nonaccumulators in the Brassicaceae. For species with access to toxic metals as an elemental defense, the "trade -off hypothesis" suggests that investment in constitutive organic defenses may decrease. The relationship between the relationship between elemental and organic defenses is complex however, and the "joint-effects hypothesis" predicts that both kinds of defenses may act together against herbivores. This study addressed the following questions: (1) do leaf glucosinolate concentrations differ in soils with and without Ni, and (2) do leaf glucosinolate concentrations increase after simulated herbivory (tissue clipping) as an induced response? The study compared 4 Ni-accumulators (*Alyssum murale*, *Alyssum corsicum*, *Streptanthus polygaloides*, *Noccaea fendleri*) and 3 non-accumulators (*Alyssum montanum*, *Streptanthus brewerii*, *Thlaspi arvense*) grown in soil with and without Ni. Germination of *A. murale* was significantly better in soil with Ni ($p=0.03$); for all other species germination did not differ between soil treatments. Glucosinolates were measured before

and after simulated herbivory on plants in both soil treatments using the ISO protocol (methanol extraction, desulfatation, and high pressure liquid chromatography). Patterns of glucosinolate production will be described for all species/ treatment combinations.

KEY WORDS: Ni-hyperaccumulator, Brassicaceae, defense, glucosinolates, herbivory

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### Characterization of BRCA1 SNPs of Unknown Clinical Significance in Breast Cancer

Presenter's Name: Ashley Queen
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Annually, an estimated 230,000 women in the U.S are diagnosed with breast cancer (BCa). Five to ten percent of these cases are a result of inherited mutations. Many mutations (or genetic variations) in the *BRCA1* and *BRCA2* breast cancer susceptibility genes have been reported to play a role in the development of BCa. However, there are many variations in genes associated with BCa whose function and potential effects are not defined; especially in the African American (AA) population. These are defined as variants of unknown clinical significance (VUS). Given this gap in data, it is necessary to examine the role of these VUS in the risk of developing BCa. This study will investigate selected VUS in *BRCA1*, and their role in predisposition to breast cancer risk. These selected variants will be analyzed in a population study through genotyping, and conducting functional and statistical analyses. The results of this study will provide for advancement in genetic cancer screening efficiency in the AA population.

KEY WORDS: BRCA1, breast, cancer, mutation, disease

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### Morphological data partitions possess different levels of phylogenetic signal for the evolutionary relationships of the reef coral families Merulinidae, Montastraeidae, and Diploastraeidae (Cnidaria: Anthozoa: Scleractinia)

Presenter's Name: Rachel Racicot
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Ann F. Budd, Danwei Huang, and Nathan D. Smith

Coral reefs are the most diverse of all marine ecosystems, and among the most threatened. A robust phylogenetic framework from which to study macroevolutionary questions about corals is crucial, however, the fidelity of morphological data for resolving coral relationships has been questioned. In this study, we test the strength of phylogenetic signal in a set of 40 morphological characters (partitioned by type as macromorphological, micromorphological, and microstructural) on a phylogenetic tree based on molecular data. We used several common metrics, including Blomberg's K statistic and Pagel's lambda, to test for phylogenetic signal in morphological characters on the molecular-derived tree. Incongruence length difference tests were also performed on the different anatomical partitions using PAUP* to determine whether data partitions possess significantly different phylogenetic signals. The majority of characters possess significant phylogenetic signal, with the micromorphological and microstructural characters showing stronger agreement with the molecular phylogeny. Future studies will investigate why the macromorphological data seems to be more homoplastic, and problematic for phylogenetic analysis. Inaccurate primary homology assessment in these characters may be a contributing factor. This work represents an important stepping-stone to using morphological data from fossil species to reconstruct phylogenetic relationships in scleractinian corals, which is crucial to understanding broader questions about macroevolutionary patterns in the group.

KEY WORDS: reef corals, phylogenetic signal, morphology, evolution

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### Neuronal and vascular anatomy in the maturing zebrafish brain

Presenter's Name: Sulman Rahmat
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Edwin Gilland, Thomas Heinbockel

Little is known about brain vascular development in zebrafish beyond two weeks of age. We therefore injected fluorescent dye into the vascular system of 1 to 12 week old transgenic zebrafish expressing GFP in cranial motor neurons and examined them with confocal angiography to demonstrate maturation of cerebral vasculature. In early larvae, segmental midline hindbrain central arteries (CAs) connect the basilar artery to bilateral venous channels by extending through the middle of rhombomeres (r) r3-8. Each CA divides into paired

trunks near the ventricular surface and continues branching within the hindbrain neuroepithelium, traversing nuclei and fiber tracts, before draining laterally into a pial venous plexus. While hindbrain CAs in younger stages were roughly similar along the series, the r3 and r8 stems progressively enlarged during maturation, with elaborate branching and increased neurovascular territories. By 75 days, the r3 CA supplies much of the rostral hindbrain, with branches supplying the trigeminal motor nucleus in r2-r3, much of the cerebellum and the migrated r7 facial motor nucleus. Since small r4-7 CAs are present in mature brains, the increased territory of the r3 CA likely resulted from angiogenic sprouting of existing branches rather than capture of neighboring trees by arterial fusion. In contrast, many other cerebellar, midbrain and forebrain arteries supplied similar neuronal territories in mature animals as in early larvae, but with increased branching. Zebrafish hindbrain vascular and CNS elements are patterned in relation to the early rhombomeric segmental framework, with some aspects of the segmental plan being maintained in adult brains.

KEY WORDS: zebrafish; neurovascular anatomy; transgenic; hindbrain; central artery

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## Increased white matter tract axial diffusivity associated with fatigue, pain and hyperalgesia in Gulf War Illness

Presenter's Name: Rakib Rayhan
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Rakib Rayhan, Sulaiman El Amin, Christian Timbol, James Baraniuk, Kebreten Manaye

**Introduction:** Gulf War exposures in 1991 have caused 30% of deployed personnel to develop a syndrome of chronic fatigue and pain known as Gulf War Illness (GWI). There are no validated clinical biomarkers or unifying disease mechanisms that account for the most prominent complaints. **Methods:** Gulf War veterans (n=31) and controls (n=20) completed fMRI scans of diffusion tensor imaging (DTI). DTI measures the integrity of the white matter tracts. DTI data was acquired on a 3.0 T Siemens TIM Trio MRI scanner. A combination of dolorimetry, subjective reports were correlated to diffusivity properties to identify tracts associated with symptom constructs. **Results:** All veterans met GWI criteria [2]. Age and gender were not significantly different from controls. GWI subjects have increased axial diffusivity compared to controls (*P=0.012) AD values from the combined control and GWI groups significantly correlated with fatigue (R=0.398, *P=0.012), dolorimetry (R=-0.407, *P=0.012) and McGill total score (R=0.448, *P=0.008). ROC analysis for right IFOF AD confirmed the potential to discriminate between GWI and control groups (threshold=1.24, AUC =0.760; P=0.002, asymptotic sig). (* P<0.05, FDR corrected; error bar depicts ± 95% CI). **Conclusions:** The study showed GWI subjects had increased axial diffusivity in the right inferior fronto-occipital fasciculus (rIFOF) compared to controls. ROC generated thresholds predicted GWI classification in the rIFOF. These correlates were absent for controls in dichotomous regression analysis. The rIFOF may be a potential biomarker for GWI. This tract links cortical regions involved in fatigue, pain, emotional and reward processing. The axonal neuropathological mechanism(s) explaining increased axial diffusivity may account for the most prominent symptoms of GWI. Funding was supported by the DoD grants W81XWH-07-1-0618 and W81XWH-09-1-0526. All of the work and analysis was completed at Georgetown University Medical Center.

KEY WORDS: Neuroscience, Brain, Pain, Hyperalgesia, fMRI

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## Characterization of GABAergic and Glutamatergic neuronal expression in the Amygdala and Hippocampus in a Disrupted-In-Schizophrenia-1 (DISC1) genetic mouse model

Presenter's Name: Shaina Reid
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Kevin S. Jones, Marjorie C. Gondré-Lewis

**Background:** Schizophrenia (SZ) is a devastating disorder with a worldwide prevalence of 0.5-1.2% (Kessler et. al., 2005). Increasing evidence suggests that mutations in the Disrupted-In-Schizophrenia-1 (DISC1) gene can dramatically increase the risk for developing SZ by as much as 50 fold (Blackwood et al., 2001). Mice expressing a truncated version of the human DISC1 protein (hDISC1) reproduce many behavioral phenotypes characteristic of SZ (Pletnikov et al., 2008), as well as several deficits in GABAergic neurons reported in SZ patients (Ayhan et al., 2010). Based on changes in regional and subregional distribution of GABAergic interneurons in postmortem brains from patients with SZ, it was postulated that the basolateral nucleus of the amygdala (BLA) may contribute to these abnormalities through an increased flow of excitatory activity (Benes and Berretta, 2001). Here we examine putative alterations in the biochemistry of GABAergic neurons in this mouse. **Methods:** We determined

the biochemical expression of GABAergic and glutamatergic neurons in the hippocampus and amygdala in a DISC1 mouse model using Western Blot analysis. **Results:** Biochemical data show that the presence of hDISC1 reduces the expression of the calcium-binding protein parvalbumin and glutamate receptor subunits NR1 and GluR1. **Conclusions:** These findings suggest that impairment of GABA expression in the presence of hDSIC1 may affect amygdalo-hippocampal reciprocal circuitry, which may be central to the pathophysiology of SZ.

KEY WORDS: DISC1, Schizophrenia, GABA, glutamate, Western blot

## Arabidopsis scaffold protein RACK1A regulates diverse environmental stress signaling pathways

Presenter's Name: Angel Rogers
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: DeAna Smalls, Victor Leonard, Hemayet Ullah

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 *RACK1A*, *RACK1B*, 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. RACK1A- the predominant isoform, is found to interact with diverse environmental stress related proteins. Deduced crystal structure of RACK1A indicates that post-translational modifications like sumoylation and phosphorylation can regulate its function. Tyrosine phosphorylation on residue 248 is found to regulate its homo-dimerization 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*. Kundu N., Dozier U., Deslandes L., Somssich IE, **Ullah, H** (2013) *Arabidopsis* scaffold protein RACK1A interacts with diverse environmental stress and photosynthesis related proteins. *Plant Signal Behav.* May 2013 Vol 8 (5)

KEY WORDS: Arabidopsis, RACK1, environmental stress, scaffold protein, drought

## Clinical Utility of MRCP in Diagnosing Biliary Diseases: A Review of the Literature.

Presenter's Name: Jean Sebastien Rowe
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Faezeh Razjouyan MS, Alexandra Millet BS, Vanessa Pinard BS, Genelle Gittens-Backus BS, Sanchez Colo PharmD-MBA, Robert Solomon BS, Mina Ekladios MS, E. Moses Ndukwe BS, Kamyar A. Sartip MD, Han Y. Kim MD, Hasan A. Nabhani MD, Bonnie Davis MD, Andre J. Du

**Background**: Magnetic Resonance Cholangiopancreatography (MRCP) is the newest imaging modality used to evaluate hepatobiliary system pathologies. Studies have shown that it is the most accurate and least invasive tool to detect abnormalities in the biliary ducts. This review of the world literature will serve to uncover the benefits of utilizing this technique in order to obtain more precise diagnoses, better patient outcomes, and lower overall healthcare costs. **Methods:** We reviewed the world literature on MRCP, including some controversial published discussions from other continents (non-USA):

1. Overview of MRCP technology
2. Current guidelines and indications for ordering an MRCP study.
3. Effectiveness of MRCP compared to competing imaging modalities.

**Results:**

1. Huge variability in the use of MRCP in different countries but no general agreement.
2. MRCP most sensitive and specific at diagnosing biliary cholelithiasis.
3. MRCP currently understudied and underutilized in the USA.
4. Benefit of using MRCP may override its cost.
5. No potential for superbug infections during MRCP unlike during ERCP.

**Conclusions:** Although there is still much controversy and variability between different countries and institutions as to the clinical role of MRCP, very important non-invasive applications are being increasingly described and put into clinical practice. For example, it is particularly useful in identifying stones, pancreatic carcinoma, liver transplant rejections, and anatomical variants in the pediatric population. While it is more expensive, MRCP can potentially lower healthcare costs as it can pick up incidental findings to prevent complications in patients with comorbid conditions.

KEY WORDS: MRCP, Radiology, Biliary Diseases, Diagnostic Imaging, Clinical Practice

## Gastrointestinal lesions in African American patients with Iron Deficiency Anemia

Presenter's Name: Armmana Saeed
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Anahita Shahnazi, Mehdi Nouraie, Ali Afsari, Sahar geramfard, Hassan Brim, Hassan Ashktorab

**Background:** Iron deficiency anemia (IDA) is a frequent disorder that is associated with many serious diseases but data on the findings of evaluation of IDA is lacking among African Americans. **Results:** The mean age was 61.9 years, and 50.5% were female. 189 patients (45%) had gross GI bleeding. The most frequent diagnosis were gastritis (40%), esophagitis (%), gastric ulcer (%), and duodenitis (%). By sex, duodenal benign tumors were significantly more represented among females (p=0.05) while colon malignancy was more prevalent among males (p=0.005). Benign and malignant colonic lesions were significantly more present among older patients P=0.005 and respectively. Colitis was more prevalent in younger patients (p=0.001). **Conclusion**: This exploratory analysis of IDA associated GI lesions revealed that gastritis and colonic lesions are most common lesions found among African Americans with IDA with minimal age and sex differences.

KEY WORDS: Iron Deficiency Anemia, GI lesions, EGD and Colonoscopy

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## On Design Vulnerability Analysis and Trust Benchmarks Development

Presenter's Name: Hassan Salmani
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Mark Tehranipoor, Ramesh Karri

**Background:** Adopted in the interest of economy, the horizontal integrated circuit design process has raised serious concerns for national security and critical infrastructures. An adversary may be jeopardize design specification by inserting hardware Trojans. Although hardware security and trust area has experienced major growth over the past several years, research in Trojan detection and prevention lacks standard benchmarks and measurements. **Methods:** We have developed innovative methodologies that, for the first time, more effectively address the problem. We have developed a vulnerability analysis flow shown in Figure 1. The flow determines hard-to-detect areas in a circuit that would most probably be used for Trojan implementation to ensure a Trojan goes undetected during production test and extensive functional test analysis. **Results:** Using the proposed vulnerability analysis flow, we introduced the Trojan detectability metric to quantify Trojan activation and effect, Table 1. This metric offers a fair comparison for analyzing weaknesses and strengths of Trojan detection techniques. Using these methodologies, we have developed a large number of trust benchmarks that are available for use by the public, as well as researchers and practitioners in the field. Table 1. The detectability (*TDetectability*) of a selected number of gate-level Trojans inserted in the circuits **Conclusions:** As no standard measurements, benchmarks, or tools have previously been developed, we put our effort into developing tools that, for the first time, analyze circuit vulnerabilities to hardware Trojans, determine Trojan detectability, and generate trust benchmarks.

KEY WORDS: Hardware, Security, Trojans, Vulnerability Analysis, Trust Benchmarks

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## Functional Implications of Mutations of Highly Conserved Cysteine Residues in the RQC Domain of RECQ1.

Presenter's Name: Furqan Sami
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Furqan Sami, Yayin Fang, Sudha Sharma

**Background:** The human RecQ DNA helicases play essential role in the maintenance of genome integrity by acting at the interface of DNA repair. Mutations in the genes of three human RecQ family members are linked to defined genetic disorders and cancer. RECQ1 is the most abundant yet poorly understood human RecQ homologue. Structure of a truncated version of RECQ1 has been reported but the aspects of the mechanisms of action of RECQ1 such as coupling nucleotide hydrolysis to DNA tracking and unwinding, and the determinants of substrate specificity are remain unsolved. The RecQ C-terminal (RQC) domain of RecQ helicases, consisting of a Zn-binding motif and a winged helix domain, is important for DNA binding and protein-protein interactions. Method: To reveal the critical functions of this domain in RECQ1, we generated recombinant RECQ1 proteins with point mutations in the conserved cysteine residues within Zn-binding motif preceded by 2 antiparallel α-helices. We then studied the

catalytic activities and DNA binding of these mutant proteins as well as important functional protein interactions. **Results:** Homology modeling in molecular operating environment (MOE) shows that the four cysteine residues located on the loop of a side chain could act like a hinge to assist RECQ1 interaction with the DNA. A missense (substitution) mutation, C453R, is reported in tumor sample indicating physiological relevance. Substitution of the cysteine (C453A, C471A, C475A and C478A) in the Zn-binding motif (amino acids 419–480) resulted in substantial loss of unwinding activity except for C471A indicating differential contribution of the individual cysteine residues within the conserved RQC domain in catalytic function of RECQ1. We confirmed that C453A, C475A and C478A are functionally helicase-dead and fail to unwind fork duplex even at 10-fold higher concentration than what is required for maximum unwinding by wild-type or C471A protein. Heat denaturation analysis of both wild-type and mutant RECQ1 proteins revealed that alteration of C453, C475 and C478 residues significantly change the overall conformation. **Conclusion:** Collectively, our structure-function analyses demonstrate differential contribution of conserved cysteine residues within the Zn-binding motif to RECQ1 functions important to maintain genomic stability.

KEY WORDS: RecQ1, RQC domain, Mutations, Genome Integrity, Zn-binding motif, Conserved Cysteine Residues

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### Using Mobile Devices to Develop a Fast and Non-Intrusive Substitution for Oprical Density Measurements

Presenter's Name: Wardell Samotshozo
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Abiye Mekonnen, Legand Burge, Patrick Ymele-Leki

Optical density measurements are the most common method used to monitor changes in liquid milieus, such as bacterial growth, byproduct fermentation or substance diffusion. The current state of the art method for obtaining optical density measurements involves the use of a spectrophotometer. In this study, image processing techniques were applied on mobile devices to provide an alternative to optical density measurements. A correlation was found between the results of the image processing techniques. The image processing techniques reached an accuracy of 83% on tests to detect the optical density reading of *Staphylococcus aureus* bacteria cultures at different stages once a machine learning algorithm was applied. Since mobile devices were used in this approach, the technology has the potential to be pervasive and cost-effective. The image processing techniques can be applied to optimize wet lab scientist, engineer and researcher's efficiency, aid facilities with limited resources or provide stem faculty and teachers a non-hazardous way to obtain optical density readings.

KEY WORDS: Optical Density, Spectrophotometer, Staphylococcus Aureus, Bacteria Culture, Mobile Devices

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### Capturing and Isolation of Sagar

Presenter's Name: Khadyja Sarr
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Bacteriophages, or phages for short, are viruses that bind to the cell surface of their host bacteria, and initiate infection, resulting in the amplification of phage DNA and production of new phage population. Phages, like bacteria, are ubiquitous therefore found everywhere. Research on phages is important because within a lot of these phages contains possible treatments for numerous diseases. Phage Hunters isolate and extract DNA from the phages. The current study represents an attempt to isolate, from the environment, a single phage which is specific to Mycobacterium smegmatis. The approach indicates that there are many phages that are M. smegspecific (particularly in the soil sample that is being used). M. smeg-specific is the receptors that allow phages to attach to M. smeg. This is apparent because of the different morphologies of the plaques that have been formed from the infection of M. smegmatis. Upon isolating the phage, Sagar, the next step is to begin extracting DNA from the phage in order to annotate the genomic DNA.

KEY WORDS: Mycobacterium Smegmatis Phages Isolating Capturing

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### Ossification of the Posterior Longitudinal Ligament: Sex difference and prevalence on computed tomography (CT)

Presenter's Name: Kamyar Sartip
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Kamyar Sartip, M.D., Sanmeet Singh, Motahar Basam, Jack Dong, Chika April, Alexandra Millet, Andre Duerinckx, M.D., PhD.

**Introduction:** Ossification of the posterior longitudinal ligament (OPLL) is a well-known cause of spinal stenosis and neurologic dysfunction. The reported prevalence of OPLL based mostly on radiography ranges between 0.1-1.7% in Europe and US, 0.4-3% in Asia excluding Japan, and 1.9-4.3% in Japan. Today computed tomography (CT) of the c-spine allows easy detection of OPLL. **Methods**: We retrospectively reviewed CT examinations of the cervical spine in adult patients (age 18 or greater) performed in 2009 at Howard University Hospital. OPLL prevalence, location, and thickness were recorded. The OPLL lesions were also classified by type based on the classification system described by the Investigation Committee on OPLL of the Japanese Ministry of Public Health and Welfare. This retrospective study was approved by the IRB. **Results**: We reviewed CT scans on 443 patients, 285 males (64%), with average age of 43.9 years (ranged from 18 to 89 yrs). We detected 43 OPLL lesions in these 443 patients (9.9%). The OPLL types and average thickness were as follows: 15 segmental with average thickness of 2.53 mm, 28 circumscribed with average thickness of 2.32 mm, and 1 mixed with thickness of 6 mm. Of the 15 patients with segmental OPLL, 12(80%) were male. Of the 28 circumscribed OPLL, only 18 (64%) were male. **Conclusion**: The prevalence of OPLL is higher than previously reported. Additionally, although prevalence among males was higher than females, we discovered that in the cervical spine that this sex difference is not uniform and depends on type of OPLL.

KEY WORDS: Ossification of the posterior longitudinal ligament, spine, myelopathy, computed tomography, radiology

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### An examination of the feeding preferences of the freshwater amphipod Hyalella azteca for aquatic vascular plants and macro algae: the potential roles of prey nutritional quality, chemical and/or structural defenses

Presenter's Name: Kevin Scriber
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: McClintock, J.B., Amsler, C.D.

Many factors influence the palatability and feeding preferences of predators for their prey. The present study tested the null hypothesis that the common freshwater amphipod *Hyallela azteca* presented three species of vascular plants and two species of filamentous algae displayed feeding rates indicative of no differences in prey palatability. Differences in prey palatability were found and pairwise-choice feeding assays were conducted and preferences for particular foods established. Subsequently, feeding bioassays using standard techniques demonstrated that tissues of the vascular plant *Vallisneria americana* were chemically defended against amphipod grazing, and that extracts from this vascular plant could inhibit feeding by amphipods on other species of vascular plants and algae. Tissue toughness, measured by penetrometry, indicated all three vascular plants likely rely on structural defense. There was no correlation between nutritional value (protein content) and prey palatability or preference for a given prey. The findings of this study emphasize the importance of the direct contribution of vascular plants and algae to freshwater food chains, an important topic in freshwater benthic ecology that has been largely overlooked.

KEY WORDS: chemical, structural defense, nutritional quality

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### "Ph-ishing" for Phage

Presenter's Name: Naa Sey
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

**Background:** A bacteriophage is a virus that only infects bacteria, and conducts its replication only within these hosts. These viruses have two lifecycles, lytic (where the bacterial cell is immediately lysed after complete viral replication) and temperate (where the virus follows the lysogenic pathway by incorporating its genome into that of the host bacterium before lysing the cell of its replicates). Phage Hunters Advancing

Genomic and Evolutionary Sciences research involves the acquisition and investigation of novel bacteriophages that infect *Mycobacterium smegmatis*. **Methods:** Phages were isolated from the environment, the samples were then enriched or plated directly to identify the presence of phage, once identified they were purified to obtain a single phage population, characterized—which entailed the use of electron microscopy to determine the virus's molecular structure, and also sequenced to understand the unique genes that form the phage's genomic DNA. **Results:** NahDatSmall was obtained from the soil directly in front of Burr Gymnasium, enriched with supplements for the *M. smegmatis* to multiply thus increasing phage particles, and lastly required extensive streaking in its purification. This phage population in particular produces turbid miniscule plaques—barely a millimeter diameter—and after DNA extraction, shows to have a low concentration of DNA with an average value of only 103.7 ng/μL. **Conclusion:** These results suggest that my particular phage has a temperate life cycle, meaning that it follows the lysogenic pathway as well as the lytic. However, research is ongoing with NahDatSmall and analysis of its genome will soon further characterize its lifestyle.

KEY WORDS: bacteriophage, Mycobacterium smegmatis, virus, lysogneic, lytic

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## Whole genome hyper-methylation sequencing in Africa American patients with colorectal cancer

Presenter's Name: Afnan Shakoori
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Hassn Ashktorab, Hassn Brim,Shokrani, Lee, Sudhir, Azhar, Sun Xeu, Leavit, Adeyinka O Laiyemo

**Background:** Colorectal cancer (CRC) involves epigenetic changes including DNA hyper-methylation, a paradigm shift in the role of DNA methylation alterations in colorectal carcinogenesis. **Aim:** Here we performed Reduced Representation Bisulfite Sequencing (RRBS) on a normal, and a tumor patient's tissue DNA to elucidate hyper-methylated target genes in colorectal cancer progression in this population. **Methods:** Genomic DNA was isolated from fresh frozen tissues from a patient with normal colon, and from a carcinoma patient. RRBS was performed on these DNA samples for hyper-methylation targets identification. Alignment, mapping and CpG Island methylation analyses were performed. Preferential hype-methylated pathways were determined using Ingenuity Pathway Analysis (IPA). **Results**: We identified the hyper-methylation status of top genes in the CpG Island within promoter regions (19 genes). Top hyper-methylated CpG Island outside promoter regions (16 genes) were also identified. Among these top genes, CDH4 and SOX21 were reported to be hyper-methylated in CRC and SCUBE2 was reported to play a role in breast cancer. Among hyper-methylated top genes, a total of 6360 CpG island sites found to be hyper-methylated in both promoter and outside the promoter region. Among these genes, *SCUBE2* gene on chromosome 11, identified to have 112 methylated CpG Island sites within promoter region, and mapped by IPA to the Hedgehog, TGF-β, and VEGF Signaling pathways. **Conclusion:** This work provides insight into differential CpG Island hyper- methylation profiles in CRC and provides a window into the more complex epigenetic events associated with CRC, including the hyper-methylation of known and novel genes. Investigations into the possible roles of the novel gene targets in the context of early and

KEY WORDS: Colorectal cancer , DNA hypermethylation , African American , SCUBE2, sequencing

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## Factors affecting the course of HCV infection and the sustained virological response in African American patients at Howard University Hospital

Presenter's Name: Zaki A. Sherif
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Zaki A. Sherif, Seyed-Mehdi Nouraie, Babak Shokrani, Edward Lee, Hassan Ashktrob

**Background:** Hepatitis C virus (HCV) infection may trigger the development of fibrosis and cirrhosis of the liver based on many compounding factors such as age of patient, immune function, viral load, the strain of the virus as well as the patient's genotype of the IL28b gene as indicated in published reports. We conducted a retrospective study of 76 patients with many clinical factors who had a clinically-verified HCV infection and documented the rate of response to standard triple therapy in a segment of the patients. **Methods:** The patients with chronic hepatitis C (n=76) were examined for viral load using RT-PCR before and after treatment with Incivek, Pegasys, and Ribavirin. The patients iron load, ferritin content, liver enzymes, neutrophils and platelet counts were determined by complete

blood count and comprehensive metabolic measurements. The condition of the liver (i.e. Steatosis, fibrosis or cirrhosis) was also determined by diagnostic imaging or biopsies. **Results:** Sustained (SR: 95%) for patients (12) treated with the standard regimen were observed. The baseline viral load was not significantly different between male and female patients (P = 0.6). There was no difference in viral load or virological response between the different genotypes of IL28 (P= 0.3). Also, the viral load was not correlated with age (P = 0.6). After treatment, the median viral load declined significantly from >2,280,000 to 0 (P = 0.002). **Conclusion:** Most of the patients with HCV receiving the triple therapy for a year had a drastic reduction in viral load despite the CT genotype of their IL28b gene.

KEY WORDS: HCV, hepatitis, Viral load, IL28b, African American

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## Identifying Type-II Diabetes-associated Salivary Biomarkers in African American Patients

Presenter's Name: Shuang Shi
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Belinda Hauser, Amber Gilbert, Dan Zhang, Gail Nunlee-Bland, Grace Robinson, Xinbin Gu

**Objective**: Approximately 11.4% of African Americans are diagnosed with diabetes which often leads to a major complication of local and systemic diseases. The objective of this study is to determine the profile of salivary protein and to identify candidate salivary biomarkers from the
African American patients with type-II diabetes to improve clinical diagnosis and outcome.
**Method:** Forty-seven saliva samples were collectedness from African American patients ranging from age 26-81 and were categorized depended on A1C score: uncontrolled diabetic (A1C >7.0), controlled diabetic (A1C <7), and non-diabetic controls. Profile of salivary proteins was determined by HPLC/LTQ-XL Orbit rap mass spectrometer. Candidate proteins were selected based on the profile of salivary protein and further analyzed by western blot and ELSIA methods. **Results:** Over 2500 proteins and 10-thousand peptides were detected from each salivary sample by HPLC/MS. The levels of glycoprotein, such as mucin 2 and 7 proteins (MUC-2 and MUC-7), were notably different between the control and uncontrolled diabetic groups based on the profiles of salivary proteins. The MUC-2 and MUC-7 proteins were further evaluated using western blot method that MUC-7 level was notable higher in each salivary sample compared with MUC-2 and upregulated MUC-7 level was paired with increased A1C score quantified by ELISA method. The MUC-7 level was significantly higher in uncontrolled group compared with control group. However, the level of MUC-2 was down regulated in the uncontrolled group with higher A1C score. **Conclusion:** In this study, we evaluated profile of whole salivary proteins and identified two salivary biomarkers: MUC-7, MUC-2, which expression levels are highly associated with A1C score in African American patients with type-II diabetes. In future, an intensive study with a large scale sample size will be conducted for verifying clinical potentials of the biomarkers.

KEY WORDS: Saliva; Type-2 diabetic; Biomaker; Mucin2; Mucin5B

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## Applications of the Urochordate Cardiopharyngeal Field to Head and Heart Syndromes in Humans

Presenter's Name: Simmi Singh
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Angelique Forrester, Fatimah Fahimuddin, Janine M. Ziermann

**Background:**
It is well established that many syndromes, such as Down Syndrome and DiGeorge Syndrome, present with a complex of symptoms affecting various muscle and organ groups. Despite a knowledge of the underlying genetic mutation, little is known about the embryological relationship that gives rise to these patients' clinical presentations. The discovery of the cardiopharyngeal field in urochordates led to our understanding, that cranial and cardiac muscles development are tightly linked. Urochordates are the closest sister-group of vertebrates and the recent findings regarding the cardiopharyngeal field have a huge impact in our understanding of human syndromes that show both cardiac and cranial muscle malformations. **Objective:** This study will demonstrate many human syndromes with combinations of heart and head congenital phenotypes that can now be investigated in the light of new discoveries in the cardiopharyngeal field. **Methods:** We used literature search engines such as Google Scholar and OVID to collect information on disorders that showed both cranial muscular and cardiac defects. Keyword search included: craniofacial, cardiac disorder, face heart malformation, craniofacial defect, facial muscle, heart, syndromes, and combinations of them. Disorders with head and heart muscle indications

were included in the study. **Results:** Many disorders showing developmental defects of cranial and cardiac muscles were found. The DiGeorge syndrome is currently under investigation regarding the connection of cranial and cardiac development. **Conclusion:** There is evidently an embryological connection between specific cranial and cardiac muscle groups. This knowledge will contribute to the understanding of complex syndromes like Down and DiGeorge syndromes.

KEY WORDS: congenital syndromes, heart, cranial muscle, cardiopharyngeal field, DiGeorge Syndrome

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### Muscular and skeletal anomalies in human trisomy in an evo-devo context using 3-D imaging and anatomical dissections, with notes on Down Syndrome, cyclopia and medical implications

Presenter's Name: Christopher Smith
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Janine Ziermann, Rui Diogo

**Background**: The study of abnormal development, such as trisomy syndromes, allows us to explore the mysteries and mechanisms of normal evolutionary/developmental processes, and provide insight into how morphology changes throughout evolution. Here, we report the muscular and skeletal abnormalities observed in a very rare 28-week human Trisomy 18 cyclopic fetus, and compare this individual with other humans with Trisomy 18 as well as with Trisomies 13 and 21 in the first detailed systematic musculoskeletal comparison of these three syndromes. **Methods**: Complete dissection of a 28-week human Trisomy 18 fetus was carried out and documentation of all muscular and skeletal anomalies were recorded. The results were compared with all published literature on human trisomy. **Results and Conclusions:** Our observations, comparisons, and literature review allow us to examine and discuss similarities and differences from the individual to the syndrome level; to delineate the muscle anomalies caused by aneuploid syndromes; to identify those muscular traits which are diagnostic for each one of the common aneuploid syndromes; to help chart the morphogenetic pathways of these diagnostic anomalies; and to assess the variability shown by the diagnostic muscular defects in the different aneuploid syndromes. Importantly, this work comes at a time when there is a rising need for comparisons between vertebrate model organisms and humans in the increasingly important field of evolutionary developmental biology, so the novel data presented and discussed here will contribute to a better and transformative understanding of both "normal" and abnormal development, evolution, and will thus have crucial medical implications.

KEY WORDS: Trisomy, Anatomy, Muscles, Evolution, Development

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### Skeletal morphometrics and phylogenetic relationships accurately predict body mass in the diverse "Waterbird", clade (Tetrapoda, Aves)

Presenter's Name: Nathan Smith
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Lorrane Kabert, Yah Kamei, Zachary Mills, Edidiong Okon, Liam Heins

Body mass is a fundamental organismal variable that correlates with many aspects of life history, ecology, functional morphology, and physiology. Generating robust regressions between skeletal measurements and body mass thus has wide-reaching implications for paleobiological inference. Waterbirds (e.g., penguins, loons, herons, pelicans) are represented by a rich fossil record, which includes ancient species anatomically similar to their modern relatives (e.g., *Limnofregata*), but also "giant" forms (e.g., *Giganhinga*, *Icadyptes*). We assessed osteological correlates of body mass in waterbirds spanning a range of morphologies, ecologies, and body mass. Our dataset included 42 species from 19 families of waterbird. Measurements of nine traits (femur length, femur circumference, tibiotarsus length, tibiotarsus circumference, humerus length, humerus circumference, skull length, synsacrum length, and synsacrum width) were obtained from over 200 specimens. Using species-averaged body masses and three different phylogenies, regressions were performed using ordinary least squares, phylogenetic independent contrasts, and phylogenetic generalized least squares. Robust correlations were recovered for all morphometric characters (R-squared values 0.61–0.93), with tibiotarsus circumference displaying the strongest correlation with body mass and tibiotarsus length displaying the weakest. Although phylogenetic topology and branch lengths have effects on regression equations, the strength of correlation, and rank-order performance of different skeletal predictors is not strongly influenced by phylogenetic uncertainty. These results indicate that accurate inference of body mass may be obtained from even fragmentary fossils with poor phylogenetic resolution, while at the same time, complete specimens of well-

resolved taxa (e.g., *Limnofregata*) can be utilized to test more nuanced hypotheses of body mass evolution.

KEY WORDS: Aves, Body Mass, Phylogeny, Evolution

## Coronary Artery Disease: A Review of World Literature Reveals Ethnic Disparities in Detection, Treatment, and Outcomes

Presenter's Name: Robert Solomon
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Motahar Basam, Rohan Menon, Christin-Lauren Tanksley, Isaac Dodd, Lauren Bacon, Andre J. Duerinckx, Sirisha Donekal

**Background:** Cardiovascular disease remains one of the leading causes of death for both men and women in the United States. As a result, numerous resources have been dedicated towards the study and creation of better tools with which to diagnose and treat the illness. We reviewed literature from around the world in order to analyze the differences in the disease's pathology across different ethnic groups, taking note of how these changes would impact its progression, detection and outcome. **Methods:** While reviewing the world literature we: 1) Looked at differences in plaque composition between men/women and between races/ethnic groups; 2) Investigated why certain types of plaque can be more easily detected, thus "biasing" certain risk estimates derived from CT imaging. **Results:** Review of the literature showed clear: 1) Disparity in Disease Pathogenesis and Progression: Black males have less calcification and more unstable plaques; 2) Disparity in Detection: Females tend to have more spiculated plaque, which is more difficult to detect; 3) Disparity in Treatment and Outcome: Differences remain in spite of a better and deeper understanding of racial and sex differences. **Conclusion:** Several pathological differences exist when it comes to coronary artery disease in various ethnicities. These variances have led to changes in how the medical course of cardiovascular disease affects each race and has played a major role in the development of health disparities in numerous communities. Understanding and acknowledging these differences will allow for better detection, enhanced treatment, and improved outcomes amongst all ethnicities.

KEY WORDS: Cardiovascular Disease, Ethnic Disparity, Coronary Artery Disease

## Isolation and Characterization of a Novel Phage from the Howard University Campus Using Mycobacterium smegmatis as a Host

Presenter's Name: Abiel Spencer
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Caroline Donnay

**Background:** Bacteriophage, also known simply as phage, are viruses that infect bacterial cells. The goal of SEA-PHAGES is to isolate and characterize an environmental phage parasitic to *Mycobacterium smegmatis*. **Method:** Two soil samples were collected from the Howard University Louis Stokes Health Sciences Library – one from beneath a bench on the front lawn and the other from the base of a tree in the parking lot – and bacteriophages were isolated from them. The phage were isolated and purified by means of repeated plaque streaking and spot testing and a pure phage stock, the High Titer Lysate (HTL), was then obtained. The phage DNA was then extracted from the HTL and its concentration and purity determined in order to ensure that enough DNA was obtained for the completion of restriction analysis and sequencing protocols. After performing a restriction digest, gel electrophoresis (using agarose gel) was undertaken in order to be able to compare the phage DNA restriction pattern with those of known mycobacteriophage. **Results:** The plaques observed from these phage were clear (not turbulent), round and approximately 1 millimeter in diameter. Therefore, it is accepted that the phage isolated were lytic. **Conclusion/ Future Research:** Moving forward, restriction pattern comparisons will be made and then the quality of the DNA and its viability for sequencing shall be determined. The results of this research can be used to bring new insight, or enhance previous understanding, of how mycobacteriophage may be further used to affect the populations of mycobacteria both in the physical environment as well as in medicine.

KEY WORDS: Bacteriophage, Mycobacterium, Lytic, Characterization, Restriction Digest

### New records of coelacanth fish (Sarcopterygii, Mawsoniidae, cf. Chinlea) from the Late Triassic Hayden Quarry at Ghost Ranch, New Mexico

Presenter's Name: Jared St. Amant
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Jared St. Amant, Nicole Osunsanmi, Randall B. Irmis, Sterling J. Nesbitt, Jennifer C. Olori, Adam C. Pritchard, Michelle R. Stocker, Alan H. Turner, Nathan D. Smith

The Late Triassic period (~235–201.3 Ma) records a dynamic interval of Earth history that witnessed large-scale environmental and biotic turnover, as well as the origin of many modern vertebrate groups. Hayden Quarry fossils (~212 Ma) from the Petrified Forest Member of the Chinle Formation, northern New Mexico, have yielded unprecedented insight into these macroevolutionary changes, particularly with respect to early dinosaur evolution. The Hayden Quarry is also unusual in preserving abundant and diverse microvertebrates, with particular bias toward small and otherwise rarely preserved taxa from this pivotal time interval. Here, we describe new microvertebrate fossils from the Hayden Quarry, including a nearly complete coelacanth basisphenoid, which preserves several characters supporting a preliminary assignment to the Late Triassic genus *Chinlea* (Sarcopterygii, Coelacanthiformes, Mawsoniidae). These include: **1)** triangular antotic processes with constricted posterior bases; **2)** a wide and deep pituitary fossa; and **3)** a well-defined crescentic depression for the intracranial ligament. Several of these features also indicate the new material is distinct from the closely related coelacanths *Diplurus newarki* and *Quayia zideki*. Rigorously establishing the affinities of the Hayden Quarry coelacanth basisphenoid could have implications for vertebrate biochronology, as it has been suggested that *Chinlea sorenseni* is restricted to the Late Norian–?Rhaetian of western North America, though some specimens referred to *Chinlea* sp. have been recovered from older Carnian sediments. However, additional analysis of the phylogenetic distribution of coelacanth braincase characters is required to confirm that potential autapomorphies of *Chinlea* do not have a wider distribution within Mawsoniidae.

KEY WORDS: Paleontology, Evolution, Triassic, Vertebrate, Coelacanth

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### Exploring the Effects of Mycobacteriophages on Mycobacterium smegmatis and Their Genetic Information

Presenter's Name: Briana Stith
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

A question that you may be asking is "Why phages"? Phages are studied to learn more about microbiological and molecular biological processes. Phages are important to the scientific world because they have been used in revolutionary discoveries in genetics, epidemiology, and therapeutics. Bacteriophages are a class of viruses that are specific to bacteria. They are ubiquitous, can survive in almost any environment, and are highly-specific. For this experiment, we are working with mycobacteriophages, which are phages that specifically infect species of bacteria in the genus Mycobacterium. The bacteria that we work with, *Mycobacterium smegmatis*, has a bacillus shape and is generally non-pathogenic. For this study, the goal is to purify a never before isolated phage. The phage will be characterized by imaging its structure by electron microscopy and analyzing its DNA by restriction digestion and other molecular biological methods. To isolate and purify a phage, a soil sample was collected from the Howard University campus. Then phages were enriched from the soil sample by growing in a liquid culture of *M. smegmatis*. A pure phage was isolated by repeated streaking until plaques of uniform morphology were obtained. A high titer lysate was generated which was used as a source of phage for electron microscopy and for phage DNA extraction. One phage from each Honors General Biology laboratory section was submitted for DNA sequencing. The phage sequence is being annotated to identify its gene products and their probable functions by comparison to similar genes of known functions found in databases.

KEY WORDS: bacteriophages, microbiological, genetics, annotate, bacteria

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### Growth Responses of Rhizobium leguminosarum to Plant-derived Terpenes, Thymol and Carvacrol

Presenter's Name: Lauren Summers
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Mary McKenna, Courtney Robinson

Researchers have long known that species in the mint family (Lamiaceae) exude essential oils containing biologically-active compounds such as terpenes. Previous studies in

McKenna's lab indicate that terpenes may play a significant role in biological N-fixation in natural plant communities and agricultural systems where mints and legumes co-occur. In particular, two terpenes (thymol and carvacrol) show a stimulatory effect on root nodulation despite their broad spectrum anti-microbial activity. This Honors Thesis examines growth responses of *Rhizobium leguminosarum* (N-fixing bacteria) in media containing biologically realistic concentrations of thymol and carvacrol. We wish to determine whether these terpenes show an inhibitory or stimulatory effect on *Rhizobium* grown in lab cultures under controlled conditions. We also wish to establish whether these terpenes might provide nutrients to support the growth of *Rhizobium* bacteria. A pure strain of *R. leguminosarum* obtained from USDA BARC was initially cultured in 10% TSB for 16 hours with shaking at 28□ C followed by rinsing and re-suspension twice in 1X PBS. Our experimental treatments included three nutrient levels: full nutrients (10% TSB), minimal nutrients (1% TSB) and no nutrients (1X PBS). Each nutrient level contained 4 terpene treatments: control (no terpene added), 3 ng/ml thymol, 3 ng/ml carvacrol, 1.5 ng thymol plus 1.5 ng/ml carvacrol, for a total of 12 nutrient/terpene combinations. *R. leguminosarum* in all treatments were cultured for 16 hours with shaking at 28□ C. Growth was quantified by dilution plating. Analysis and interpretation of the results from three independent trials will be presented.

KEY WORDS: N-fixation, thymol, carvacrol, Rhizobium, terpene

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## Genetic variation in the serotonin type 7 receptor (5-HT7) gene and its association with cortisol levels in African Americans

Presenter's Name: Grace Swanson
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Stephanie Miller, Forough Saadatmand, Victor Apprey, Clarence Lee, Georgina Dunston, Muneer Abbas

**Background:** Serotonin, a widespread hormone and neurotransmitter is involved in processes such as behavior and wound healing. Psychosocial stressors may cause serotonin release resulting in immune system dysregulation, seen by increased cortisol. Cortisol is involved in the inflammatory response, which is necessary for proper wound healing as well as protection against pathogens. We hypothesize that single nucleotide polymorphisms (SNPs) in the serotonin receptor gene (5-HT7) are associated with increased cortisol levels due to chronic stress. **Methods:** The study population included 590 African-American subjects ranging 18-25 years who live in stressful environment from two urban communities in Washington, D.C. Three SNPs, rs2420367, rs12412496, and rs2185706 of 5-HT7 were genotyped by restriction fragment length polymorphism or the TaqMan assay. Statistical analysis using the programs SNPassoc and haplo.stats NR was performed to determine association. **Results:** In females SNP rs12412496 was found to have significant association with cortisol levels with the log-additive model being most significant, as it remains unchanged when adjusted for age. In males, SNP rs12412496 and rs2420367 were shown significantly associated to cortisol by the overdominant model regardless of adjustment for age. Furthermore, the haplotype CGA was determined to be associated with cortisol in females regardless of age adjustment. No haplotypes were found associated in males, or when looking at the population as a whole. **Conclusion:** In conclusion, rs12412496 and rs2420367, as well as the haplotype CGA are associated with increased cortisol levels in a gender specific manner under chronic stress conditions.

KEY WORDS: serotonin, genetic variation, cortisol, immune system

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## Impact of Atrial Fibrillation and Flutter in Patients with Pulmonary Hypertension

Presenter's Name: Mestawet Teka
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Isaac Biney MD, Prithviraj B. Rai MD, Alem Mehari MD

**Introduction:** Atrial fibrillation and flutter are being increasingly reported in patients with pulmonary hypertension but little is known about their impact. We sought to determine the prevalence and clinical impact of these arrhythmias in patients with pulmonary hypertension. **Methods:** This cross-sectional study included consecutive patients with pulmonary hypertension (PH) by right heart catheterization (n=129) who were followed up in an outpatient PH clinic. Demographic data; EKG and RHC hemodynamic data were reviewed. We defined PH as mean pulmonary artery pressure (mPAP) ≥25mmHg by right heart catheterization (RHC) at rest. All-cause mortality data was obtained from medical records and or social security death index. Characteristics between PH with normal sinus rhythm and those PH with atrial fibrillation or flutter were

examined using chi-square tests. **Results:** A total of 129 patients were analyzed. Forty percent were males and 98% were African Americans. The prevalence of atrial fibrillation was 24% (n=31) and there were a total of 21 (16.2%) deaths. Compared to PH patients with a normal sinus rhythm, patient with PH and atrial fibrillation or atrial flutter had significantly higher mortality 12.4% vs. 31.3%; p=0.025. Patients with PH and atrial fibrillation or flutter had also a higher trans pulmonary gradient (20.84±11.44 vs. 15.93±12.53mmHg; p=0.047), lower pulmonary vascular capacitance (1.79±1.02 vs. 2.54±1.49mmHg; p=0.037) and were more likely to have a pulmonary vascular resistance ≥3Wood units (76.2% vs. 36.7%; p=0.02), but the pulmonary artery occlusion pressure were similar 22.8±9.5mmHg vs. 22.9± 9.4mmHg when compared to those patient with PH and a normal sinus rhythm. **Conclusion:** Atrial fibrillation and flutter are associated with hemodynamic severity and increased mortality in patients with pulmonary hypertension irrespective of the etiology.

KEY WORDS: Clinical Research

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### The Process of Identifying Bacteriophage

Presenter's Name: Laurie Thomas
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

The body is swarming with bacteria. In bacteria are bacteriophages, viruses that infect bacteria and many times take over the bacteria, replicate, and lyse the bacteria. After collecting soil from Howard University's campus the next step was to isolate one specific phage that was to be studied. Phages from the soil sample were enriched by growth in liquid culture on *Mycobacterium smegmatis*. A pure phage population was isolated by repeated cycles of streaking until plaques of uniform morphology were obtained. A high titer lysate was generated which provide sufficient phage for characterization of phage structure by electron microscopy and of phage DNA by restriction digestion and other molecular biological methods. Only one phage from each of the four General Biology Honors laboratory sections was submitted for DNA sequencing. The DNA sequence of that phages is being annotated to identify its gene products and their function by comparison to similar genes with known functions in databases.

KEY WORDS: Mycobacterium smegmatis, phage, Howard, bacteriophage

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### Body Mass Index, Depression, and Participant Retention Correlations in the W.E.I.G.H.T. Study

Presenter's Name: Roshni Thomas
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

The W.E.I.G.H.T. Study, conducted at Howard University Hospital, is designed for overweight and obese young African-American adults, who are at risk for Type II Diabetes Mellitus. The ultimate goal of the study is to promote making healthy choices in diet and exercise in order to prevent the eventual onset of the disease. However, increasing participant retention has been a continuous problem. The purpose of this experiment was to determine if body mass index (BMI) and possible depression affected retention rates among 63 participants. Relationships between BMI and possible depressive disorders was also determined. Because 19 participants did show signs of possible depression, the severity of depression was also measured. These scores were then compared to BMI and their corresponding depressive disorders to observe any relationships. Two predictions were made for each scenario just described. During baseline visits, the height and weight of each participant was taken to determine BMI. Then they were given a PHQ-9, along with their subsequent questionnaires, to indicate possible depressive disorders and the severity of depression. The PHQ-9 results were tabulated and compared to the corresponding BMI ranges. In addition, whether or not the participants dropped out of the study was recorded. The results showed that neither BMI nor depression affected retention. Also, possible depression had no effect on BMI. Likewise, BMI had no effect on possible depression. Regardless of BMI or the depressive disorder, most depressive participants fell into the category of moderate depression above the other four categories.

KEY WORDS: body mass index, depression, PHQ-9, African-American, young adults

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### NsrR regulation of Small RNA RybB and RpoE in Escherichia coli

Presenter's Name: Karl Thompson
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Joseph Aubee, Karl Thompson

RybB is an 80 nucleotide (nt) small regulatory RNA, in *E. coli*, involved in the envelope stress response and is regulated by the envelope stress transcriptional regulator RpoE ($\sigma^E$). We have evidence to suggest that a nitric oxide sensing transcriptional

regulator, NsrR, may act as a direct transcriptional regulator of RybB and its regulator RpoE in vivo. Here we also demonstrate biochemical evidence that the purified NsrR protein binds to DNA corresponding to the *rybB* and *rpoE* promoters in vitro, supporting the hypothesis that NsrR acts a direct transcriptional regulator of *rybB* and *rpoE*. We also execute further biochemical analysis to define possible nucleotide interactions between NsrR and the *rybB* and *rpoE* promoters in vitro. This research demonstrates cross-talk between the nitric oxide and envelope stress responses in *E. coli*. Defining physiological cross-talk in simple biological systems, such as *E. coli* K12, will increase the knowledge necessary the vertical advancement of Systems Biology and Functional Genomics.

KEY WORDS: Bacterial Genetics, Small RNAs, Noncoding RNAs, Anaerobiasis, Nitric Oxide

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### Childhood Overweight/Obesity Among Youth Living in Food Insecure Households: Contributing Factors

Presenter's Name: Linda Thompson
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Alan Johnson

Childhood overweight/obesity has become an epidemic in this country. Among overweight/obese children of low socioeconomic status, food insecurity is an unlikely factor that has not been widely explored. Food insecurity occurs when households have limited access to food due to economic and social conditions. A goal of the research was to investigate factors that contribute to overweight/obesity in children 12-19 years of age in food insecure households. Socioeconomic factors, dietary intakes, lack of physical activity and sedentary behaviors as contributing factors were explored. Methodology: This study incorporated secondary data analysis using the most current National Health and Nutrition Examination Survey (NHANES) data available. Results: Neither socio-demographic factors nor level of physical activity were found to be significantly related to weight/height status among children living in food insecure households. However, with regard to sedentary behaviors, t-tests showed a significant relationship between TV watching or videos and weight/height status. Investigation of dietary intakes and weight/height status revealed that overweight/obese children living in food insecure households had higher intakes of all dietary variables than overweight/obese children living in food secure households. Recommendations for further study include developing cost effective strategies to improve the accuracy of self-reported dietary intakes. It is also important to research the role of fast food consumption, participation in family meals, and individual and maternal stressors, when comparing contributors to weight/height status among in children living in food insecure households.

KEY WORDS: Childhood, Obesity, Overweight, Food, Insecurity

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### Thymic involution during murine Toxoplasma gondii infection is dependent on the immunodominant surface antigen SRS29B (SAG1)

Presenter's Name: Gezahegn Tolla
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Gezahegn Tolla, Dionne Robinson, Alessandra Commodaro, DM Bouley, Julie Hixon, Scott Durum, John Boothroyd, Michael Grigg

Many infectious diseases target the thymus, leading to thymic involution. The role of microbial antigens mediating induction of thymic involution is poorly understood. In this study, we investigated the role of the immunodominant surface antigen SRS29B (SAG1) expressed on *Toxoplasma gondii* in the induction of thymic involution by engineering a SAG1-defiecient parasite (Δsag1). Intraperitoneal infection of susceptible mice with virulent RH *T. gondii* results in a severe thymic involution whereas Δsag1 strains were less virulent organisms, producing less severe disease and loss of thymus-derived cortical lymphocytes. Failure to produce thymic involution could not be explained by inability of the Δsag1 parasite to colonize mice, since these parasites possessed wild type invasion and growth kinetics and equivalent parasite burdens during in vivo infection. However, Δsag1 infected mice produced substantially less IFN-γ and TNF-α from CD4+ T cells, in contrast to infection with wild type parasites. No change in corticosterone levels was detected in mice infected with parental RH and Δsag 1 parasites. Thymic involution was not dependent on the production of IFN-γ, inducible NO synthase or CD4 T cell recirculation from the periphery to the thymus, as mice deficient in these inflammatory mediators or CD4 depletion failed to restore the double positive thymocyte population. We observed an effect of parental RH infection on earliest thymic precursors. Our results suggest that SAG1 is a critical immunodominant virulence factor that triggers thymic involution.

KEY WORDS: Infection; Thymic involution; Surface antigen 1; Toxoplasma gondii

## Use of Complementary and Alternative Medicine Use and Colon Cancer Screening among US Adults

Presenter's Name: Cortni Tyson
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Andrew K. Sanderson, MD , Angesom Kibreab, MD , Victor F. Scott, MD , Adeyinka O. Laiyemo, MD, MPH

**Background:** Despite proof of effectiveness, the use of Complementary and Alternative medicine (CAM) continues to increase in the United States. This is believed by many to suggest increased health awareness by those who practice these methods. Aim: To evaluate whether CAM users were more likely to be up-to-date with colorectal cancer (CRC) screening guidelines. **Methods:** Data from the 2007 Health Information National Trends Survey (HINTS) was analyzed. A total of 3,498 responders (weighted population size = 67,123,130), aged 50 to 75 years responded to questions about the use of complementary alternative medicine and CRC screening. Up-to-date with CRC screening was defined as a Fecal occult Blood Test (FOBT) within the past 1 year, a flexible sigmoidoscopy within the previous 5 years, or a colonoscopy within the previous 10 years. Multivariate logistic regression analyses were used to calculate the odds ratios (OR) with 95% confidence intervals (CI). Results: A total of 972 (26.6%) participants reported use of CAM in the previous year while 2,526 (73.4%) participants did not. There was no age difference between CAM users and nonusers, but CAM users were more likely to be females (P <0.001) but less likely to be black (P <0.001). After adjusting for age, sex, race, education level, marital status, health insurance, smoking and BMI, CAM use was not associated with increased adherence to CRC screening guidelines (Table). **Conclusions:** The use of CAM among US adults is not predictive of use of CRC screening. Care providers should emphasize CRC screening to all their patients.

KEY WORDS: Complementary Alternative Medicine Colon Cancer

## Improving glycemic control in minority patients diagnosed with type 2 diabetes: A Review

Presenter's Name: Ngozi Uka
Classification: Professional Student
*Presentation Type: Poster Presentation*

**Objective:** This study assessed the effectiveness of education targeting the ethnic diet habits of minorities with type 2 diabetes and poor glycemic control. **Background:** According to Healthy People 2020, the prevalence of type 2 diabetes is higher in minority populations. This is attributable to prevailing health disparities. Minorities are more likely to lack access to healthcare, including preventive care. Low socio-economic status and a mistrust of the healthcare systems in this population are also contributing factors. **Methods:** Using CINAHL, COCHRANE and PubMed datasets, we searched related articles from 2010-2014. In addition, randomized control studies were selected to determine effectiveness of diet changes for minorities diagnosed with type 2 diabetes. Health Belief Model was used as a conceptual framework for this study. **Results:** Review of selected articles revealed that there was an improvement on all aspects of required lifestyle and quality of life of the participants. The studies drew a correlation between patient tailored diabetes self-management education and positive outcomes. A six-month follow up showed a significant improvement for diet ($p < 0.001$), diabetes management ($p = 0.003$), monitoring blood glucose ($p < 0.001$), and preventing complications ($p = 0.001$). Overall, there was no significant difference between individual education and usual care. **Conclusion:** This review has shown that empowering individuals through culturally competent education, while using individualized teaching strategies that integrate diabetes self-management into daily living was effective in controlling the incidence of type 2 diabetes; thereby reducing the huge toll the disease takes on the society at large.

KEY WORDS: Type 2 doabetes, Minorities, Self - management, Effectiveness, Education

## Role of RACK-1 protein on oxidative stress signaling pathways in MC3T3

Presenter's Name: Carmen Vails
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Ayele Gugssa, Hemayet Ullah, and Winston Anderson

Role of RACK-1 protein inhibitors on the oxidative stress signaling pathway in MC3T3
RACK-1 acts as scaffold protein in plants that integrates signals from different pathways. Recent studies revealed that certain antioxidants isolated from RACK-1 when used on the model organism *Arabidopsis* were significantly effective against oxidative stress due to its newfound potential interaction with dehydration, salt stress, ribosomal and photosynthesis pathways. Therefore, in order to ascertain whether any parallels exist between the aforementioned behaviors exhibited by plants and mammals, the following experiment was conducted. Operating under the hypothesis that mammalian cells do indeed possess these properties when treated with oxidative stress agents, namely methyl viologen, after secondary treatment with antioxidants, MC3T3, a mouse pre-osteoblast, was used. Because its characteristics were closest to *in vitro* human cell lines without tumorigenic properties, we were able to adequately observe the effects the oxidative stress agent posed on cell proliferation following antioxidant-induced recovery. In the end, based on the acquired immunofluorescence, fluorescent microscopy, and live and dead assay results, the selected antioxidant compounds had a significant effect on the cells' morphology. However no unilateral effect was observed. Further investigation is needed in order to understand the mechanisms involved for a conclusive evaluation.

KEY WORDS: RACK1A, mammalian cells, oxidative stress signaling pathways, apoptosis, antioxidants

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## Screening for Leishmania spp. in Ethiopian Phlebotomine sand flies

Presenter's Name: Sachin Vasikaran
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Ingrid Harris, Tiffany Clinton, Chanda Macias, Winston Anderson, Meshesha Balkew, and Courtney J. Robinson

**Background:** Leishmaniasis is an infectious disease prevalent in Ethiopia, as well as other parts of the world. The causative agents are protozoa in the genus *Leishmania*. *Leishmania aethiopica* and *Leishmania donovani* are among the species that elicit leishmaniasis in Ethiopia. These protozoa are spread via phlebotomine sand fly bites. The species of sand fly examined in this study were *Phlebotomus longipes* and *Phlebotomus ashfordi*. *P. longipes* is a known vector of *Leishmania,* but the vector status of *P. ashfordi* and its ability to carry *Leishmania* is unknown. In addition to being the first study to investigate whether *Leishmania* inhabits *P. ashfordi,* this study is part of a larger project that will test the hypothesis that *Leishmania* has an impact on the gut microbial community. **Methods:** DNA was extracted from 80 sand flies collected in Ethiopia. PCR was used to detect key regions of the *Leishmania* genome. Two sets of primers will be used to detect the presence of *Leishmania*. One will specifically amplify *Leishmania* mitochondrial cytochrome b and regions of kinetoplast minicircles. An additional another set of primers that amplify the ribosomal internal transcribed region will be used to differentiate the samples that are positive for *L. aethiopica* and *L. donovani*. PCR products will be examined using gel electrophoresis. **Conclusions:** This study is the first of several that will determine: 1) whether natural populations of *P. ashfordi* carry *Leishmania,* and 2) whether members of the bacterial communities associated with sand flies in Ethiopia can be used in the control of these important vectors.

KEY WORDS: Ethiopia, Phlebotomine sand fly, Leishmaniasis, protozoa, insect vector

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## Prevalence of Pre-Masticating Food for Weaning Infants Among Mothers and Caregivers in the Washington, DC Area

Presenter's Name: Melanie Ventocilla
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

**Purpose:** The purpose was to determine the prevalence and reasons for pre-masticating food among parents and caregivers for weaning infants in the Washington, DC area. **Methods:** A cross-sectional 20 question written survey evaluated the prevalence of pre-chewing food and feeding practices for weaning infants among parents and caregivers in the Washington, DC area. Variables such as the caregiver's age, marital status, race, gender and education level were recorded. The survey was offered to all parents or caregivers who brought a child or children to the Pediatric Clinic at Howard University Hospital and the Pediatric Dentistry Department

at Howard University College of Dentistry. Results: A total of 92 surveys were collected. Of the surveys completed, 4 were White, 53 Black/African, 27 Hispanic, 3 Asian/Pacific Islander, 1 American Indian/Native American, and 4 indicated "Other". Eighty-six of the caretakers were female and 6 were male. Fifty-nine of the participants were born in North America, 23 Central/South America, 6 in Africa and 3 in Asia. The youngest age when solids were initially introduced to the infant was 3 months. Forty percent of the primary caretakers pre-chewed food before offering it to the weaning infant, and the most prevalent reasons were to make the food smaller and to estimate if the food was too cold or too hot. The mean length of time food was pre-chewed was 2 months. These results are significant and should be taken into consideration by the American Academy of Pediatric Dentistry in their Guidelines for Caries Risk Assessment.

KEY WORDS: pre-chewing, pre-masticating, birdfeeding, kiss feeding

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### Characterization of a Bacteriophage(Phage)

Presenter's Name: Vanessa Vixamar
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Courtney Robinson, PhD, Laricca London-Thomas, MS

**Background**: Studying bacteriophage infections of bacteria helps us to understand the bacterial host as well as its phages. The purpose of this project was to isolate a novel phage that infects *Mycobacterium smegmatis* and to characterize it. This is beneficial to research on other species in the genus *Mycobacterium* and phages' effects on them. **Methods**: A soil sample was collected from the Howard University campus at 38° 55'22'' N, 77°1'13'' W. This soil was enriched with nutrients to amplify the growth of *Mycobacterium smegmatis* and its phages. After this, the presence of phages was determined by the appearance of lysed regions on a Petri dish, this research process could then be broken down into categories of purification and characterization. A step-by-step procedure was used to purify and study the phage. The purification methods included the spot test, streak tests, phage-titer assay, and the final plaque purification. Once a high-titer lysate was harvested, DNA was extracted. This was examined by restriction digest and gel electrophoresis; electron microscopy was used to observe size and shape and to determine the family of the phage. **Results/Conclusion:** The bacteriophage Finesse produced characteristically small plaques, approximately one millimeter in diameter. The plaques were also clear which indicated that its phage population had undergone a lytic lifecycle. Finesse's DNA had a low concentration of 55 ng/mL. Polymerase chain reaction was used to confirm the characterization and clustering of the phage.

KEY WORDS: Bacteriophage, Mycobacterium smegmatis, viral diversity, phage therapy, Mycobacteriophage

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### Nicotinamide Adenine Dinucleotide Phosphate (NADPH) oxidase subunit – 4 and gp91phox, in the presence of Interleukin-6, contributes to increased mean arterial pressure during Angiotensin II hypertension

Presenter's Name: Makeeva Walker
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Joanne Allard, Ph.D. and Dexter L. Lee, Ph.D.

**Background:** Increases in plasma levels of Interleukin-6 (IL-6), an inflammatory cytokine, correlate with increases in mean arterial pressure (MAP). Previous results from our laboratory demonstrate that IL-6 knockout (KO) mice have an attenuated blood pressure response during Angiotensin II (Ang II) hypertension. The mechanism of how IL-6 increases MAP is not completely understood. We tested the hypothesis that gp91phox and NOX-4, Nicotinamide Adenine Dinucleotide Phosphate (NADPH) oxidase subunits, expression in the kidneys and heart are increased in Ang II-treated wild-type when compared to Ang II-treated IL-6 KO mice. **Methods:** Male (10 - 12 weeks old) IL-6 KO mice and their wild-type (WT) controls were implanted with biotelemetry devices and infused with a slow pressor dose of Ang II (400 ng/kg/min) for 12 days. Kidneys and hearts were collected and homogenized for western-blot analysis. **Results:** Baseline mean arterial pressure (MAP) was not different between WT and IL-6 KO mice. On day 12 of Ang II, mean arterial pressure (MAP) was 140 ± 6 mmHg in WT and 120 ± 6 mmHg in IL-6 KO mice. Kidney gp91phox and NOX-4 expression was increased in Ang II-treated WT, 10 ± 1% and 20 ± 5%, respectively. Heart gp91phox, and NOX-4 expression was increased in Ang II-treated WT mice 8 ± 1% and 22 ± 2%, respectively. **Conclusion:** Our data suggests increased gp91phox and NOX-4 expression in the kidneys and heart of WT + Ang II mice contribute to an increase in MAP during Ang II hypertension.

KEY WORDS: Kidneys, Heart, IL-6, NOX-4, gp91phox

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## Conditional Reprogramming of Adult Rat Primary Astrocytes

Presenter's Name: Robert Walker
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Galam Khan, Brent Harris

Glial cells within the central nervous system (CNS) are the most numerous cell types and maintain the architecture, nutrition, neuronal function, and immunology aspects of the CNS. Glial cell dysfunction may play an important role in CNS pathology. Previous studies have demonstrated conditional immortalization of a variety of epithelial cell types when co-cultured with irradiated rat fibroblasts or conditioned medium from these fibroblast together with a Rho-associated protein kinase (ROCK) inhibitor Y-27632. The aim of this study is to investigate culture conditions that conditionally immortalize adult rat astrocytes allowing them to proliferate, be cryopreserved, and re-constituted while preserving astrocyte specific characteristics. Primary astrocytes were harvested from the frontal cortex of adult Sprague Dawley rats. Astrocytes were maintained and observed under two culture medium conditions: (1) standard astrocyte culture conditions (Dulbecco's Modified Eagle Medium, 10% Fetal Bovine Serum, 1% Penicillin/Streptomycin) and (2) conditioned media from irradiated fibroblasts with addition of ROCK inhibitor. Preliminary results demonstrate conditionally reprogramed astrocytes with larger nuclei and 2-3 nucleoli, broader cellular processes, and a reticular-like cytoplasmic pattern. Standard astrocyte cultures similarly display large nuclei but have typical astrocyte morphology. Immunohistostaining for astrocyte specific markers glial fibrillary acidic protein (GFAP), S100b, and glutamine synthetase show that standard and conditioned astrocyte cultures similarly express these markers suggesting preservation of astrocyte phenotype. Creation of conditionally reprogrammed astrocyte cell lines will aid investigators in glial cell biology research and may have implications for personalized therapy research in CNS disease states if similar methods can be employed with human astrocytes.

KEY WORDS: Glial Cell, Astrocyte, Central Nervous System, Pathology, Reprogramming

## Retrograde Signaling with Cannabinoids in Olfactory Neuronal Circuits

Presenter's Name: Ze-Jun Wang
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Liqin Sun, Thomas Heinbockel

**Background:** The bioactive ingredient of marijuana, Δ9-tetrahydrocannabinol, activates cannabinoid receptors (CB1R) in the brain in the same manner as brain-produced endogenous cannabinoids (endocannabinoids). Endocannabinoids mediate retrograde signaling at synapses in several brain regions through a form of short-term neural plasticity. Endocannabinoids are released from depolarized principal neurons and rapidly diffuse to presynaptic inhibitory interneurons to transiently reduce presynaptic firing and neurotransmitter (GABA) release. Here, we study the function of this novel neuromodulatory system at central olfactory synapses. **Methods:** In mouse brain slices, we used whole-cell patch-clamp recordings to test for the presence of retrograde signaling in regulating the activity of mitral cells, key olfactory bulb output neurons. **Results**: We applied depolarizing voltage steps to mitral cells and measured if cannabinoid-mediated retrograde signaling is present in mitral cells as a change in amplitude and frequency of spontaneous inhibitory currents (sIPSCs). Our data support the notion that retrograde signaling is present in olfactory neural circuits involving mitral cells. At the same time, presynaptic GABAergic periglomerular cells are inhibited by endocannabinoids. Our results suggest that endocannabinoids function as retrograde messengers to inhibit the activity of neurons that are presynaptic to mitral cells, namely periglomerular cells. These experiments provide novel insights about the function of endocannabinoids in the olfactory system and could pave the way for novel treatment strategies in drug addiction. **Conclusion:** Mitral cells release endocannabinoids that inhibit periglomerular cells through retrograde signaling which controls their GABA release and, in turn, regulates mitral cell activity.

**Support:** NIH (MD007597) and NSF (IOS-1355034) to TH.

KEY WORDS: cell signaling, electrophysiology, neurotransmitter, brain, olfaction

## Small compounds targeting Arabidopsis Scaffold Protein RACK1A in Oxidative Stress and Auxin Signaling Pathways

Presenter's Name: Kyaira Ware & Rachel Darko
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Dr.Hemayet Ullah

RACK1 (Receptor for Activated C Kinase 1) is a highly conserved WD-40 type scaffold protein. It regulates diverse signal transduction and stress response pathways. Studies of loss of function mutants in *Arabidopsis* indicate that RACK1A-the predominant isoform, negatively regulates diverse environmental stress and developmental signaling pathways. It is hypothesized that chemical knock-out, as opposed to genetic knockout of RACK1A, will provide a functional advantage in protecting plants from environmental stress. Site-directed mutagenesis studies indicate that key post-translational modifications, such as tyrosine phosphorylation of Y248 residues, dictate the RACK1A's function. Using our own published crystal structure of RACK1A protein, dozens of small compounds were identified. These compounds can potentially inhibit the Y248 phosphorylation. The effectiveness of the compounds in regulating diverse environmental stress responses are evaluated in different crop plants and are found to protect crops from diverse stresses like drought and salt stresses by upregulating the oxidative stress detoxification pathways. In addition, the developmental pathway associated with growth hormone auxin appears to be regulated by the compounds as well. Reporter gene assays, tissue cultures, hydroponics and oxidative stress assays were used to establish that the functional inhibitor of RACK1A proteins protects crops from diverse environmental stresses while positively impacting growth hormone signaling pathway.

KEY WORDS: oxidative stress auxin RACK1A Arabidopsis thaliana

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## The ecological implications of variation in morphology among four lizards in the genus Gonatodes in Trinidad and Tobago

Presenter's Name: Jerome White
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Stevland Charles, Tyler Brown, George Middendorf

Studying closely related species that exist at varying levels of geographic range overlap aids our understanding of mechanisms used by species to avoid and reduce competition, particularly in situations when ecological resource availability is limited. To examine this, we studied ecological interactions among four closely related species of lizards in the genus *Gonatodes* in Trinidad and Tobago; namely *G. ceciliae*, *G. humeralis*, *G. ocellatus* and *G. vittatus*. The species varied considerably in their levels of range and habitat overlap. For each species we collected data on distribution, microhabitat use, and multiple aspects of body morphology. The data were analyzed to determine to what extent these lizards vary in morphology and how that variation might help us understand the interactions of the species. We found significant differences in body size both within and between species. The largest of the species, *G. ceciliae*, inhabited mainly humid forests, often co-occurring with one of the small species, *G. humeralis*, and more rarely with the other small species, *G. vittatus*, in drier forests. The rarely co-occurring small species did not vary in size, and all three afore mentioned species had over-lapping ranges on Trinidad and its satellites. The middle-sized species, *G. ocellatus* was practically isolated from all of the others in forests of northeastern Tobago and its satellites. Coupled with patterns of distribution, habitat use and microhabitat use, these morphological differences strongly suggest that that they act to reduce ecological impacts on resource acquisition.

KEY WORDS: ecology, sympatry, habitat use, lizards; morphology

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## Evaluation of a Commercially Available Heart Rate Variability Algorithm Using Electronically Simulated Electrocardiograms

Presenter's Name: Kaila Wilcher
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

**Background:** Heart Rate Variability (HRV) results from interactions between the parasympathetic and sympathetic nerves. It has been studied in different diseases and physical/mental activities. The results are sometimes confusing and difficult to interpret. To improve our understanding of a commercial frequency domain HRV system available in this laboratory we studied the system using simulated electrocardiograms (ECG). **Method:** Neither animal nor human subjects were used for this study. ECGs were electronically simulated using a Burdick Electronic Patient (model EKS-95), and analyzed with Biopac's AcqKnowledge

3.9 Software's HRV algorithm. HRV was characterized as power spectral density in frequency bands: very low frequency (VLF), low frequency (LF), high frequency (HF), and very high frequency (VHF). Sympathetic and vagal values were calculated. HRV was measured as a function of number of beats and time at high/medium/low rates. **Results:** VLF, LF, and HF bands increased non-linearly at all heart rates. VHF and vagal at low/medium rates decreased. Sympathetic values increased as the number of beats increased but decreased at highest rate. Sympathetic and vagal trends were constant for each time interval. At each heart rate VLF and LF increased; HF and VHF decreased. **Conclusion:** The Biopac HRV algorithm is strongly influenced by the number of beats sampled as well as the associated heart rate and the duration of the sample. This may explain some of the ambiguity in some studies.

KEY WORDS: Heart Rate Variability, Electrocardiograms, Parasympathetic, Sympathetic, Power Spectral Density

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## Isolation and partial characterization of mycobacteriophage, Ariel, from soil sample collected outside Howard University Biology building

Presenter's Name: Tahirah Williams
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Ashley Holt

There exist mycobacteriophages in soil yet to be discovered and characterized. In this study 2g of soil collected outside the Biology building (38.5518 N and 77.0110W at depth 1.5 cm) was added to enrichment broth containing 5ml *Mycobacterium smegmatis,* and incubated aerobically at 370C for 48 hours. Examination of enrichment plates showed phage morphologies varying in plaque size, shape, lysogenic or lytic cycles. Most were lysogenic with average diameter of 2mm. Purification and isolation of the phages were accomplished by selecting five lysogenic plaque morphologies from the enrichment plate to perform a spot assay and a series of plate streaks. Medium Titer Lysate (MTL) was obtained by flooding the web plate (85% lysed) with 7ml phage buffer and pooling the suspension after 24 hours incubation at 40C. The ten-plate infection, using MTL, produced two lysogenic plagues with average diameter 2mm in the 10-8 section, with a titer of 1.0 ×1011 pfu/ml. MTL of 4.8×10-5 was observed to yield complete lysis on the plate and hence chosen to perform a five plate infection, yielding High Titer Lysate. Promega Wizard DNA Clean-up kit was used to isolate the phage DNA and ThermoScientific Nanodrop 2000c spectrophotometer indicated pure DNA (1.87) of concentration 60mg/µl. Restriction enzymes (BamH1, Cla1, EcoR1, Hea111 and Hind11) were used to digest the DNA and fragments were visualized under Ultraviolet light. The results showed the existence of diverse mycobacteriophages in the soil sample used. Further analysis of the phage with electron microscopy and annotation of the DNA sequence is underway.

KEY WORDS: Ariel, Promega, Wizard, microscopy, enrichment

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## Hypertension genotypes in an historic African-American population: Comparisons with contemporary hypertension genomics

Presenter's Name: Bradford Wilson
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Fatimah Jackson, Georgia Dunston, Uzoamaka Nwaogwugwu, HannesSchroeder, Latifa Jackson, Bradford Wilson, Hasan Jackson

African-American populations are disproportionately affected by stroke/cerebrovascular disease (CVD), hypertension (HTN), cardiovascular disease (CVD) and renal disorders (RDs). This increased disease prevalence is thought to arise, in part, from population specific variation in genes involved in these disease phenotypes. We have developed a method of identifying the significant underlying genetic polymorphisms curated from National Center for Biotechnology Information (NCBI) gene sets. The resulting literature curated gene sets can be used to identify modules and pathways mediating the intersection of CVD, HTN, RD, and CVD. These may indicate the historical relevance of particular variants by comparing these disease-gene clusters in contemporary populations. We have identified eight disease gene hotspot regions that appear to play a functional role at the intersections of AA health disparities. The Cobb Collection (CC) represents a unique opportunity to make genomic health disparity assessments among AAs living 75 years ago. Ancient DNA (aDNA) will be extracted and sequenced for a subset of 150 CC individuals who died from these diseases and compared with the literature curated genes sets. This will provide insights into the antiquity of certain disease associated genetic variants in this understudied population. Additionally, we will develop the foundations for future epigenomic studies by well-characterizing the historical geospatial exposures in the 150 individuals known to have died from hypertension and its sequelae.

KEY WORDS: hypertension, genomics, African Americans

### Tumor size is a prognostic factor in colon cancer: review of the Surveillance Epidemiology and End Results database

Presenter's Name: Firew Wubiee
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Anteneh Tesfaye, MD, Belen Tesfaye, MD, Angesom Kibreab, MD, Charles Howell, MD

**Introduction:** In many cancers, macroscopic tumor size is used in the TNM staging. In colon cancer, the depth of tumor infiltration in to the wall is used in the TNM staging instead of tumor size. The aim is to evaluate the impact of tumor size in the prognosis of patients with colon cancer. **Methods:** A List of patients who were microscopically diagnosed with colon cancer was generated in the period 2004 to 2008 from the SEER database. **Results:** 69, 500 cases met the study criteria. The median age was 70 years. The proportion of females was 52.4%. Caucasian was the most common race (80.4%). The median tumor size was 4.4 cm. Tumor size was categorized into 2 groups based on the median value. There were 34,128 patients with N0M0 disease. Among stage T1, tumor size <4 cm and >4 cm were associated with 95% and 83% 4 year cancer specific survival respectively. In stage T2, tumor size <4 cm and >4 cm were associated with 93% and 90% 4 year cancer specific survival respectively. In T3 and T4, no significant difference in survival was noticed in tumor size <4 cm and >4 cm. On multivariate survival analysis of patients with N0M0 disease, age, T staging and tumor size were significant predictors of survival. **Conclusion**: The size of the primary tumor is a significant predictor of mortality in T1 and T2 stages. In advanced T staging, size of the primary tumor is noted to have no effect on survival.

KEY WORDS: Colon cancer, tumor size, SEER database

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### Whole genome hypomethylation sequencing in Africa American patients with colorectal cancer

Presenter's Name: Shatha Zarnogi
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Hassan Ashktorab, Hassan Brim, Shokrani, Lee, Sudhir, Azhar, Sun Xeu, Leavit, Adeyinka O Laiyemo

**Background:** Colorectal cancer (CRC) involves epigenetic changes including DNA hypomethylation, a paradigm shift in the role of DNA methylation alterations in colorectal carcinogenesis. **Aim:** Here we performed Reduced Representation Bisulfite Sequencing (RRBS) on a normal, and a tumor patient's tissue DNA to elucidate hypomethylated target genes in colorectal cancer progression in this population. **Methods:** Genomic DNA was isolated from fresh frozen tissues from a patient with normal colon, and from a carcinoma patient. RRBS was performed on these DNA samples for hypomethylation targets identification. Alignment, mapping and CpG methylation analyses were performed. Preferential hypomethylated pathways were determined using Ingenuity Pathway Analysis (IPA). **Results**: We identified the hypo-methylation status of top genes in the CpG Island within promoter regions (18 genes). Top hypomethylated CpG Island outside promoter regions (18 genes) were also identified. Among these top genes, total of 4845 CpGI sites was methylated included the genes in the promoter and CpGI region. ACOT9 gene identified in the promoter region of chromosome X and 97 CpGI sites found to be hypomethylated. Where RIN2 gene identified in the CpGI region of chromosome 20, and 40 CpGI sites found to be hypomethylated. Both genes might play a significant role in CRC in AAs, and IPA mapped these markers to the Wnt/β-catenin and VEGF signaling pathways. These genes were also found to play a role in breast and prostate cancer. **Conclusion:** This work provides insight into differential CpG island hypo-methylation profiles in CRC and provides a window into the more complex epigenetic events associated with CRC, including the hypomethylation of known and novel genes. Investigations into the possible roles of the novel gene targets in the context of early and prognostic methylation biomarkers are underway.

KEY WORDS: Colorectal Cancer, Hypomethylation, African American, RIN2 gene, ACOT9 gene

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### Multimodal Mossy Fibers Form Distinct Synapses in the Granule Cell Domain of the Dorsal Cochlear Nucleus in Rats

Presenter's Name: Xiping Zhan
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Michael A. Muniak, Jahn N. O'Neil, David K. Ryugo

The cochlear nucleus receives a variety of mossy fibers from multiple nonauditory origins, which form glomeruli with postsynaptic structures including interneurons projecting to principal cells in the dorsal cochlear nucleus. This circuitry is implicated in multimodal integration by providing meaningful

cues for audition, but their synaptic nature is not yet determined. We are addressing this issue by examining the postsynaptic targets and their presynaptic endings in the granule cell domain of the cochlear nucleus. To investigate the projection terminals in the cochlear nucleus, biotinylated dextran amine or Phaseolus vulgaris leucoagglutinin was injected into the second cervical dorsal root ganglion, the cuneate, lateral reticular, spinal trigeminal and pontine nuclei of rats, respectively. The anterogradely labeled endings and associated unlabeled structures were visualized by histology and electron microscopy. Following three-dimensional reconstruction, we noted a diversity of synaptic vesicles, post-synaptic densities and postsynaptic targets that have characteristic features pertaining to their origins. Synaptic vesicles in mossy fiber endings from the cuneate nucleus have larger shape bias than those of others, and the postsynaptic densities at spinal trigeminal mossy fiber endings were exceptionally larger. Mossy fibers from spinal trigeminal nuclei project to the Golgi cell, whereas inhibitory boutons were found from the lateral reticular nucleus. C2 DRG endings form axon-axonal synapses both in a postsynaptic and presynaptic fashion. Our findings suggest that the postsynaptic structure of the axonal endings, as well as the presynaptic diversity have distinctive functional contributions to auditory signal processing in the granule cell domain.

KEY WORDS: mossy fibers,cuneate nucleus, pontine nucleus, C2 DRG, cochlear nucleus

# Business

### Internal control material weakness and directors reputational consequence

Presenter's Name: Isaac Bonaparte
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Tony Andersen, Nana Amoah

This study examines the relationship between the disclosure of internal control material weaknesses (ICMW) under Section 404 of the Sarbanes-Oxley Act of 2002 (SOX) and reputational consequences to independent directors. Using a sample of 280 firm-year observations for the years 2004 and 2005 consisting of 1,724 independent directors, we find a positive association between the disclosure of internal control material weaknesses and seats lost by independent directors of ICMW firms serving on other boards in the three years following the disclosure of the material weaknesses. We also find a positive association between the disclosure of internal control material weaknesses and seats lost by non-audit committee members, audit committee members and audit committee chairs serving on other boards.

KEY WORDS: Internal control material weakness, independent director, reputational consequence, corporate governance

### Liquidity Transformation: An Examination of U.S. Life Insurers

Presenter's Name: B. Paul Choi
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

Coauthors: Jin Park, Chia-Ling Ho

Insurers create liquidity by borrowing short-term and lending long-term. That is, insurers use the premiums paid by policyholders and deposits by customers to make long-term loans and investments, then liquidity is created. However, insurers have limited ability to invest in illiquid assets or finance long-term projects due to expected and unexpected liquidity demand for policyholders and customers. Insurers should allow policyholders or beneficiaries to immediate access to loss payments and loans when liquidity is desired (liquidity de-creation). E.g., life insurers are obligated to pay guaranteed surrender value which is not predictable but payable within a specified period of time. Therefore, one of an insurance company's major concerns is to maintain its ability to keep its promises to pay policyholders obligations as they become due. Our empirical results show that life insurers de-create liquidity in the U.S. market. This is mainly caused by the fact that the insurers' inability to invest in illiquid assets or finance long-term projects due to expected and unexpected liquidity

demand for policyholders and customers. Life insurers have a contractual obligation to provide liquidity so that policyholders and beneficiaries are able to access to loss payments, loans or surrender values. The insurers' position in liquidity de-creation counteracts to the banking industry which is at risk for creating too much liquidity during the financial crisis.

KEY WORDS: insurance, liquidity

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### Growth in International Reserves: Does Size Matter?

Presenter's Name: Maru Etta-Nkwelle
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

Over the past couple of decades, there has been a growing trend by emerging market countries to accumulate quantities of foreign exchange reserves beyond the 4 percent of GDP (or three months of imports) considered by the International Monetary Fund (IMF) as optimal for balance of payment purposes. For example, in 1990, the reserves of emerging market countries stood at 4 percent of GDP. But by 2007 they were reported at 20 percent of GDP (Obstfeld, Shambaugh and Taylor, 2007). Specifically, in the emerging market countries of India and China, growth rates of reserves exceeded 30 percent of GDP between 2001 and 2003 (Terada-Hagiwara Akiko, 2005). This paper expands on the existing literature on the determinants of reserve adequacy by testing if the initial size of reserves influences the growth rates in reserve accumulation. This relationship between the growth rate of a variable and its size is based on a phenomenon called Gibrat's law. This law states that the proportionate change in the size of a firm depends on its absolute size. An IMF report (2008) suggest that if reserve accumulation and holding patterns are guided by an optimal reserve objective then Gibrat's law should hold, i.e. an inverse correlation should exist between the initial reserve size and the growth rates in reserves. In this paper we show that this relationship does not exist for small emerging market nations but larger emerging market nations produce slightly significant results.

KEY WORDS: International Reserves, Foreign Exchange reserves, Gibrat's law, Emerging nations, Size

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### Proper utilization of care reduces hospital re-admissions.

Presenter's Name: Shenita-Ann Grymes
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Background: The effective of the Patient Protection and Affordable Care Act is an increase in patient population for hospitals. Hence there is a need for quality care which would result in undue readmissions. Population: The population Includes discharges from community, non- rehabilitation, and non- specialty hospitals. As well as Medicare and Medicaid beneficiaries who have experienced at least one acute inpatient hospital stay. Methods: This is a comparison of the readmission rate before the Affordable Care Act legation and after the law was passed. According to the descriptive data analysis, on a national scale it is estimated that an increase in hospital readmission rates would occur relative to newly insured patients. Results: A national 30-day, all-cause, hospital readmission rate averaged 14.1%. During the calendar year of 2010 the total number of hospital admission days were 29,400,959 with the number of readmissions 4,125,678 days. During the calendar year of 2011 the total number of hospital admission days were 29,168,412 with the number of readmissions 4,134,539 days. During the calendar year of 2012 the total number of hospital admission days were 28,833,405 with the number of readmissions 4,041,045 days. Conclusion: This analysis provides evidence that the number of hospital readmissions are decreasing by a higher amount of patients each year. Undue hospital readmissions have been witnessed. External environment factors; such as Center for Medicaid and Medicare Services penalties', provide a more direct cause, and thus correlations to the PPACA does merit further investigation.

KEY WORDS: Hospital Operations, Affordable Care Act

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### A critical analysis of food waste and recovery

Presenter's Name: Maryam Khan
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

Around the world, food worth around US 1 trillion dollar is wasted. Consumers in industrialized countries waste almost as much food as the entire net food production of some third world countries. In the United States about 30-40% of the food supply is wasted. About 14 percent of greenhouse gases in the United States are associated with growing, manufacturing, transporting, and disposing of food. Reducing

the amount of food wasted has significant economic, social and environmental benefits. The objective of this research is to identify food waste indicators and summarize food preventive measures and its benefits. Food waste can be at production source, in supply chain, at consumer and/or retail level. Water, fertilizer, energy, and pesticides are needed to grow food. By wasting food, all these resources are also wasted. Reducing food waste can benefit the environment by reducing methane from landfills, reduce resource wastage, and improve sanitation, public safety, and health. Economic benefits can be lower disposal costs, reduced over-purchasing, and labor costs. An estimated 50 million Americans do not have access to enough food. Organizations can donate safe and healthy food to food bank or food rescue organization and get tax benefits while being socially responsible. At retail level restaurants can reduce food waste by avoiding over-purchasing food, implementing practice proper storage techniques, reduce prep waste, reduce plate waste, and consider secondary use of food. By doing food waste assessment a company can identify food waste indicators and implement strategies to be economically, environmentally, and socially beneficial.

KEY WORDS: Food waste, food recovery, food waste indicators, sustainability

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## Gresham's Law for Environmental Practices

Presenter's Name: Anupam Kumar
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Rajni Goel

The study looks at the impact of environmental strengths and concerns on environmental performance, specifically environmental reputation. Prior research has looked at the asymmetric impact of positive vs. negative news on consumer perceptions accounting for consumer preferences. The literature indicates a stronger impact of negative news on individual attitudes as compared to positive news. This study extends this body of work to the environmental domain. Specifically, this study looks at the impact of a firm's positive and negative environmental practices on its reputation. Two years of data of the top 500 green ranked firms in the US are used in a dynamic panel setting for exploring the effect of environmental practices on firm reputation. The results suggest a significant impact of both positive and negative environmental practices on environmental reputation. While environmental strength positively impacts environmental reputation, environmental concerns have a negative impact. More importantly, the study finds that positive practices are overshadowed in the presence of environmental concerns. From a theoretical standpoint, the study makes a compelling case for the application of Gresham's Law on environmental practices. From a managerial perspective, the study makes a case for firm strategy to focus intently on environmental processes that might be a cause for concern.

KEY WORDS: environmental practices, sustainable strategy, archival data, panel data

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## Was Andersen less than its peers? A Comparative Analysis of Audit Quality

Presenter's Name: Lucy Lim
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Krishna Kumar

**Background:** Our study compares Andersen's audit quality to the other Big-Five auditors five years before its indictment. Before its collapse, Andersen had been involved in a series of audit problems and culminating in Enron's problem in October 2001. On March 14, 2002, Andersen was convicted on a single count of obstruction of justice. A conviction meant that Andersen would be disqualified from auditing public companies unless it received a waiver from the SEC1 and there was no promised that SEC would grant it. The conviction turned out to be a death penalty for Andersen and by that time, clients have left and over 27,000 employees lost their jobs. Methods: We compare Andersen's audit quality and the other Big-Five auditors using five methodologies, namely earnings response coefficients (ERCs), magnitudes of abnormal accruals, the propensities to issue going-concern opinions, the usefulness going-concern opinions in predicting bankruptcy, and the frequency of Accounting and Auditing Enforcement Releases (AAERs). Our comparisons are based on both pooled samples of all observations and propensity-score-based matched-pairs. Results and Conclusions: The preponderance of evidence shows that Andersen did not differ materially in audit quality from other Big-Five auditors prior to its failure. However, we find that Andersen's independence was compromised in the year leading to its collapsed (2000) as indicated by the lower likelihood to issue going-concern opinions.

KEY WORDS: audit quality; Arthur Andersen; auditor collapse; Big-Five auditors

## A Web Service Leveraging Nepal Social Networks for US e-commerce Shipments

Presenter's Name: Prashant Thapa
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Nimersh Ghimire, Legand Burge, Todd Shurn

Developing country consumers have increasing purchasing power, but limited e-commerce options. In specific, Nepalese consumers have costly obstacles to receive goods purchased from Amazon, e-bay, etc. This research explores using social networks to reduce cost and barriers for Nepalese to receive e-commerce shipments. We conducted a study to understand the eco-system surrounding international micro-transactions from US based product shippers. Based on our study, we designed a social network product delivery service that could potentially provide 30% reduction in product shipment cost from the US to Nepal. The core concept is utilizing existing travelers between Nepal and international destinations. Our prototype web service matches international travelers and Nepal consumers and complies with homeland security, airline and Nepal travel restrictions.

KEY WORDS: International Shipping Innovation

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## Identity Theft Tax Refund Fraud: Efforts to Detect and Prevent

Presenter's Name: Jean Wells
Classification: Senior Faculty
*Presentation Type: Poster Presentation*

Coauthors: Gwendolyn McFadden, Marka Fleming

Background: Identity theft (IDT) tax refund fraud occurs when a thief steals a taxpayer's social security number and files a false tax return with the Internal Revenue Service (IRS) to claim a fraudulent refund. Since 2011, IDT tax refund has appeared on the IRS' annual list of "Dirty Dozen" tax scams. In 2012, the Department of Justice Tax Division issued a directive which delegated authority to the United States Attorney to criminally prosecute persons engaged in IDT tax refund fraud. Since then, about 3,500 IDT tax refund fraud criminal investigations have been initiated and about 1,400 individuals have been sentenced. Despite these efforts, the Government Accountability Office reports that during the 2013 tax filing season, individuals attempted to collect $29.4 billion in fraudulent refunds and that the IRS paid out $5.2 billion in fraudulent IDT tax refunds. In 2014, the United States Senate introduced the Tax Refund Theft Prevention Act which contains enhanced protection for taxpayers who have been victims of IDT tax refund fraud. In 2014, IDT tax refund fraud was the number one form of identity theft reported to the Federal Trade Commission. Conclusion: This paper describes how IDT tax refund fraud occurs, details legislative, judicial and administrative efforts to combat IDT tax refund fraud, provides techniques that taxpayers can implement to prevent IDT tax refund fraud, and recommends corrective actions that taxpayers can take if they have been victims of IDT tax refund fraud.

KEY WORDS: tax, identity theft, fraud

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# Creative Arts & Design

### Black Women in the Media: How are they viewed

Presenter's Name: Shaun Jackson
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Sierra McDonald, Ashley Guthrie, Sydney Wilson-Roberts, Danielle Solomon, Morgan English, Brittany Burton

Despite the many roles African American woman in the media can play there seems to be an occurrence of, what many would call, "type casting". Type casting places women in the media in categories bred by societal stereotypes thereby limiting their ability to perform in roles outside of those dictated by societal expectations and/or the comfort zone of the director, casting agency, or the media network outlet. While there has been an increase in the number new shows depicting black women in leading and supporting roles in both film and on air programming, recent media portrayals do not come without much debate and backlash about whether these images have evolved from the simplistic mammy, submissive house wife, to the promiscuous jezebel. Some may even propose that we are we are witnessing the same product in a newly enclosed package. This study focuses on the audience's perception of black women in the media in today's current climate. A seven question electronic survey was administered to 94 participants to rate their perception of the depiction of African American women in the media, the evolution of programming roles, as well as their perception of the roles/depiction of African American women in media to their non- minority counterparts.

KEY WORDS: African-American Women, Media, Public Perception, Stereotyping

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### A picture tells a thousand words: How viewers perceive Black Women

Presenter's Name: Brookie Madison
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Diamond Coles; Autasia Ramos; Bernaiyya Jackson;Tamika Lanier;Kiana Knolland;Janaiya Hampton ; Khloe Webb; Sydney Clayborn

This study focuses on what if any differences exist in audience's perception of Black women in media programming versus their perception of the women themselves. Participants completed an online survey about the evolution of programming roles of Black women and their perception of the how African American women are depicted in comparison to their non-minority counterparts. The participants when then presented with an image of an African American in the media and asked to describe their impression on the image displayed. A total of 94 online surveys and 50 interviews were completed with participants that range in ages from 18 and 35. The results of the research revealed that while audiences do not feel that African American women are positively portrayed in media programming (i.e. movies, tv, sitcoms, videos, etc.), they felt that the individuals themselves are a positive representation of African American women as a whole. When presented with individual photos representing a variety of public figures they used positive terms (i.e. strong, beautiful, intelligent, etc.) to describe the individual. While the participants do not like the way in which Black women are portrayed in programming, they look at these individuals as positive roles models for both themselves and the African American community as whole. Although media programming has increased the visibility of African Americans, the media continues to perpetuate stereotypical characteristics through the types of roles they are cast in. Despite their attempts to paint African American Women as "angry black women", the regard in which individuals view public figures outside of the role that play has not been swayed.

KEY WORDS: African-American Women, Media, Public Perception, Stereotyping, Imaging,

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### Major Themes, Trends and Relationships within The Creativity Research Journal

Presenter's Name: Monique Major
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Kelly Banks, Briana Applewhite

As the 65th anniversary of J. P. Guilford's address on the importance of creativity research approaches, several scholars (Amabile & Hennessey, 2010; Long, 2014) have evaluated the field's maturation since that address. In 2014, Long identified the most frequent research methodologies and methods used to study creativity in The Creativity Research Journal, The

Journal of Creative Behavior, Gifted Child Quarterly, Thinking Skills and Creativity, and Psychology of Aesthetics, Creativity, and the Arts--the five major creativity journals. While it is important to know what methodologies and methods are used to study creativity, the content of these studies is equally important. A complement to Long's research would be an analysis of the major research themes that emerge from the studies published in these journals. In the present presentation, the first phase toward achieving this goal will be to conduct a co-word analysis with journals published in The Creativity Research Journal. Co-word analysis is a method recently used by Viedma Del-Jesus et al. (2011) to identify the major themes, centrality and density within the Journal of Psychophysiology from 1964-2008. The co-word analysis will be conducted with articles from The Creativity Research Journal. The current presentation will discuss the major themes that emerge, their relationships, and trends over time with articles published in The Creativity Research Journal. Finally, suggestions will be made for future creativity research.

KEY WORDS: Creativity, Creativity Journals, Co-Word Analysis, Creativity Themes, Creativity Research

# Education & Outreach

### Red Cell Distribution Width an emerging prognostic marker

Presenter's Name: Ghulam Abbas
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Red blood cell distribution width (RDW) is a measure of the variability in size of circulating erythrocytes. A higher RDW has recently been linked to a strong independent predictor of adverse outcomes in patients with chronic heart failure, coronary artery disease, peripheral arterial disease, acute myocardial infarction, pulmonary hypertension, pulmonary embolism, prostate cancer and community acquired pneumonia. High admission RDW levels in patient with ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention is linked with increased risk for in-hospital and long-term cardiovascular mortality. A higher RDW level is also associated with active inflammatory bowel disease.

KEY WORDS: red blood cell, heart disease, cell distribution width

### The association of patients' perception of their health status and being current with colorectal cancer screening guidelines

Presenter's Name: Kawtar Alkhalloufi
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Andrew K. Sanderson, Angesom Kibreab, Hassan Brim, Hassan Ashktorab, Getachew Mekasha, Momodu Jack, Victor F. Scott , Charles D. Howell, Adeyinka O. Laiyemo.

**Background:** The healthcare provider's perception of a patient's overall health status, including comorbidities may affect colorectal cancer (CRC) screening recommendations. It is unknown if patients' perception of their health status influences CRC screening compliance. **Aim:** To determine the relationship between the patients' perception of their own health status and being up to date with CRC screening. **Methods:** We used the 2007 Health Information National Trends Survey. Our analytic cohort included 3,498 respondents (weighted population size = 67,247,111) without history of CRC who were 50 – 75 years old, reported their perceived health status as poor, fair, good, very good or excellent, and answered questions regarding their use of CRC screening. We used logistic regression analyses to examine the association of patients' perception of their health status with being current with CRC screening guidelines. We calculated odds ratios (OR) and 95% confidence interval (CI). Our final model included age, sex, race, education, marital status, health insurance, smoking and BMI. **Results:** Mean age of participants 59.9 years, 52.3% females, 77.4% whites. The respondents rated their health status as poor/fair (18.8%), good (36.2%) and very good /excellent (45.1%). After adjusting for age, sex, smoking, race, education, marital status, insurance and BMI there was no association of health status with CRC screening. **Conclusion:** Patients' perception of their health status was not associated with being up to date with CRC screening. This underscores the importance of care providers' discussions with their patients and the fact that they should recommend CRC screening in routine patient encounters.

KEY WORDS: Colorectal, cancer, Screening, health, perception

### The Tale of Three Perspectives: Closing the Achievement Gap by Examining The Relationship Between Student Engagement and Interpersonal Relationship Strategies Among Students, Teachers and Observers

Presenter's Name: Porsche Boddicker
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: A. Wade Boykin

Starting at kindergarten, an academic gap (i.e. math and reading outcomes) between Black and Latino/a children and their White counterparts becomes evident, with the gap continually widening through out formal schooling. Closing this gap is at the forefront of many researchers and administrator's goals. By understanding the relationship between student engagement and interpersonal relationship strategies within the classroom environment, we can take the steps in closing this gap. The current study seeks to examine the relationship between classroom observers', teachers', and students' ratings of three interpersonal strategies (teacher-student relationship quality, learning goals, and collaborative learning) within the classroom, as we know that these perspectives often collide. We also seek to examine the relationship between the three interpersonal strategies themselves. Additionally, we seek to examine whether teachers', students', and classroom observers' ratings of the three interpersonal strategies are correlated to student engagement, as reported by the teachers. Lastly, we seek to examine how gender and the three interpersonal factors contribute to teacher's ratings of student engagement. Participants include twenty 4th grade students, twenty-eight 5th grade students, and their teachers from an elementary school in a Wicomico County Public School. Third party observers include classroom observers from Capstone Institute at Howard University. Materials include three survey tools: 1) observation of instructional and learning practices, 2) student survey of instructional and learning practices, and 3) teacher survey of instructional and learning practices. Data analysis is ongoing.

KEY WORDS: Education, Developmental Psychology, Achievement Gap, Engagement, School

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### Math Achievement and Racial' Aademic Identity: Understanding How Racial and Academic Identity Impacts Math Achievement.

Presenter's Name: Noelita Bowman
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Noelita Bowman, Janicia Dugas, Tierra Ellis, Teneisha McIntyre

An enormous selection of literature continues to highlight performance outcomes for students relating to mathematics. Of particular interest involves understanding and highlighting how African American students perform in the area of mathematics. "African American students continue to perform poorly in school mathematics" (Sedaca, 1992). Contrary to white and Asian students, successful African American students are perceived as an exception, and lower expectations often preclude students from reaching their full potential. One way of examining the achievement gap in mathematics may be through racial and academic identity. Brown (2008) discovered that youth learning about their culture and receiving racial pride messages are related to better psychological well-being and academic achievement among African Americans. The purpose of this literature review is to explore how racial identity can positively impact academic performance for African American students in mathematics. Using a comprehensive literature review, the present study explores the independent influence of academic and racial identity on academic success among African American children.

KEY WORDS: Acdemic Identity, Racial Identity, Mathematics

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### Written

Presenter's Name: Sheila Brooks
Classification: Graduate Student
*Presentation Type: Oral Presentation*

This dissertation research uses feminist theory to set forth a study on the ways that a Black woman newspaper publisher and editor, Lucile Bluford, contributed to the articulation of Black women's rights from 1968-1983 within the context of both the civil rights and feminist movements. Bluford was first a reporter, then an editor, and finally the publisher and co-owner of the Kansas City Call, a weekly Black newspaper in Kansas City, Missouri. While there are numerous studies on the ways that Black newspapers contributed to the advancement of the

civil rights movement for racial and social justice, there has been little scholarly research published on the ways that Black women journalists who were media owners used the power of their news stories and the structures they owned to champion Black women's rights within both the feminist and civil rights movements. Collins (1990) characterizes this feminist narrative as the historical exclusion of African American women who provided powerful and pervasive frameworks for connecting social justice with lived experiences. The research uses a critical historical approach to examine Bluford's writings, providing an opportunity for interpretation of her contributions to the women's rights movement. The research also uses feminist theories to analyze the content of Bluford's writings in The Call from 1968-1983. Feminist theory posits that gender is a significant characteristic of women's lives in helping to understand the nature of gender equality.
This research is intended to show how one woman's feminist voice in her writings helped to change the landscape of Black women's rights, from the time the civil rights movement peaked in 1968, throughout the second wave women's rights movement in the 1970's, until 1983.

KEY WORDS: Lucile Bluford and feminist theory

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### Pieces of Me– African American Males in School Psychology

Presenter's Name: Dwayne Bryant
Classification: Graduate Student
*Presentation Type: Poster Presentation*

"Pieces of Me", will provide a visual exploration into the journey of African American male school psychology students. The purpose of this production is to showcase experiences of students of color by engaging in issues surrounding racism, discrimination, gender and the perceptions of African American males. A major goal of this showcase is to provide viewers with insight on the issue of being a double minority within a profession and the importance of diversity recruitment. Participants will learn how this information can be useful in addressing issues African American males in the School of Psychology encounter as well as assisting with multicultural competence. Program Description This video production will document the experiences of African American males in the School of Psychology at Howard University and the Washington, DC Metro area. These individuals will provide viewers with information that will provide an alternative look into the lives of African American males as well as the various elements of a man. The overwhelming concern for the underrepresented population of diversity in the field of school psychology will be addressed in efforts to produce thoughts surrounding diversity recruitment. African Americans only represented 1.9 percent of the field. Research shows that males have a higher chance of receiving special education services but are less likely to be serviced by a male professional. The learning objectives from this video will be the disproportionate representation of African American males, the need for diversity recruitment and the issues encountered by graduate students.

KEY WORDS: School Psychology, African American Men

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### Virtual Community Can improve Staffing, Retention, and Job Satisfaction

Presenter's Name: Brian Danner
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Paul Wong, Lori Purdie, Ben Smith, Kathie Carpenter, Cheryl Fisher, Debbie Parchen

The approximate cost for training one new nurse is about $65,000. The price it takes to replace a nurse is 1.5 times the rate of the original price. The average duration to train one new staff nurse ranges about four months to a year. In addition, the turnover ratio among nurses across the country is about sixty percent. Ironically, the average duration of new staff nurses within that sixty percent is about six months. With these facts, the researcher believes that there is a retention issue among nurses within the nursing field. The researcher will discuss how the virtual community can improve staffing, retention, and job satisfaction among nurses across the country. The educational program iCohere can be used to help improve these categories if used correctly and used consistently. Within the poster, the researcher will discuss how the program iCohere can be used through my own personal use of the program and through real time surveys that were conducted within the Clinical Center at the National Institutes of Health.

KEY WORDS: iCohere, Staffing, Retention, Job Satisfaction, nurse

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## CT-guided 3D printable models for anatomy teaching

Presenter's Name: Tuo Dong
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Andre Duerinckx, Bonnie Davis

Background: Three-dimensional (3D) printing can become a powerful tool for learning gross anatomy for medical students, as it already does for surgeons, by providing hand held 3D replica of very complex anatomy. CT scans are most often used as the starting point for medical 3D printing. Transforming DICOM images into a format suitable for 3D printing can be a challenge, and multiple protocols have been created for this purpose. We reviewed several image modeling programs to transform DICOM CT data, into simplified 3D models and then into to printable STereoLithography (STL) format needed for 3-D printing. Methods: We sampled 8 imaging programs to achieve this goal, and although all accepted some DICOM images, 4 did not easily accept our DICOM images. The printability of each modeling software was then tested with the Stratasys Dimension 3D printer (made available through the Howard University Mechanical Engineering Lab). Results: Four of the eight image modeling programs were able to generate STL models compatible with printing from our DICOM data sets. The 3DSlicer, however, provided the simplest and the most user-friendly software interface for STL conversion. Conclusion: CT-guided 3-D printing, a novel tool for teaching anatomy, can enhance the visual learning experience. The 3DSlicer, a free open source modeling software, provides a simpler user friendly computer design to build the 3D model by combining the data processing into one computer software.

KEY WORDS: 3D printing, Anatomy, Education, Imaging, Modeling

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## Best Strategies to Recruit and Enroll African Americans into Clincial and Biomedical Research

Presenter's Name: Lennox Graham
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Lennox A. Graham, DM, Julius S. Ngwa, Ph.D., Steven Johnson, B.A., Megan Johnson, B.Sc., Oludolapo Ogunlana, B. Pharm., Saba Wolday, M.Sc., Chimene Castor, EdD., Oyonumo Ntekim, Ph.D., Thomas Obisesan, M.D.

Background: The determinants of the participation of African Americans (AA) in clinical research remain poorly understood. The natural outcome of this, are increasing health disparity, poor health equity, and suboptimal wellness of the nation. To address this gap, we analyzed our recruitment data to identify the most effective recruitment strategies for AA aged 60 and above. Methods 3196 potential volunteers ages 60 and older, completed a Mini-Mental Status Exam (MMSE). We then determined the most effective strategies for engaging AA in clinical research. The test of proportion determined significant differences in recruitment sources among males and females. The percentages and counts determined optimal recruitment strategies by gender. Boxplots were used to describe age distribution and years of education by recruitment strategy and gender. Results A total of 1944 AA participants were considered in the analysis. Overall, a greater percent of females compared to males (73.8% vs. 26.2%) participated in our recruitment activities. A significantly higher proportion of males than females were recruited from family source (3.86% vs. 1.30%, p = .0004) and referral (5.89% vs. 2.59%, p = 0.0005). A higher proportion of volunteers were recruited from the health fairs (42.95%) and through advertisements (14.97%). Conclusion Health fairs appear to provide an environment for group sharing of clinical trials information to older AAs. Collectively, AAs aged 60 and above are more likely to respond to health fairs and targeted clinical trials advertisements. AA men may depend more on family referrals when considering participation in clinical research.

KEY WORDS: African American, recruitment, disparity, strategies, outreach

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## Preparing Charter Schools in Science, Technology, Engineering, Mathematics (STEM): A Justice Perspective

Presenter's Name: Barrie Hamilton
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Purpose: Charter schools are growing exponentially and students who attend them are substantial in some states. In addition, charter schools that specialize in STEM education are on the rise. Yet, there is a shortage of leaders to lead them. This explanatory study examines inclusive beliefs and practices from preparation programs and effective charter school leaders from a socially just perspective that pertains to equity and improving conditions for a quality education. Research Questions: a) To what extent, are emerging leaders prepared to lead a charter school that specializes in STEM

education from a justice perspective?; b)What are the objectives in leadership preparation programs that provide the tools for effective leadership in charter sectors that specialize in STEM education?

KEY WORDS: social justice, STEM, charter schools, principal leadership preparation

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### Revisiting Conscientization & Critical Race Theory for the Social Responsibility of African American Educators, K-12

Presenter's Name: Joycelyn Hughes
Classification: Graduate Student
*Presentation Type: Poster Presentation*

African American, Latino/Hispanic and students who are English Language Learners perform academically lower than their Caucasian and Chinese peers, K-12. African American students, however, perform academically lower than any other population in America. This disparity is often referred to as the "Achievement Gap." Additionally, African American, Latino/Hispanic and English Language Learner students are also more likely than their Caucasian and Chinese peers to face educational inequities such as school finance disparities and misallocation, ineffective or under qualified teaching staff, poor facilities, lack of educational resources, assessment inequity, lack of school safety, lingual and cultural (teacher-student) mismatch, and lack of appropriate or sufficient programs to assure academic success. The "Achievement Gap," specifically for African American students K-12, may be indicative of America not fully addressing the societal factors that contribute to their lowered academic performance. This study investigates the theoretical framework of Paulo Freire and his regard of "Conscientization" or "Critical Consciousness" in education documented in his book the "Pedagogy of the Oppressed". Additionally, this study investigates the validity of Derrick Bell's concept of "Critical Race Theory" in education, and how he and Freire theories coincide with the perception of social responsibility from African American educators to African American students, K-12, thus closing America's academic achievement gap.

KEY WORDS: Critical, Consciousness, Social, Justice, Black

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### Design and Implementation of a Structured Adaptive Individualized Learning System (SAILS) to Assist in the Successful Matriculation of Students in Computer Science

Presenter's Name: Ketly Jean-Pierre
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Dr. Legand Burge, Dr. A. Nicki Washington, Dr. Harry Keeling

Students who choose to major in computer science (CS) come in at varying levels of exposure. The task of trying to adapt to each student in the classroom and provide interventions for them becomes a daunting task for the instructor. In order to address these issues, students need to be engaged in activities/interventions that address (adapt to) his/her academic needs. The Structured Adaptive Individualized Learning System (SAILS) is proposed to address the under-prepared undergraduate computer science students in the Department Computer Science at Howard University. The SAILS project seeks to design such a system that will provide the content and interventions that will help level the experience for all students. Since students learn differently and at varying rates, SAILS will seek to utilize the Felder-Silverman Learning Style Index (FLSI) to ensure a robust and well-rounded student experience. To help improve self-efficacy and self-regulation, SAILS will provide a dashboard for students to get a visual representation of their performance throughout the semester. In addition the system will provide the students with personal accomplishments they have achieved in the course. The system will be designed using gathered requirements via document analysis from sources such as journals, case studies, and conference proceedings that discuss adapting to user models and employ common techniques for addressing Human Computer Interaction (HCI) issues. The initial system validation will be done using simulated data.

KEY WORDS: Adaptive Learning, Learning Styles, Learning, Technology

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## Using a Simulated On-Call Experience to Reinforce Key Clinical Skills

Presenter's Name: Porscha Johnson
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Kenneth Wiley, Clarence Curry

**Background:** Many healthcare practitioners are required to spend some time "on-call," often during their educational process. Generally, pharmacy professional education does not include such experience. The following is a descriptive account of an on-call simulation within a pharmacotherapy module to provide an experience similar to the real-life practice of a specialty pharmacy post-graduate in a hospital. The exercise sought to enhance students' capability to respond to unanticipated drug-related requests requiring timely, concise and accurate responses. **Methods:** Initiating in Fall 2011, pharmacy practice faculty incorporated an on-call activity within a third-professional year Hematology/ Oncology pharmacotherapy module. Students anonymously registered their SMS messaging-capable telephone numbers with Textmarks, Inc., an automated web-based messaging service. The service was used to transmit a Patient Care Alert associated with an urgent patient care scenario during an on-call period spanning 3 days. Students were advised that an alert could be sent at any time, and a response was required within 4 hours of the initial alert. Sample on-call patient care scenarios include hypocalcemia, pain management, tumor lysis syndrome, and supportive care issues. Response accuracy was based on a predetermined rubric outlining acceptable solutions. Extra credit was awarded for value-added information beyond the rubric. **Results/Conclusion:** The goal of the program was to reinforce student comprehension of the need for rapid and accurate response to challenging requests that require the application of drug information and problem-solving skills. Student and faculty impressions of the simulation were mostly positive.

KEY WORDS: on-call, simulation, pharmacy, education, healthcare

## Filling the Gap by Example: Analyzing the relationship between mentors and the development of academic motivation in African American Male Students

Presenter's Name: Jamal Jones
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Research focusing on African American male (AAM) students suggests that many lack motivation to achieve academically as they don't see a connection between academic achievement and success and thus, will not benefit from school (Noguera, 2003). Other studies show a positive connection between mentoring and academic achievement, amongst other factors (Lampley, 2010; Thompson, 2001). Emerging research suggests a strong relationship between mentoring and formation of strong, positive racial identities and thus improving academic success (Whitney, Hendricker and Offutt, 2011; Hurd, Sanchez, Zimmerman, Caldwell, 2012) However, there is currently little research focusing specifically on the relationship between AAM middle school students and mentoring. This is problematic as this group is where risk of academic apathy and thus drop out increases dramatically (Harper, 2012). The current study explores the relationship between mentoring and academic achievement motivation in AAM students. Through the perspective of the Organismic Integration Theory (OIT), a sub theory of Self Determination Theory (SDT), this research further explores the relationship of a mentor, or mentor figure, the development of motivation and AAM students. The qualitative data analyzed in this study are taken from 100 African American 6$^{th}$ and 8$^{th}$ grade charter school students who participated in focus groups addressing the question "what does your school do to motivate you?." This data analysis will explore the hypothesis that mentoring, or other social extrinsic influences, will have a positive connection on the internalization academic achievement as a value in AAM students. Future research should explore the important role of mentoring among older students.

KEY WORDS: Mentoring, academic achievement motivation, African American Males, Self Determination Theory

### Fostering an Emerging Future Scientist Pipeline through Interactive Demonstrations in Chemistry and Biological Sciences

Presenter's Name: Amol Kulkarni
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Daphne Bernard

**Introduction:** According to a recent survey, United States students rank 7th in fourth-grade science and 10th in eighth-grade science. There is an urgent and unmet need to kindle an interest among younger middle- and high-school students in basic sciences and math. The College of Pharmacy at Howard University has initiated various activities to demonstrate the critical role of chemical and biological sciences in our day-to-day activities in an effort to spark further interest amongst young students in science, technology, engineering, and mathematics (STEM) areas. Methods: Through its partnership with DC public schools, the College of Pharmacy has identified a need to develop a pipeline for future scientists during their early training in. In 2011- 2015, the college expanded its outreach efforts by providing interactive chemistry demonstrations involving acid-base reactions, chemistry of elements, states of matter, etc. These demonstrations were provided at no cost to the schools with the college either visiting the schools or hosting the students at the college. Results: With our continued outreach efforts, more than 300 students from numerous schools in DC, MD and VA have been exposed to chemical and biological sciences in through practical demonstrations. Conclusion: We have designed a student-centered program focused on inculcating an interest in chemistry and biology among elementary-, middle-, and high-school students. It is our hope that their interest in STEM areas will continue throughout their educational training as we expect to translate this progress into the development of young scientists in the near future.

KEY WORDS: Pharmacy, STEM, demonstrations, chemistry, biology

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### Bridging the Gap: Culturally responsive instruction and STEM achievement in African American students

Presenter's Name: Teneisha McIntyre
Classification: Graduate Student
*Presentation Type: Poster Presentation*

African Americans, who will make up nearly 15% of the U.S. population by 2060, are making significant strides in education, STEM, and other professional areas, but there is still a long way to go before fully reducing the racial/ethnic disparities they encounter. Disparities in STEM education are significantly large among African Americans, and they occur long before students enter college. According to a 2014 US Department of Education report, Black students have significantly less access to a full range of math and science courses compared to their Asian and white counterparts. In an effort to support students who are in schools where access to resources and information is limited, studies have suggested that culturally responsive strategies can make academic material, particularly STEM content, more accessible and ensure an equal opportunity for all children to learn. Culturally responsive instruction is the development of dynamic teaching practices using culture as a bridge to school learning. Ladson-Billings (1995) introduces a theoretical framework that involves academic success, cultural competence, and critical consciousness to achieve collective empowerment. Along with Ladson-Billings research, additional studies have shown that incorporating cultural strategies into instructional models such as RTI and tutoring programs improves academic outcomes for children who have been underserved by our nation's public schools. Using a comprehensive literature review, the present study examines the relationship between culturally responsive instruction and STEM achievement among African Americans.

KEY WORDS: school psychology, education, culture, instruction, STEM

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## A Socio-technical Approach to Undergraduate Computer Science Student Development

Presenter's Name: Marlon Mejias
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Dr. Legand Burge, Dr. Alicia Nicki Washington

Community interaction plays an important role in the development of a student. It ensures that students have a sense of belonging and increases their likelihood of matriculation. Community interaction also serves as a form of cognitive apprenticeship that facilitates the student's professional development. It leads to learning of the jargon of the discipline as well as an understanding of the tacit ways of knowing and reasoning that are common to all successful members. Appropriate cognitive apprenticeship can only happen if students are aware of the technical and professional expectations of the computer Science (CS) community. In order to help both students and faculty assess and ensure the holistic development of students in their CS departments, a sociotechnical system that encourages community interaction and motivates students to co-regulate and self-regulate their technical as well as professional development is proposed. The sociotechnical system shall investigate gamification as a persuasive technological approach that will motivate students to explore and achieve holistic development at a HBCU through increased informal learning and community interaction. Research shall be conducted to understand, track and incorporate students' as well as CS community stakeholders' perceptions of holistic CS development. Research shall investigate CS students', CS identity, CS self-efficacy, perception of community belonging, motivation, self-regulation and co-regulation.

KEY WORDS: Soci-technical Systems, Persuasive Technology, Gamification

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## Perception of pain and pain management amongst residents in training

Presenter's Name: Jennifer Obi
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Mekonen, E .MD, Deonarine, A. MD.

Background Pain is inevitable. Poor pain management in hospital settings is known to be associated with slower recovery, greater morbidity, longer hospital stay, lower patient satisfaction, and higher costs of care. This raised a need to evaluate resident physicians' perception of pain and practice of pain management. Methods: A survey was administered to internal medicine and family medicine residents at our academic hospital. The questionnaires assessed the resident-physicians' perception of patients' pain, level of comfort in managing pain and their management strategies. Results Eighty percent of residents responded to the survey. 44.6% were post graduate trainee year (PGY) 1, 28.6 % (PGY2), 23.1 % (PGY3), 1.7% (PGY4) and 1.7 %( PGY5). The PGY 4 and 5 respondents were fellows. 77.2% of residents perceived that patients though in pain were narcotic seeking. Only 5.3% of residents responded that these patients were really in pain. 38.6% of all residents surveyed felt that there was a delay in pain management while 42.1% felt otherwise. The results show that 38.6% of residents were uncomfortable with pain management, 48% of which were PGY 1. Conclusion: This survey demonstrates that there are a large percentage of residents who are not comfortable with pain management. Our findings, though obtained from a single training program, may be indicative of poor pain management practices among residents nationally. Further studies will be needed to verify this premise. Hence, we recommend pain management be in cooperated in the residency curriculum.

KEY WORDS: Quality improvement, Pain management, Residents

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## Paragraph Writing in Adolescent Hispanic Students: A Mixed Methods Investigation

Presenter's Name: Valencia Perry
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Many Hispanic students in the U.S. schools are considered to be proficient in English. Yet, national writing assessments indicate that Hispanic students are not performing as well as their counterparts in the area of expressive writing. There is a need to gather research on written expression in English-proficient Hispanic students. This study addressed this issue by exploring the writing of Hispanic middle school students, and by determining the effectiveness of an intervention for improving their expository paragraph writing abilities. A mixed-methods research design was used, which incorporated descriptive and single-subject research. The descriptive research methods analyzed explanatory paragraphs for error patterns relating to macrostructural features. Next, a multiple-

baselines, multiple-probe design was used to measure the efficacy of the Paragraph Writing Intervention (PWP) on increasing paragraph-writing performance. The results indicated positive effects for increasing paragraph quality scores, as well as accuracy, with regard to using paragraph elements across the participants.

KEY WORDS: written language, expository, macrostructure, Hispanic students, written expression

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## Each One Teach One: Collegiate Tutors in Urban Middle Schools

Presenter's Name: Tiffany Phillips
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Chakoria Wells, Amber Gibson

The ACT reported "Eighth-grade students' academic achievement has a larger impact on their readiness for college by the end of high school than anything that happens academically in today's high schools" (ACT, 2014). Evaluating the population directly, less than 50% of the middle school students scored proficient in reading and exactly 50% scored proficient in math. Understanding the status of today's middle school's student's achievement and the long-term impact of the middle school education highlights the importance of investing in our middle school students. As college students, we are equipped with experience, knowledge and the appropriate tools in order to improve the wave of students who are following our footsteps. The President's Committee on the Arts and the Humanities has sounded off a call of action by establishing the turnaround initiative which focuses on using arts to help improve low-performing schools. Several states and cities have used this model and launched their own school turnaround initiatives in which collegiate level students are playing an intricate role in provide tutoring services for at-risk students. Collegiate tutors are multi-dimensional by providing students mentorship, academic support and early exposure to college. This poster uses literature that supports the effects of tutoring, evaluates the academic performance of today's middle schools and explores universities that have answered the call of going into today's middle schools through the use of collegiate level tutors and addresses the steps needed in order to establish a tutoring partnership or program in one's community middle school.

KEY WORDS: Tutoring, Mentoring, Education, Middle School

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## A Social Cognitive Investigation into the Relationship between Faculty Instructional Effectiveness and Student Achievement

Presenter's Name: Faun Rockcliffe
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Kimberley Freeman, PhD

This is a replication study based on the findings from Frick and colleagues (2010) that utilized their Teaching and Learning Quality (TALQ) course evaluation instrument to investigate the relationships among faculty instructional, student engagement, and other student-related variables and student achievement in undergraduate courses. This study also utilized the TALQ and employed a cross-sectional survey design. It sampled 189 undergraduates taking English courses at a northeastern HBCU (76.6% women, N =141) to primarily investigate the relationship between faculty instruction and student grade attainment in English courses. Results from ordinal regression analyses demonstrated a significant predictive relationship between only one of the five instructional principles variables (integration) on the TALQ and student course grades as well as a significantly positive predictions of the academic learning time (ALT) TALQ variable on student grades. Results from a follow-up hierarchical regression showed that the five TALQ instructional variables (authentic problems, activation, demonstration, application, and integration) positively and significantly predicted ALT. These results as well as those seen in the Frick et al. (2010) suggest that faculty instruction, representing an environmental factor in social cognitive theory (Bandura 1986), may influence student achievement through its interaction with student engagement, a behavioral factor in social cognitive theory measured by ALT in this study. Results from multivariate (MANOVA) and univariate (ANOVA) analyses of variance demonstrated a significant relationship between faculty employment of the instructional principles by course. Issues with the measurement the TALQ variables and utility of the results as well as directions for future research are discussed.

KEY WORDS: faculty instruction, course evaluations, student achievement, undergraduate students, student engagement

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## Education as the Cornerston of Ethical Sustainable African Development

Presenter's Name: Charles Verharen
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

Background: Until this moment in human development of technology, the quality and extent of education was necessarily the unbreachable divide between those who controlled their lives and those who could not. For the first time in our five thousand year written history, we are now able to realize the Pan African scholar W.E.B. Du Bois' dream: universal university education Method: The paper offers philosophical analysis of the prospects for universal university education in Africa through universal broadband access, massive open on-line courses, and expert tutorial programs. African and African American research universities will bear the primary responsibility for the development of this program. Results: Current Information Communication Technologies will make the execution of this responsibility possible. The first step is an Africana university commitment to life-long learning for their graduates. The ethical justification of this philosophy is that life-long education will enhance the capacities of graduates to solve the problems of the communities that made their education possible. Conclusions: In the same way that universities will set up life-long learning communities for their graduates with the assistance of MOOCs and other online instruction, so alumni will set up comparable communities of learning for their fellow citizens who have not had the privilege of attending a college or university. Alumni commitment to life-long learning for their community members can be the bridge to realizing Du Bois' vision of universal university education.

KEY WORDS: Du Bois, Universal University Education, Life-Long Education, Ethics, African Development

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## The Value of Occupational Therapy as Part of a Medical Missionary Team

Presenter's Name: Latonya Washington
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Joelle Johnson, Lisa Mason, April Morris

Research has found that occupational therapists are valuable because they possess the knowledge and expertise to provide evidence based interventions that focus on issues such as aging in place, home based primary care, and understanding how acute and chronic medical conditions affect the ability to live within the community. Research also indicates that an increasing amount of health care practitioners are becoming a part of short-term medical missionary trips in the United Sates and developing countries. The purpose of this particular research study is to explore the self-perceived value of occupational therapy as a contributor to an inter-professional medical missionary team, and answer the question "Do occupational therapists believe that occupational therapy services as part of a medical missionary team, will provide a unique service to underserved populations that other healthcare professionals do not"? Through a non-experimental descriptive research study, this topic will be explored by distributing an 18- item likert survey to licensed occupational therapy practitioners throughout the United States. The survey explores the current perceptions of licensed occupational therapists in relation to medical missions and their potential role in a primary care setting. Surveys will be collected and categorized to obtain further information necessary to complete this study. Student researchers predict that occupational therapists do believe that their profession can provide unique and valuable services to a medical missionary team and that participation in a medical missionary team will improve quality of health care services for the underserved population.

KEY WORDS: occupational therapy, medical missionary team, primary care, perceived value, interdisciplinary team

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## Capitalism Stunts the Growth of a Green Planet

Presenter's Name: Eshani Way
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Background Environmental destruction is not new, however, it has exponentially increased its speed over the last century. Industrialization has acted as the catalyst for this growth and Capitalism has maintained it. There has been a lot of research on climate change, resource depletion and the like, that criticize industry and big business who are some of the major contributors to emissions and pollution, however very few, if any, criticize the economic system that has protected and prioritized industry and big business. This research presentation will demonstrate the inherent tie between Capitalism and environmental demise, why a Resource-Based economy is needed, as well as effective alternatives in energy and infrastructure that can save the planet. Methods: This is not experimental research, so there are no "methods" in the

conventional sense. However, there is a method to the way the information would be presented. The link between Capitalism and the environment would be illustrated in a historical context. In order to define and describe the Resource-Based economy, I would refer to the work of Jacque Fresco, who is the creator of the Venus Project. In order to show the achievability of effective innovations in energy, examples from around the world would be presented, like the Japanese "bullet train" that uses magnetic levitation technology. Conclusions: It is imperative for us to make strides toward an ecologically-conscious society. It is also very important for people to know that with the current economic system that has been embraced, there is only so much improvements that can be made when profit is placed above the planet.

KEY WORDS: environment, capitalism, green technology, climate change, resources

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### Expressive Language: An Examination of Language Growth in Prekindergarten Centers

Presenter's Name: Chakoria Wells
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Tiffany Phillips B.S., Gregory Reed PhD.

Are early childhood education programs providing children with cognitive skills including high levels of vocabulary development required for success? Are such programs improving the academic trajectory of young children, particularly with regard to at-risk populations (i.e., children from impoverished or diverse backgrounds)? This study provides information on the performance of African American children on the Expressive Vocabulary Test II, and their growth of expressive language.

KEY WORDS: language development, language growth, quality language, prek

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### Examining Parental Involvement and School Engagement among African American Adolescents

Presenter's Name: Dimitri White
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Sycarah Grant-Fisher, Ph.D

Parental Involvement is an indicator of achievement in the education system, and there are many forms of how parental involvement occurs. It can occur in both home and school settings, but as students get older there is a decline in parental involvement. This study evaluates African American parental involvement and its impact on the school engagement of high school adolescents. The purpose of this study is to determine whether a positive relationship exists between parental involvement and school engagement among African American high school students. 354 African American high school students were examined in this study (54 percent female). The results of the present study indicate that there is indeed a significant relationship between parental involvement and school engagement among high school students, with no differences found by gender. Despite research indicating the decline of parental involvement as children grow, this study emphasizes the need for parental involvement and school engagement for high school parents and student among African Americans.

KEY WORDS: Parental Involvement, School Engagement

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### Development of a New Tool to Survey Interns, Residents and Fellows about the Impact of Learning Radiology Throughout Their Training

Presenter's Name: Brittney Williams
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Andre J Duerinckx, Oritsetsemaye Otubu, Bonnie Davis, Peter Sealy, Brittney Williams, Vanessa Pinard, Shakita Crichlow, Tuo Dong, Crystal Babb, Ikechukwu Amobi

**Background:** Teaching programs devote a lot of energy and time teaching radiology to non-radiology residents, and it is not always clear what the impact of such teaching is. The aim of this study is to expand upon a previously used survey tool to evaluate the impact of radiology teaching to trainees other than radiology residents. Methods: We gathered input from stakeholders from multiple specialties and multiple levels of training and practice, including medical students, trainees, faculty, program directors, department chairs, and members of the Graduate Medical Education Committee of our institution. The purpose was to develop a more extensive survey tool that would be applicable to a broad group of trainees. Results: Our new tool can be used to survey a broad group of learners and evaluate many aspects of the impact of radiology training on the development of non-radiologist physicians. We classified

the survey questions in groups that assess standard ACGME Physician competencies (Patient care, Medical knowledge, Professionalism, etc). Conclusion: This new tool will allow us and other institutions to perform more meaningful and more in depth assessment of the impact of radiology education on the ability of future physicians to provide excellence in care. In addition it will assist institutions with radiology curriculum development.

KEY WORDS: graduate medical education, academic radiology, medical student education, core competencies, radiology curriculum

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**The Mis-education of Moynihan: The Role of Black Women in the Academic Excellence Gap**

Presenter's Name: Amy Yeboah, Ph.D.
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

In the 1965 Negro Family Case for National Action, also known as the Moynihan Report, David Moynihan echoed to the nation, "In essence, the Negro community has been forced into a matriarchal structure which, because it is so out of line with the rest of the American society, seriously retards the progress of the group as a whole… it is clearly a disadvantage for a minority group to be operating on one principle" (p. 29). This one disadvantaged and disastrous principle is the Black Women, according to Moynihan. As scholars such as Moynihan exuviate fragmented narratives of Black Women being unmarried, uninvolved, deficient and to blame for the failures of Black youth, as it pertains to education seldom do we hear about the dynamic role they are engaged in (Ogbu 1974; Ogbu and Simons 1998; Fordham & Ogbu 1986, Steele and Aronson 1995, Steele 1998; Buck 2010; Rumberger and Thomas 2000; Lee and Burkam 1992). More than often, what is critically overlooked in these conversations are the historically rich and advanced legacies of Black Women that come out of Africa. As some scholars elusively agree on creating a false impression of a non-existent genealogy of matriarchal contributions to educational excellence, this work looks to shift the conversation. In order to understand what some modern social scientists and education theorists would call an issue with the Black Woman, when asked the right questions, the answer is in the forms of disruption Western societies come into conflict with the role of Black women and African systems of learning.

KEY WORDS: Education, Dropout, Black Women, Achievement

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# Ethics, Law & Religion

**Fulfilling the Great Commission the Africana Way**

Presenter's Name: Tiffany Brockington
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

An integral part of the Africana experience, and one of the oldest African institutions in America, is the African Methodist Episcopal Church. The A.M.E. church is a safe space where the history of African people is alive and taught effectively but even the A.M.E. church history could be improved when its existence is tested by applying the critical elements of Africana studies. To re-frame A.M.E. church history will allow members and scholars alike to experience an educational journey that will speak to their inner, ancestral (inherently present) African child. There are many benefits to re-framing the A.M.E. church's history, most importantly those benefits are self-awareness, self-knowledge, and self-actualization. These benefits are not limited to real-time, contemporary, or self-awareness, self-knowledge, or self-actualization but generations of Africana self-awareness, knowledge, and actualization (Ubuntui). As the A.M.E. church history exists now, it is very flawed and blatantly misrepresents all events leading up to the founding of the A.M.E. church. This project will allow the A.M.E. Review Board to identify the existing misrepresented narrative and engage the truth in a manner that will uncover the true history that honors everything that Bishop Richard Allen sacrificed in order to bring the A.M.E. denomination into existence unencumbered by the Methodist Episcopal Church. This project is a reminder of self-determined Africana lifestyles of the past, and clarify our existing resolve to act in the best interest of the Africana diaspora in the present, near future, and future.

KEY WORDS: Re-Framing the AME Church History

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### "How I got over!": Comparing the growth of spiritual formation in students on Historically Black College Campuses with Chapels

Presenter's Name: Cecil Duffie
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Background: According to a 2014 report from National Public Radio "a third of young Americans report no religious affiliation". While students may not affiliate with a religious group, young Americans still seek spiritual direction while in college. With the contemplation of the necessity of historically black colleges, a review of the growth of spiritual formation and discernment of students should be had on such campuses to argue the need of HBCs with concentration on their ability to assist students in religious engagement. Methods: Based on participant and direct observations, interviews, review of records, and collections of writing samples of the Chapels of four historically black colleges/universities: Howard University –Rankin Chapel; Morehouse College –King International Chapel; Spelman College – Sisters Chapel; and Morgan State University – Interfaith Center, a case study to determine spiritual formation is paramount. Results: Based on preliminary results, Rankin Chapel offers more development in spiritual formation and discernment through the observation of their weekly chapel service, conversations with chapel staff, enrollment of students in religious-life organizations, and history as recorded by the archives committee of the 'Friends of the Chapel'. Conclusions: The level of spiritual formation and its growth in students is challenging to determine. However, through the method of observations, interactions, and writing samples it is clear that Howard University students stand out based on the vision and reach of Rankin Chapel.

KEY WORDS: Chapel Religion Students Spiritual Growth

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### Desiring Masculinity: An Inquiry into the Subversive Praxis of Male on Male Rape

Presenter's Name: Ardaine L. Gooden
Classification: Graduate Student
*Presentation Type: Oral Presentation*

When a rape occurs, we often assume that the victim must be female. But this is an inchoate view of the problem. The scholarship of theorists like Michael Scarce informs us that male on male rape is a grossly overlooked problem in our contemporary society. And yet, the subject remains under-investigated, even now, as only sparse literature on the phenomenon of male on male rape has been emerging over the last few decades. Even our sacred texts are rather taciturn on the issue. For instance, the story of the Levite and his concubine in Judges 19 contains one of only two references to male rape in the Hebrew Bible. This passage has much attention because its deals with the touchy subject of homosexuality, which continues to be a very controversial topic in religious communities as well as secular society. However, an alternative reading of the text points to the age-old phenomenon of rape, specifically male rape. This research offers an analysis of males as victims of sexual violence in the Bible. I will analyze the Judges 19 narrative using Rene Girard's theory which suggests that mimetic desire, which leads to social violence, is a fundamental part of human culture. The aim of this research project is to explore the ways in which Girard's theory can be utilized to better understand the relationship between desire and violence, which will also facilitate our understanding of the relationship between masculine desire and the subversive nature of sexual violence depicted in Judges 19.

KEY WORDS: Male on Male Rape, Male Rape, Masculinity, Masculine Desire, Male Sexual Violence

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### A Critical Evaluation of President Obama's Faith-Based Domestic Policies

Presenter's Name: Terence Mayo
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Background: President Obama's administration has been both hailed and hammered for its relationship to religious groups. The White House Office of Faith-Based and Neighborhood Partnerships, launched under former President George W. Bush in part to provide federal grants for social services to religious groups, expanded under President Obama to support broader cultural issues such as responsible fatherhood, reducing unintended pregnancies and promoting interfaith cooperation. But it has been critiqued for allowing religion-based employment discrimination; under a Bush-era policy that Obama vowed to change during his first campaign, faith-based groups that get taxpayer dollars are exempt from federal nondiscrimination laws. Methods: This research relies upon interviews with Office of Faith-Based and Neighborhood Partnership staff, independent bipartisan faith-based policy organizations, and congressional staff. This research will also look at the guiding principles of the office versus their resource allocations and changes in target community populations. Conclusions: By critically analyzing the White House Office of

Faith-Based and Neighborhood Partnership's domestic policies and programs, I will further the development of partnerships that serve the common good in ways that respect church-state separation and religious freedom, identify partnerships and best practices that make significant community changes, and provide greater analysis of governmental expenditures.

KEY WORDS: faith-based policy government evaluation religion

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### It's My Life, I Can Die If I Want To

Presenter's Name: Davynte Pannell
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Suicide should be allowed. The overt denunciation of suicide as well as the hospitalization of suicide-attempters not only superimposes the popular opinion on the individual, but moreover it infringes on the Constitutional rights of life, liberty, and the pursuit of happiness. I will articulate this argument using a Wittgenstenian Ordinary Language approach to alleviate some of the esotericism typically associated with philosophical papers and to broaden the scope. This the present research draws on the works of Emile Durkheim as well as other philosophers to reconcile traditional normative theories on suicide with my own. This research has implications for public policies regarding the treatment of suicide attempters and committers. More specifically, it suggests that the former not be forcibly hospitalized, the latter not be victimized in the media, and both be respected as rational beings.

KEY WORDS: suicide, rights, life, liberty, happiness

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### I Will Make You the Head and Not the Tail: The Legitimation of Jephthah (Judges 10:6 -12:7)

Presenter's Name: Yvonne Salazar
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Background: The story of Jephthah in Judges 10:6 – 12:7 is primarily known for the tragic events that ensue after Jephthah makes his infamous vow offering his innocent daughter's life as a sacrifice to God. More often than not, the text is read as Jephthah being extremely reckless and his daughter, the unfortunate victim, having to pay the ultimate price because of his foolishness. Yet, Jephthah was also a successful military commander, a clever negotiator, and an astute diplomat. Nevertheless, early in his life, he had to deal with the issue of fraternal rivalry, which ultimately led to his disinheritance and being driven away from his ancestral home and his community by his younger half-brothers. Methods: In this paper, an analysis of Jephthah's background, including his paternal and maternal lineage, Jewish inheritance laws, as well as the text of scripture, propose answers to the questions of how his younger brothers were able to so easily dispossess him of something that was so important to the Israelites. Results: N/A Conclusions: The conclusion is that Jephthah was not disinherited solely because he was the son of a prostitute, but rather because of the legal actions his half-brothers took against him in contesting his legitimation (adoption within one's family) by their father, Gilead.

KEY WORDS: The Legitimation of Jephthah-Judges

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# Humanities

### An Examination of Product Placement on African American Youth Consumer Habits

Presenter's Name: Avery Allen
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

The purpose of this study is to examine the effects of product placement in entertainment media on African American youth and their consumer habits. Consumer habits is an overarching term that describes both how one feels about a product and how one views the brand's presence in their lives. Using Mead's Generalized Other as a framework, this examination looks at what factors are key influencers for this specific young adult demographic. African American youth were selected as the focus for this study because of upward trends of the spending power of the African American community. Typically this sort of research is conducted with only quantitative methods. This particular examination utilizes a mixed method approach with surveys and interviews. By adding the quantitative element, the researcher was able to gain another dimension of insight

into the topic. After conducting both phases of the research, evidence emerged that suggests that while television and film have more influence on consumption habits than music and music videos, peer influence seems to be what is most important in to the target audience. Knowledge such as this can be useful to advertising practitioners by offering more understanding into the patterns of the Millennial and Gen Z audiences. Also this information is beneficial to the general public as an exercise in media literacy and how the media they consume shapes their behavioral patterns.

KEY WORDS: Advertising, Communications, Youth, African American, Product Placement

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### Cultivating Spirituality: A Systematic Study of the Sci Fi Film Experience

Presenter's Name: Cherish Barnwell
Classification: Graduate Student
*Presentation Type: Oral Presentation*

The topic of interest for this study focuses mainly within three philosophical schools of thought; The Philosophy of Religion, Phenomenology, and Aesthetics. I have chosen to embark upon interdisciplinary research that will further my knowledge and expertise regarding the reception of art as a spiritually cultivating experience. In order to examine how art is capable of provoking such an effect, I have chosen to analyze the aesthetics of film, specifically science fiction, in addition to phenomenological accounts of film experience. Utilizing this information, I will then attempt to justify Georg. W.F. Hegel's concept of 'Absolute Spirit', specifically in regards to art, as the cause of such experiences.

KEY WORDS: Science Fiction Film, Spirituality, Phenomenolgy, Mystical Experience, Absolute Spirit

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### The Origins and Outcomes of Stress-Related Factors amongst Caribbean Populations: Implications for Clinical Treatment and Future Research

Presenter's Name: Vanessa Battiste
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Caribbean people are vastly underrepresented in the body of research in many acclaimed Journals and databases (Goosby, Caldwell, Bellatorre, Jackson, 2012; Lincoln, Chatters, Taylor, Jackson, 2007). More specifically, there is minimal research on individuals from the Caribbean who migrate to larger nations (Williams, Haile, Neighbors, González, Baser, Jackson, 2007). This number dwindles even more when investigating individuals who are born and still reside in Caribbean islands. This underrepresentation has resulted in limited empirical research on important factors that contribute to overall psychological well-being of Caribbean people. Thus, the exploration of the origins and outcomes of psychological factors such as stress has gone overlooked. This has contributed to the application of clinical interventions being implemented with Caribbean people despite the fact that these treatments have often been normed on other populations (World Health Organization, 2011). Without knowing the origins and outcomes of factors like stress, it is difficult to identify what interventions may be most effective amongst the Caribbean population (Caribbean Health Research Council, 2010; World Health Organization, 2011). This presentation will incorporate a multicultural framework to examine the factors that contribute to stress amongst Caribbean people. Stress management clinical interventions that are most appropriate for stress-related symptomology amongst Caribbean people will be discussed. Implications for future research that focus on the factors that contribute to the exploration of the origins and outcomes of psychological factors such as stress and appropriate interventions for Caribbean people will also be presented.

KEY WORDS: Caribbean, stress, clinical intervention, health, stress-management

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### Demographical Change and Russia's Growing Problem

Presenter's Name: Ayah Belal
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Vladimir Putin's policy towards reversing population decline is characterized by the way he views the issue. Describing it as the country's "most urgent problem", it is no surprise that he is dedicating a lot of funding and strategies to try and solve this problem. This research will attempt to explore the history and manifestation of the population decline, the strategies used to reverse it, and other issues relating to Russian demographics.

KEY WORDS: Russia Demographics Putin Decline History

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### The Epistemology of Baldwin's Closet

Presenter's Name: Sonia Mae Brown
Classification: Graduate Student
*Presentation Type: Oral Presentation*

The distance between reality and its representation is representative of the space that is traversed in the process of translation. Translation, as noted by Gayatri Spivak, in "The Politics of Translation," is "the most intimate act of reading. […] The task of the translator is to facilitate this love between the original and its shadow, a love that permits fraying, holds the agency of the translator and the demands of her imagined or actual audience at bay" (180-1). As an intimate act, translation can be seen as erotic; in translating, the translator engages with its subject and seeks to understand it in detail. While translation can be discussed in terms of it's linguistic, rhetorical, and narratalogical application, this paper concerns itself with the concept of cultural translation—or the means in which one attempts to understand, identify and locate themselves within a culture. This paper aims to illuminate the concept of the erotics in translation and will ultimately point out ways in which Lucy, by Jamaica Kincaid, participates in this eroticization. In analyzing the erotics of translation in Lucy, I intend to look at the structure of the book that imitates Spivak's "seductive erotics." Lucy is an example of a text where a migrant participates in a process of cultural translation. In Lucy, the erotics of translation can be seen where Lucy attempts to understand the Lewis family, her future, and American culture or community, while negotiating her relationship with her mother, her past, her cultural background, and herself.

KEY WORDS: Homosexuality, Closet, James Baldwin, African American Literature, Identity

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### Women of the World: "Globalizing" Cultural Identity, Preserving Self

Presenter's Name: Karen Drake
Classification: Graduate Student
*Presentation Type: Oral Presentation*

The popularity and influence of contemporary African female writers Chimamanda Ngozi Adichie and Taiye Selasi set a precedent for the world. Included in the Africa39 Project, their visibility on US and international booksellers' lists authenticates their works, affording them a heretofore unseen presence on the global stage. Their writing reconstructs ethnic and regional borders to interface with global themes considered "current events" and continues to train the gaze of the global public. Additionally, they engage in direct discourse with preceding theorists in a manner not formerly present in African literature. Therefore, their study is prerequisite in establishing and continuing dialogue concerning the creation and critique of African culture and literature. Unlike Africanists who define globalization exclusively in terms of cultural loss, I argue that these writings enable further refinement of globalization to cast such writers as current cultural colonizers. My presentation will explore select writings of Adichie and Selasi to examine the texts' discussion of personal identity, creation of a national literature, and reframing of African history. This engagement uses African feminist and Globalization theories to highlight specific mechanisms by which these writers maintain personal identity, the identity of the Diasporic community and connectivity with the parent community. In these ways, West African writers continue to shape their national and African communities, but also transcend the African community to engage with the larger consciousness of an independent, political agenda.

KEY WORDS: Chimamanda Ngozi Adichie, Taiye Selasi, Africa39 Project, Globalization. Cultural Identity

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### The Birth of Identity: An Analysis of Sapphire's Push as a Modern Slave Narrative

Presenter's Name: Ciara Grubbs
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

This thesis will use The Narrative of the Life of Frederick Douglass as a lens through which to understand Sapphire's Push (1997) as a "modern slave narrative." I will examine common themes that occur in each text, with an emphasis on the role of literacy as an essential step toward each protagonist's physical and mental emancipation. I will also analyze significant dissimilarities in the journeys of Douglass and Precious and explain the ways that these differences stem primarily from persisting gender roles rather than the fact that the narratives belong to different centuries. It is particularly important to understand the significance behind the fact that, whereas Douglass tends to assert his autonomy and agency, Precious more often describes her plight as a communal one. This portion of my analysis will lead to a consideration of Precious' identity as a mother and an evaluation of how that identity functions as part of a larger historical and societal narrative that has linked the worth of the African-American woman with her ability to bear children.

KEY WORDS: push douglass slave narrative modern

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## Public Sexual Harassment

Presenter's Name: Odyssey Hines
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Kristin Banks and Angela Brennan

The act of harassment takes place in various ways these days. Most people have an understanding of sexual harassment and even exposure to the form of harassment associated with bullying. However, many do not know that street harassment also known as public sexual harassment is a major form of stress for many women. It often transpires when a person receives an unwanted comment, gesture, or behavior in a public setting. The recent video known as "Catcall" brought awareness to street harassment. The video shows a young woman walking around the city and constantly being exposed to public sexual harassment. In a survey of 2,000 people, produced by the nonprofit organization Stop Street Harassment, it revealed that nearly 65% of women had experienced a form of public sexual harassment at least once in their lives. This is a major problem in society as it potentially causes physical and psychological danger to the victims. This study seeks to discover if the attire of a woman plays a significant role in the amount of public sexual harassment she experiences. In addition, it also examines whether or not specific street locations a woman frequents increases or decreases the amount of public sexual harassment. The purpose of this study is to find out when, where and how women are most likely to experience public street harassment. In obtaining this information, other researchers can utilize it to further their efforts and produce methods and techniques that will contribute to promoting safety for women.

KEY WORDS: Harassment, attire, location, public sexual harassment, and catcall

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## Identity Politics of Nation, Color, Language and Land in the Literature of Nubian Egyptians

Presenter's Name: Naglaa Hussein
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Naglaa Hussein

Nubian Egyptians are commonly known as the darker-skinned inhabitants of the southern region of Egypt extending up the Nile into Sudan. Over the course of many historical eras, the inhabitants of the Nubian kingdom cycled through relationships of trade, rivalry, battle, and integration with their neighboring kingdoms, particularly with the ancient kingdom of Egypt. These ancient politics in combination with modern day politics have shaped the features of contemporary Nubian Egyptian identity. This project is concerned with the intricacies of media representations, literary exclusions, state homogenization, and the academic othering of Nubian Egyptians. A number of historical factors have contributed towards these trends: the emergence of the modern nation state, the establishment of the borderlines between Egypt and Sudan, the completion of the Aswan High Dam, and the effects of forced migration on the indigenous Nubian population of southern Egypt. The major contribution of this research project is the investigation of a specific text as its central case study: the novel Ashamandoura by the Nubian novelist and artist Muhammad Khalil Qasim (1922-1968). In addition to his literary works, the details of Qasim's lengthy imprisonment and political activism also serve as a historical documentation of what it was like for Nubians to live during the great social and political upheaval that characterized the 1950s through the 1970s. In fact, Ashamandoura is the first Nubian novel written in Arabic, and its significance is such that literary critics classify Nubian novels according to their occurrence before or after its publication. This research project will utilize post-colonial theory of the global consciousness of black communities and their struggles for equal rights as citizens to investigate the context, subtext, and literary texts pertaining to the Nubian experience during the period from the 1950s through 1970s.

KEY WORDS: Identity, Nationalism, Color, Land, Nubian

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## It's Coming…When?

Presenter's Name: Taylar Lewis
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

In an interview with Rev. Williams on a religious show entitled Vibrations for a new People, Angela Davis, in her first American broadcast interview since her arrest in her connection to the 1970 Marin County shoot out, states, well, there's no single, simple meaning of the term revolutionary. A revolutionary is a man or woman who is a lot of things, but basically the revolutionary wants to change the nature of society in a way to promote a world where the needs and interest of the people are responded too. A revolutionary realizes however that in order to create a world where human beings can live and love and be healthy and create, you have to

completely revolutionize the entire fabric of society… Angela Davis' work, activism, proactive voice caught the attention of one of the world's great powers, the Soviet Union, in the late 1970's. Why? Why was a government, of one of the biggest countries located on the other side of the planet, interested in Angela Davis? Well, this research journeys through Davis' life leading up to and delving into her interaction with the Soviet Union.

KEY WORDS: Soviet Union, Angela Davis

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### Julia and the Scandal of regression in stereotypes in prime-time network television

Presenter's Name: Brandale Mills
Classification: Graduate Student
*Presentation Type: Oral Presentation*

When Diahann Carroll played the leading role in NBC's Julia (1968-1971), the first television show to star an African-America woman during prime-time television, American audiences were introduced to the complexities of Black women that were seldom seen on the small screen. Nearly 40 years after Julia's cancellation, the powerful and complex character, Olivia Pope on the ABC series Scandal, expands on those depictions creating a new archetype for Black female depictions in the media. Methods: This study examined the television shows, Julia and Scandal, evaluating content and message themes in each show, specifically comparing character portrayals, story plots, stereotypes, relationships, feminism and race. Using convenience sampling method, five episodes of Scandal and Julia were randomly selected based on the most recent shows available during the time of the study to ensure the most accurate and current data analysis. The leading characters were the primary unit of analysis. The researcher used a coding guide (based on relevant themes found in previous literature) as a reference point while examining each show. This analysis examined many variables of the program's characters separated in categories such as stereotypical images, elements of feminism and relationship dynamics Results/Conclusion: Results revealed that neither show's female protagonists explicitly embody a single characteristic of traditional stereotypes seen in Black female characters in the media, but Olivia Pope's character encompasses elements of all stereotypes.

KEY WORDS: Scandal, Julia, Race, Gender, Television

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### The Chickens Have Been Home Roosting: A Critical Analysis of the American Media's Role in Promoting Propaganda that Shapes the Role of the American Hero in Cinema

Presenter's Name: Olivia Pearson
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Olivia Pearson

In 2013, a film called The Purge introduced movie-going audiences to the possibility of a state sanctioned violence that gives all social classes the liberty to "purge" those they deem useless to society. Recently a film entitled American Sniper told the story of the late Navy SEAL sniper Chris Kyle's war with Iraq and his personal life. The main characters of the movies are white male characters that appear "honorable" and protectors of their families when facing adversity. Despite class differences and scenarios of each movie, both The Purge and American Sniper integrate American media into the narrative, shaping their perceptions of their environments. The notion perceived is that the men and their families are under attack and must take action to preserve their freedoms. However, each film's ending has an unexpected twist that defies the propaganda spewed by the media, sending an uncomfortable message: the enemy is normally the one in your own backyard, looking nothing like the images on television. The trope of the American hero in American cinema reinforces the stereotypical notion that normative whiteness is constantly under attack by non-whites. In this analysis, I will examine how the usage of American media in American Sniper and The Purge both shape the perception of the American hero and instill irrational fears of non-white people. I will also examine text from Clyde Taylor's The Mask of Art to argue how the films' protagonists fit the Western concept of the hero and how the media fuel their efforts to preserve order.

KEY WORDS: American Sniper, The Purge, media

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### The Logic of Sanctions: Russian Effects

Presenter's Name: Sarah Porter
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

The study is to show how the multiple sanctions of Russian leading officials will impact the ruble, Russian currency, and call attention to its soon to be impact on the global economy.

The current state of Russian affairs is calm and tranquil even though recent diplomatic changes have occurred. Overtime it is suspected that due to the lack of young entrepreneurs under 30 and the prohibited international business that Russia will fall. The study seeks to measure the time it will take to fall while also offering solutions to the logic of sanctions. This research draws upon mostly primary sources including journals, lectures and interviews with a variety of elite officials who specialize in Russian studies and economics. Most prior research on the logic of sanctions focuses on the particular individuals being sanctioned. This focus examines the nation's economy as a whole and the international market. This case example shows how what is meant to be consequences for particular individuals, ultimately affects us all as a whole.

KEY WORDS: Sanction, Russian studies, Vladimir Putin, Economy, Ukraine

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### Shevchenko and Aldridge: The dialogic chronotope of the legendary friendship

Presenter's Name: Alla Tovares
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

Few friendships that were so brief but whose influence so enduring can be compared to the one between the renowned African American tragedian Ira Aldridge and Ukrainian national poet Taras Shevchenko. The two men met and became friends in November of 1858 in St. Petersburg, Russia. In January of 1859, Aldridge, after his two months' engagement to perform on St. Petersburg's stage, left and returned to the Russian empire only in 1861, but by then his friend Shevchenko had died. While the actual friendship of these two talented men was short-lived, the story of their friendship endured years, decades, and even centuries and has been retold on the pages on newspapers and magazines, academic journals and books, made the subject of paintings, poems, plays and other literary works, and even discussed in the political arena such as the US Congress. In this work, using Bakhtin's notions of dialogue and chronotope, I explore the reproduction of story of this friendship across time and space to gain a better understanding why, when, and how this relatively short friendship continues to emerge in scholarly, artistic, and political discourse. I demonstrate how the numerous reproductions of this story have been influenced by the social context in which the story was retold. Specifically, I suggest that the story has become an "artifact" that is used as a metaphor when a country or the world needs an example of the fundamental dialogic possibilities of creating understanding among people.

KEY WORDS: Ira Aldridge, Taras Shevchenko, friendship, chronotope, dialogicality

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### The Effects of Cognitive Dissonance on Safe Driving Behavior Among Older Drivers

Presenter's Name: Chinenye Ude
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Natika Muhammad, Stephanie Neal, Natalie Scarborough

This study examined the correlation between cognitive dissonance and safe driving behavior among 30 older drivers in the Maryland suburban area. These active drivers, age 65 and older attended a community activity center. This study was comprised of two short self-report surveys and an online driving assessment. The first survey was a cognitive behavior survey, used to identify the participants' beliefs about his/her driving safety. The second survey included a 15 item self-rating scale to measure the participants' awareness of safe driving habits. The online road wise review assessment developed by AAA was used to measure the participants' mental and physical abilities, which has been shown to be important for driving. It features 30-45 minute series of computer-based exercises on eight key areas: leg strength & general mobility, head and neck flexibility, high-contrast visual acuity, low-contrast visual acuity, working memory, visualizing missing information, visual information processing speed, and visual search. The main research question was, if older drivers were shown that they were unsafe to drive, even though they thought they were safe, would they be willing to change their belief or stop driving if the data indicated. The results from the road wise review assessment were compared to the participant's result in the cognitive behavior survey to identify if there was a discrepancy between the participants' mental and physical ability to drive and; regulation of driving behavior that included ceasing to drive or taking steps to improve their ability to drive safely. The data was analyzed using SPSS 22.

KEY WORDS: Cognitive dissonance, driving, older adults, safety and habits

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### Using Poetry as a Communication Multimodality to Engage African American Learners with Mild Intellectual Disabilities in Reading: A Case Study

Presenter's Name: Cherie Ward
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Cherie Ward

Since reading literacy statistics for selected African American learners have only increased by four percent in 164 years, this research proposes to understand why, by taking an in depth look at literature which describes the history of the public education system, African American students (ages 4-8) with mild learning disabilities and the standardized narrative texts which have been historically used for teaching reading in urban classrooms. Consequently, the discourse of underachievement is a social injustice which needs to be addressed for this community of learners, while new alternatives to communicate multimodal texts are introduced to engage them. Alternatively, the use of poetry in cultural expression as a communication multimodal (written, audio and video technology) text will be reading interventions used over a two month period of time, three days a week, during the regular reading block in the student's homeroom. This will be a case study using four African American students (2) females and (2) males (with and without IEPs) but all reading below basic. They will be selected from the fourth grade, who attend a local District of Columbia Public School (DCPS), for the purpose of engaging them in the reading process to the extent that they not only embrace it, but more importantly are eager to participate. Three days a week, for 55 min. the students will work one-on-one with the researcher and the third day, the researcher will teach the entire class, inclusive of the student. Using a categorical description analysis of the data gathered through pre and post peer group observations, this researcher's observation of videotape of sessions for engagement, student self-assessments, as well as, teacher guided assessments. Although achievement is not the focus, data will be collected which addresses the issue. The data will be analyzed for interactional and social context as it relates to individual agency using poetry as a communicative multimodal text for reading engagement.

KEY WORDS: Poetry, Multimodality, Discourse, Engagement, Social and Interactional Contexts,

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# Physical Sciences & Engineering

### Exploring Synonyms to improve Question and Answering Systems

Presenter's Name: Anietie Andy
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Anietie Andy, Robert Rwebangira, Mohamed Chouikha

Community Question and Answering (CQA) systems are a popular way for Internet users to get answers to complex and common everyday questions. One of the challenges with CQA is that some of the asked questions are not answered [8]. This paper addresses this challenge by using a synonym-based approach that expands each unanswered question into several related questions. This paper argues that the number of unanswered questions can be reduced by searching the data set for the most similar resolved question(s) (questions that have been satisfactorily answered) to either the unanswered question and / or any of its expanded questions. If this search returns more than one resolved question, we rank the returned questions and choose the highest ranking resolved question as the most similar to the unanswered question.

KEY WORDS: Question Answering Synonyms

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### Simulation and Validation of the Seismic Behavior of Hinged- Rubber Bearings

Presenter's Name: Amedebrhan Asfaw
Classification: Graduate Student
*Presentation Type: Poster Presentation*

A new type of seismic isolation system called hinged-rubber bearing (HBB) is studied herein. A HBB consists of a rubber bearing mounted on a hinge joint; the hinge is a rolling ball that can rotate in all directions. The study creates new knowledge

on the bidirectional behavior of HBB isolated systems under general earthquake excitations. The objectives and the corresponding general procedures of this research work are: (1) To develop an analytical model that can predict the seismic behavior of HBB: modifications on available mathematical models used to analyze conventional elastomeric bearings are implemented. (2) To experimentally verify the accuracy of the developed model: data obtained from physical earthquake simulation testing of HBB isolation system is used to evaluate the validity of the mathematical model. (3) To analyze effects of P-Δ and friction on the seismic behavior of HBB. (4) To assess tension releasing capability of HBB: numerical models to quantify tension released on conventional elastomeric bearing are developed and compared with those on HBB. The results demonstrates that the additional flexibility provided by the hinge of HBB shifts the natural period of the supported structure into longer period range. Thus, during earthquake ground shaking, absolute acceleration and drift demands above the plane of isolation are reduced thereby reducing the likelihood of damage to acceleration and displacement sensitive nonstructural systems, equipment and components in buildings. This will brought down economic losses and loss of operational functionality of facilities.

KEY WORDS: Hinged-rubber bearing; Sesimic Isolation; Seismic behavior; Analytical model;Validation

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### Adsorption of Cations onto Graphene Surface for Tuning the Band Gap and Hierarchical assembly of 2D materials

Presenter's Name: Tina Brower
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Graphene, a strictly zero band gap semi-metal due in large part to a network of π-electrons perpendicular to very tightly bonded carbon atoms organized into a hexagonal 1 atom thick lattice. Defined control of the electronic properties of graphene would offer practical advantages for its utility in advanced electronic devices. The goal of this research is to adsorb cations on the surface of graphene and probe the potential to induce electron holes through charge transfer. The affinity of mercury for aromatic compounds has been documented. Electrophilic merucration reactions and π-complex formation substantiate the high affinity of Hg+2 cations for aromatic hydrocarbons. The π-electron rich structure of graphene renders it a good adsorbent for Hg+2, 3. In addition Cu cations readily gain electrons and have also been investigated. The successful adsorption of cations should change the electronic properties of graphene. Therefore, the characteristic Raman spectra of single layer graphene should be altered. X-ray photoelectron spectroscopy has been used to confirm the presence of cations on the surface of graphene.

KEY WORDS: Graphene, 2d materials, Raman, adsorption, X-ray Photoelectron Spectroscopy

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### Simulation of Seismic Failure Mechanisms in Reinforced Concrete Frames Using Analytical Tools and Experimental Data

Presenter's Name: Diego Buitrago
Classification: Graduate Student
*Presentation Type: Oral Presentation*

The simulation of the seismic behavior of reinforced concrete (RC) framed buildings including different failure mechanisms is currently a challenge for structural engineering practitioners. In this project, a structural engineering guideline is developed to provide tools and procedures on currently available nonlinear dynamic modeling methodologies with different accuracy levels. The guideline is based on available simulation methodologies to capture the seismic failure mechanisms of RC frames using analytical tools and available experimental data to validate the numerical models. This project is based on numerical dynamic simulations using OpenSees, an open source software for earthquake engineering simulation. The first step of the project is to analyze and study available experimental data on RC buildings that were tested with dynamic loads to identify different failure mechanisms. Based on the characteristics of the test specimens, different dynamic nonlinear models in OpenSees are developed. The models are able to capture and simulate different failure mechanisms. The experimental data are compared with the numerical responses to validate the numerical models. The planned guideline provides procedures to implement nonlinear-models to predict the seismic responses of RC framed buildings. The aim of this project is to demonstrate that it is possible to create accurate nonlinear dynamic models to predict the seismic behavior of RC buildings within the time constraints of the structural engineering practice. This project has the potential to enhance the connection between research findings and engineering practice.

KEY WORDS: concrete frames, structural engineering, reinforced concrete, seismic behavior

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## Mobility of Transformed Nanomaterials through Porous Media

Presenter's Name: Shauna-Gaye Campbell
Classification: Graduate Student
*Presentation Type: Poster Presentation*

The use of wastewater treatment plant biosolids as soil amendments has been widely practiced in the agricultural community. Increased occurrence of nanomaterials (NMs) such as Ag, CuO and ZnO in biosolids raises concerns with environmental and regulatory agencies, as it is unclear whether these materials are transported to underlying water, or are available to plants or microorganisms. When studying transport of NMs, it is important to study the transformed NM rather than the pristine form, as NMs are transformed in the environment, resulting in a change of chemical and physical properties that may alter their toxicity, bioavailability, solubility and mobility in the environment. Consequently, environmental studies using transformed NMs under realistic environmental conditions are necessary. This study intends to examine the transport behavior of sulfidized Ag, Cu and Zn nanoparticles through saturated porous silica columns under various conditions of pH, ionic strength and organic loading. Volumes of leachate are collected and analyzed with furnace atomic adsorption spectroscopy (AAS). Preliminary results show an increase of nanomaterial transport with the increase in organic concentration. The interaction of organic content with the nanomaterial and collector surface plays an important role in the mobility of transformed nanomaterials. The effect of pH and ionic strength of the influent are currently being explored to better understand the surface interactions.

KEY WORDS: Nanoparticle Transport Transformed Mobility Environment

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## Investigation of Thermal Expansion Properties of Single Walled Carbon Nanotubes by Raman Spectroscopy and Molecular Dynamics Simulation

Presenter's Name: Daniel Casimir
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Raul Garcia-Sanchez, Prabhakar Misra

Single-walled carbon nanotubes (SWCNTs) are hollow cylindrical tubes of sp2 -hybridized carbon atoms having diameters on the order of nanometers and lengths ranging from microns to centimeters. The thermal expansion property of carbon nanotubes is important for the development of future semiconductor technologies, e.g. in super-capacitors and biochemical sensors, and for hydrogen storage applications. We have examined the characteristics of these graphitic allotropes using Resonant Raman Spectroscopy at 514, 532 and 780 nm laser excitations, using a Thermo Fisher DXR Smart Raman spectrometer and a Renishaw inVia Raman Microscope. The Raman spectra of SWCNTs under thermal loading were used to demonstrate the bond softening and resultant red-shifting of the various Raman bands of SWCNTs. This latter Raman spectroscopic data was then used to determine the thermal expansion behavior of these quasi one dimensional materials. The computational technique of molecular dynamics simulation was also performed on model carbon nanotubes with the goal of determining the effect that temperature has on the vibrational frequencies of the nanomaterials. In many future applications of graphitic nanomaterials, the electronic devices may have to endure high temperatures during manufacturing and/or operation, whereby the induced strain and thermal expansion characteristics may serve as significant quality/reliability control factors.

KEY WORDS: Carbon Nanotube, Raman Spectroscopy, Molecular Dynamics Simulation, Thermal Expansion

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## High resolution nanoscale mapping of cartilage mechanical properties

Presenter's Name: Preethi Chandran
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Nolan English, Emilios Dimitriadis, Ferenc Horkay

The major components of cartilage matrix are the collagen mesh and aggrecan ground substance. The composition and organization of these components varies along the cartilage growth line and in the vicinity of chondrocytes. Mouse cartilage is extensively used as a model system for a wide range of cartilage pathologies including arthritis, but there are limited studies mapping the changes in matrix long the growth line. Nanomechanical studies are typically performed on tissue sections and are subject to errors from tissue collapse and uneven sectioning surface. We performed a high-resolution (~1um) nanoindentation mapping of a mouse cartilage section along the growth line using an AFM microsphere. We used large-strain indentations and force corrections to remove the error due to surface roughness. A new method for obtaining the

Hertzian contact points of rough surfaces was developed. The consistency of our elasticity results from the same cartilage region improved significantly with the roughness corrections. Tissue collapse was corrected using standard polymer models and cartilage height mapping. Matrix regions were extracted by correlation with optical images. The elasticity of the matrix regions along the cartilage growth line showed interesting trends when juxtaposed against previous studies of matrix composition along the growth line. The implications for cartilage growth, disease, and engineering are discussed.

KEY WORDS: cartilage, biomechanics, Atomic Force Microscopy

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### Fourier Transforms in Aperture Antennas

Presenter's Name: Skander Chaouch-Bouraoui
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Jonathan Lopera

Background: This research is a part of a project for the forward-looking SIRE radar system with application in IED and landmine detection. The antenna subsystem is an important component of the SIRE radar. The equation used in this paper applies to the aperture antenna, which is related to both the transmitter horn antenna and the receiver tapered slot antenna. Methods: The two dimensional Fourier transform equation which can be utilized to find the far field radiation pattern from the electric field distribution over the aperture (near field) and vice versa. The equation is derived for both Cartesian and spherical coordinate systems. Results: Using the two dimensional Fourier transform equation, the far field and near field have been computed and plotted in MATLAB. The far field was plotted three times depending on the x and y coordinates, the time and y coordinate, as well as x and time coordinates. The near field's magnitude and polarization has also been plotted with similar dependence. Conclusion: The results are to be applied to the understanding of the radiation mechanism of the antennas in the SIRE transceiver subsystem.

KEY WORDS: Antenna Electromagnetics Communication Electronics Systems

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### Nanostructured Thin Films for Advanced Applications

Presenter's Name: Michelle Chavis
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Crawford Taylor, James Griffin, Gary Harris

We explore the convergence of two fundamentally different patterning approaches for nanostructured applications and devices. The well-established 'top-down' patterning approach involves the direct exposure of photoresist to ultraviolet light, in which the resolution of the patterned line depends critically on the wavelength used for patterning. The newer 'bottom-up' approach uses natural principles of self-assembly to organize block copolymer films into sub-30- nm dimensions. The field of 'block copolymer lithography' combines both 'top-down' and 'bottom-up' approaches and has afforded significant improvements in the lithography world with significant increase in patterning density without a concomitant increase in manufacturing cost. However, many challenges remain in order for this technology to qualify for an industrial application, including the ability to reliably control the orientation and translational order of microdomains over large areas.

KEY WORDS: nanostructure, quantum, block copolymer, diamond, patterning

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### Construction and Analyses of Subsonic Airfoils for Wind Tunnel Testing

Presenter's Name: Matthew Clarke
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Narcrisha Norman

One of the biggest challenges researchers face today is lack of resources, whether from fiscal constraints or the availability of prototypes to conduct experimental tests. This papers addresses this issue by proposing a relatively lost cost method of fabricating subsonic airfoils for undergraduate coursework that introduce student to aerodynamics, then validates the construction of subsonic airfoils for subsonic wind tunnel testing. This was done first through the comparison of experimental aerodynamic behavior such as lift and drag to theoretical data from literature and secondly by the analysis of the air flow over these streamline bodies using generated smoke. The airfoils were made of wood and surfaced with aluminum to reduce any frictional shear forces that could arise

in the test section. Wood proved to be a suitable option due to the ease of forming irregularly curved surfaces that define an airfoil's profile in the absence of complex prototyping machinery. The data retrieved indicated close similarities between the conducted experimental tests and theoretical plots of lift, drag and moment coefficients shown in the literature. These results conveyed that the models built for wind tunnel testing performed as presumed which validated and accomplishment the primary objective.

KEY WORDS: Airfoil, Aerodynamics, Subsonic, Wind Tunnel

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## Optimization Of Biogas Production Conditions Using Pilot Scale Mesophilic And Thermophilic Anaerobic Digesters Optimizationof Biogas Production Conditions Using Pilot Sclae Mesop

Presenter's Name: Victoria Dillard
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Evans O. Omotto, Aron Munywoki, Caroline Ouma,

The Nairobi Water and Sewerage Company is looking to advance their anaerobic digestion systems to reduce environmental pollution and transform digester gas into a useable fuel for the wastewater plant. Anaerobic digestion is the stabilization of organic matter in raw sewage solids. Its ability to produce an alternative source of heat and electricity (biogas) is gaining global importance. This research focuses on the optimal anaerobic digestion conditions that maximize methane (biogas) production in batch pilot scale mesophilic and thermophilic anaerobic digesters. A digester design with effective heating methods and mixing mechanisms was implemented. Determination of optimal flow rate of wastewater to the digesters and characteristics of feed wastewater (BOD, COD, pH, TS) was undertaken using analytical methods outlined in the Standard Methods for the Examination of Water and Wastewater. Measurement of biogas production rates in mesophilic and thermophilic anaerobic digesters, maximum gas yield and biogas quality was determined using standard operating procedures. The bioreactors produced a final average volume of biogas (corrected to STP) and relative retention times: Mesophilic-2.04 x 10-3 m3 (21 days, 37 ± 10 C, pH 6.5 -7.2), Thermophilic-7.42 x 10-3 m3 (10 days, 55 ± 10 C, pH 6.5 -7.1). Biogas average production rates were: Mesophilic-1.41 x 10-5 m3 /day, Thermophilic- 4.08 x 10-4 m3 /day. Average percentage composition of biogas produced by thermophilic digester was CH4 66.6 vol. %, CO2 30.4 vol. % and other gases were assumed 3 vol. %.

KEY WORDS: Anaerobic, Digestion, Mesophilic, Thermophilic, Wastewater

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## Computational toxicology as an Early Safety Assessment Tool for Peroxisome Proliferator-Activated Receptor Induced Toxicity

Presenter's Name: Beatrice Efumba
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: DesseyAnn Julien, Terry-Elinor Reid, Xiang Simon

**Background:** A major concern for pharmaceutical industry and regulatory agencies is the propensity of drug candidates to elicit adverse drug reactions due to drug toxicity. The cost of bringing one drug to market spans millions of dollars and the financial burden to the pharmaceutical company if the drug fails clinical trials is even greater. Peroxisome Proliferator-Activated Receptors (PPAR's) is one of the targets associated with drug-induced toxicities such as reproductive toxicity and hepatotoxicity. The mechanism by which PPAR ligand-induced toxicity arises is complex and is yet to be elucidated. In vitro safety profiling is an informative means of identifying potential liabilities arising from drug toxicity. However, it is limited due to its small coverage of chemical space, is time consuming and costly. In silico approaches can accommodate these limitations and can be implemented early in parallel with lead optimization. Hence we direct our cheminformatic modeling efforts on building screening tools capable of accurately identifying potential PPAR agonists. Methods: We collected datasets of structurally diverse molecules with known agonist activity for PPAR's. Ensemble learning methods were incorporated to generate externally predictive QSAR models using advanced machine learning algorithms such as random forest (RF), genetic algorithm-k Nearest Neighbor (GA-kNN) and support vector machines (SVM). Results: The most predictive and robust models showed CCR> 0.70 or R 2 > 0.70. In addition, measures of performance including specificity, sensitivity and predictive accuracy supported our model evaluation. **Conclusion:** We have developed multiple cheminfomatic models capable of early identification of potential liabilities resulting from PPAR agonist-induced toxicities.

KEY WORDS: Computational, Toxicology, Cheminformatic, Modeling, PPAR

## Cellular Automata-based LED Canvas for Light Pattern Generation

Presenter's Name: Dhuel Fisher
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

A light canvas is conceptualized with an array of light emitting diodes (LEDs) on which patterns of lights are generated in such a way that the color of each LED in the array at each time step is automatically determined by the color states of its neighboring LEDs, and thus collectively, colorful light patterns result in the canvas. The idea for the autonomous control of each LED by its neighboring conditions in the array is based on a mathematical algorithm called cellular automata. This research reports the hardware implementation of a cellular automata-based LED canvas utilizing microprocessors and communication modems. Each LED module of the canvas is an integration of an LED, an Arduino, a popular microcontroller, and a direct-current (DC) power line modem with serial communication connectivity. For communication structure among the LED modules an in-house protocol is developed for a central controller to broadcast the initial conditions and a selected rule to all LED modules. This protocol is designed to allow each LED module to sequentially broadcast its color state to the entire LED modules of the canvas. Once color states of all LED modules are available to all LED modules, the rule is executed at all LED modules simultaneously. The same simple rule executed in all LED modules generates in the array level very beautiful light patterns on the light canvas, and they evolve to different patterns, which humans hardly guess would result from such a simple rule applied at the same place at the same time.

KEY WORDS: PLC LED Cellular Automata Pattern

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## The Effect of Thermal and Gas Exposure Effects on the Raman Spectroscopy of Gas Sensor Nanomaterials

Presenter's Name: Raul Garcia-Sanchez
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Daniel Casimir, Prabhakar Misra

Metal Oxide Gas Sensors are solid-state devices used for the detection of reducing and/or oxidizing gases through conductive measurements. Their advantages include low cost, easy production, large number of detectable gases, simplicity of use and compact size. In addition, they can be combined with graphitic nanomaterials such as carbon nanotubes to improve sensitivity. The purpose of this research is to find patterns for predicting material-gas combinations in metal oxide gas sensors through changes in the sensor's Raman Spectroscopy features. We have studied the behavior of these features under increased temperatures and exposures to NO/NO2 mixtures over different periods of time. The Raman Spectroscopy analysis was carried out on three different Tungsten Oxide (WO3) samples (nanowires, nanopowder, WO3 on silicon substrate) at 780 nm wavelength under temperatures of 30-160°C. In the thermal studies, we found that features such as 750 cm-1 for nanowires and 492 and 670 cm-1 for WO3 on Silicon substrate, appear to slowly fade as temperature increases. For gas exposure experiments, WO3 on Si, we have found that redshifts occur on the main Raman features and that, on prolonged exposure, some features do appear and the intensities of some peaks on the lower Raman shift range can overtake the main WO3 features. Understanding the effect of temperature and gas exposure on the Raman features of WO3 has helped extend our knowledge regarding the behavior of metal oxide-gas interactions for sensing applications.

KEY WORDS: nanomaterials; gas sensing; raman spectroscopy; metal oxides; computer modeling

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## Production of Biogas from Human and Kitchen Waste

Presenter's Name: Jasmine Gordon
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Creating biogas fuel from kitchen and human waste has the potential to be a viable and resourceful way for developing countries to sustain energy independence. Discovering the best ratio and combination of human and carbon and nitrogen rich kitchen waste to create biogas could lead to a shift from conventional energy to more biogas energy usage in a time when alternative fuels are becoming more popular and necessary. This experiment explored the production of biofuel from a 90% human waste and 10% kitchen waste input and what is the best ratio in providing a viable energy source. Fresh human and kitchen waste was collected and digested in an anaerobic biodigester for more than a month and biofuel in the form of methane formed. Further research can be done to determine the best ratio of carbon and nitrogen rich kitchen waste to optimize the formation of biofuel.

KEY WORDS: Biogas Ethiopia

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### Accelerating Ground Penetrating Radar Image Reconstruction using Graphics Processing Units

Presenter's Name: David Greene
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Ayotunde Odejayi

Background: A publication sponsored by the Cluster Munition Coalition revealed that approximately 4,200 people worldwide were killed by landmines in 2011 alone, 42% being children. Ground penetrating radar (GPR) is a viable and effective technology for locating landmines which are buried in the earth. Unfortunately, preexisting technology for processing collected GPR data takes minutes to image a small area of land, forcing clearing personnel to travel at ridiculously slow speeds. Methods: Graphics processing units (GPUs) are finding their way into more aspects of scientific computing every day. Whereas a normal processor can calculate one to six operations at a time, a GPU possesses the ability to process thousands of operations simultaneously. By breaking down the GPR image reconstruction problem into smaller pieces, a GPU can solve individual pixels of a final image at incredible rates. This final image can then be displayed to clearing personnel, informing them of what's buried ahead. Results: Using the Tesla C2075 GPU from NVidia, GPR image reconstruction by backprojection was accomplished in 150 milliseconds for an area of 240 squaremeters. Comparatively, a modern Intel hex-core processor took nearly 25 minutes to generate the same image. Conclusions: Our work at Howard University's Electromagnetic Imaging and Modelling Laboratory has brought GPR image reconstruction to real-time, allowing landmine clearing personnel to quickly map out concealed landmines and make the world a safer place.

KEY WORDS: GPU, radar, signal processing, image processing

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### The Effect of Adsorbed Gases on the Raman Image of Graphene

Presenter's Name: Gina Greenidge
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Joshua Halpern

The ability of graphene to function as a gas sensor for polar molecules has been widely investigated by monitoring the conductivity of graphene near the Dirac point. Here we demonstrate that Raman spectroscopy can also monitor the interaction of these molecules with graphene. Using a Raman microscope, we observe measureable changes in the width and position of the G peak upon exposure to water vapor, ammonia and nitrogen dioxide. The changes are reversible. Baking the material at 350 oC restores the graphene spectrum to its original state. We are investigating the effects of additional gases as well as the relationship of these shifts to the conductivity and the gas-graphene interaction.

KEY WORDS: graphene, Raman spectroscopy, gas adsorption,

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### Electronic and Thermal Properties of a Superconducting Flip Chip Package during Thermal cycling between 4K and 77K

Presenter's Name: Ferris Harvey
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Natasha Moore, Brandon Johnson, Narcrisha Norman

In recent years, the demand for greater computing speed and memory storage has fueled the field of superconductive computing. Superconductive materials must allow the electronic resistance of its electronic packaging to be approximately equal to zero to maximize computer processing speeds. In such systems, to maintain package integrity, it is pertinent that the thermal properties of the various components of the chip maintain their desired relationship to one another throughout various thermal cycling processes. For this research a superconducting flip chip was developed using a preliminary analysis of the thermal and electrical properties of substrate materials such as Sapphire, Germanium, and Tungsten. The purpose of this work was to demonstrate the ability of a select electronic package to perform at a 4K operating temperature and to endure limited thermal cycling between 4K and 77K. Theoretical and qualitative analysis supported the conclusion that an electronic package whose chip is supported by a Sapphire (Al2O3) Substrate whose electronic passage includes a Silicon Nitride (SiN2) backplane shown optimal results for a desired thermal conductivity, electrical resistivity, dielectric constant, dielectric loss and thermal expansion of the flip chip package.

KEY WORDS: Cryogenics, Micro-Chip, Property Analysis, Superconductivity, Electronic Package

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### Antimicrobial and Cytotoxicity study of Silver Chloride/Poly (3-hydroxylbutyrate-co-3-hydroxylvalerate) (AgCl/PHBV) Film: A Potential Scaffold for Bone Tissue Regeneration

Presenter's Name: Marai Hayes
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Rotimi Bakare, Lauren Wells, Negene McLennon, Manisha Singh, John Stubbs III, Dharmaraj Raghavan

Currently, there is a major need to design a scaffold that can prevent biofilm formation while sustaining bone tissue regeneration. AgCl/PHBV composite film was prepared from NaCl/PHBV film by an ion exchange reaction. Studies were conducted to optimize the AgCl content in the PHBV film via washing as well as the soak times of films in varying concentrations of AgNO3. The composite film was acid digested and assayed for ion content by Atomic Absorption Spectrometry (AAS). The release of Ag+ ions in aqueous solution from AgCl/PHBV film as a function of time was also studied. The antibacterial efficacy of AgCl/PHBV film against Escherichia coli, Staphylococcus aureus, and Pseudomonas aeruginosa was evaluated by standard microbiological assay, while cytotoxicity of the scaffolds towards MCTC3-E1 cells was determined by MTS assay. Clear zones of inhibition around AgCl/PHBV film were noticed on a modified Kirby-Bauer disk diffusion assay. Colony forming unit measurements showed that AgCl/PHBV composite film has broad bactericidal activity with strong inhibition towards P. aeruginosa, followed by E. coli and S. aureus. Further studies are underway to investigate AgCl/PHBV film / osteoblast biocompatibility. These studies provide a novel approach to formulate scaffold with enhanced antimicrobial activity while exhibiting limited or no cytotoxicity towards bone cells.

KEY WORDS: PHBV, silver chloride, cytotoxicity, bacterial inhibition

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### Securing through SQL

Presenter's Name: Brionna Huskey
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Sibongile Toure, Eden-Cherith Clements

This study aimed to investigate possible cyber security solutions for the software company ROPARDO SRL. We hypothesized that the implementation of AES-128 and AES-256 encryption methods would be able to protect the data of the company's mobile health application. In turn, we encrypted value tables composed of SQL data through a program called pgAdmin III. This type of software was selected because the given database, dubbed mywear, was compatible with it. Factors such as execution time based on unencrypted values and encryption types were considered to gain a more thorough understanding of how effective and efficiently the information could be secured. An evaluation of this caliber was necessary in order to determine what type of larger scale cyber security program ROPARDO would need to invest in. This experimental process composed of two main parts: encrypting the given values tables in the data integration platform within, and brainstorming possible data security solutions based on those results. Consequently, we were unable to encrypt all of the data due to the overwhelming amount of md5 hash codes in the mywear database since we lacked the sufficient encryption software to do so. Therefore, no conclusive results were generated.

KEY WORDS: security, computer science, SHA, AES, encryption

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### Analysis of Thermal Relaxation Phenomena in Magnetic Multi-layer Materials and Potential Applications to Landmine Detection

Presenter's Name: Ayobami Idubor
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Dr. Mihai Dimian

Background: This paper aims to determine the impacts of magnetic properties in multi-layer materials so as to better understand its effects on metal detectors and in particular how it may affect clearance of landmines. Ground Penetrating Radar (GPR) devices employ electromagnetic techniques but its effectiveness for landmine detection can be influenced by the magnetic and electrical properties of soil and landmine. Methods: Thermal relaxation are induced by various factors and affected by thermal, acoustic, and electromagnetic noises. Bearing in mind some limitations of landmine detection techniques, it becomes important to address areas where consideration can be given to the effect of soil properties on the landmine detection. To achieve this, HysterSoft software is used for implementation of the objective of this paper after a careful selection of a suitable model of study. Results: Simulation results from the selected Preisach model shows that the effect of thermal relaxation is to erase the history of the system by bringing it to a new, nondeterministic state. Also

the irreversible and reversible components of the effective Preisach distribution depend on the holding value of the input but are not dependent on the history of the hysteretic system. Conclusion: Thermal relaxation can be used for magnetic multi-layer materials application to landmine detection.

KEY WORDS: Thermal Relaxation, Magnetic Multi-layer Materials, and Landmine Detection

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**Graphene Oxide - Functionalized Polyethersulfone Membrane to Mitigate Organic Fouling during Water Treatment** Presenter's Name: Efosa Igbinigun
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Yaolin Liu, Malaisammy Ramamoorthy, Kimberly Jones, and Vernon Morris

Polymeric ultra-filtration (UF) membranes experience organic fouling during water and wastewater treatment applications, causing high operational costs and low flux. The aim of this study was to fabricate a UF nano-composite membrane with improved organic fouling resistance and pure water flux recovery during water treatment. The fabrication involves a three-step surface modification of polyethersulfone (PES) membrane by covalently attaching single layered graphene oxide (GO) nanosheets. Amine functional groups were first grafted onto PES membrane surface by UV-induced graft co-polymerization in the presence of allylamine monomer. Sequentially, solutions of trimesoyl chloride TMC (0.2wt.% in hexane) and GO nanosheets ( 4wt.% in 7:3 mixture of water and ethanol) were spun onto the PES-polyallylamine modified membrane surface, to allow the covalent coupling take place between TMC and amine functionalized PES, as well as the oxygenic functional groups of GO. The resulting nanocomposite membrane possesses typical ultra-filtration membrane properties in terms of molecular weight cut off (MWCO) and pure water flux. During filtration of humic acid, the GO nano-composite membrane showed better organic fouling resistance and higher pure water flux recovery after hydraulic cleaning compared to an unmodified control ultrafiltration membrane. The surface modification was confirmed by Fourier transform (FT-IR) spectroscopy and x-ray photoelectron spectroscopy (XPS), and the modified membrane morphology was characterized by Scanning Electron Microscopy (SEM) and Atomic Force Microscopy (AFM).

KEY WORDS: Graphene oxide, Polyethersulfone, Ultra-filtration membrane, Modification, Fouling

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**The Role of Subchondral Bone in the Progression of Load-Induced Osteoarthritis**
Presenter's Name: Kendra Jones
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Olufunmilayo O. Adebayo (Cornell University), Dr. Frank C. Ko (Cornell University), Dr. Steven R. Goldring (Hospital for Special Surgery), Dr. Timothy M. Wright (Hospital for Special Surgery), Dr. Mary B. Goldring (Hospital for Special Surgery), Dr. Marjo

Osteoarthritis (OA) is a disease that causes deterioration of cartilage in the joints. This debilitating disease affects over 26 million people in the US alone. Clinical evidence indicates that OA affects both cartilage and bone; however, the exact role of bone in the progression of the disease is unknown. This study aimed to understand the role of bone remodeling in the initiation and progression of osteoarthritis using a non-invasive loading model. We hypothesized that inhibiting bone remodeling, would prevent cartilage changes contributing to the development of OA. To develop OA, the left tibias of 26-week old male mice were subjected to cyclical 9N loading over 1, 2 and 6 weeks using a non-invasive joint compression model. Right limbs served as internal controls. Mice were treated either with alendronate, a bisphosphonate known to slow bone remodeling, or a vehicle drug as a control. After euthanasia, left and right tibiae were retrieved and scanned using MicroCT. Groups were compared using a multi-factor, repeated-measures ANOVA. Results demonstrated that at 6 weeks, bone volume fraction was not different between loaded and control limbs in both alendronate and vehicle-treated groups. However, loading increased trabecular thickness in both treatment groups, and reduced tissue mineral density after 6 weeks. Results confirmed that alendronate inhibited bone remodeling, as indicated with the lack of change in bone volume fraction with loading. Further analyses will focus on examining cartilage changes in this experiment to determine the role of bone remodeling on the progression of OA.

KEY WORDS: biomedical, engineering, osteoarthritis, cartilage, bisphosphonate

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### Fixing Gender Translation Errors in Devanagari Script

Presenter's Name: Bisola Kamara
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Prashant Thapa

The overarching goal of our research is to improve machine translation (MT) for Devanagari script. Devanagari is a syllabic alphabet in that consists of consonants with vowel signs. It is used for several major Indian languages including Hindi, Sanskrit, Konkani, Marathi, Nepali, Sindhi, Sherpa, and others, but it is only one of many scripts used in India. . We have analyzed a major MT system, Google Translate, which uses Statistical Machine Translation (SMT). We've observed that Google Translate automatically gives subjects and verbs the male gender. Our approach is to fix the errors by creating a post processor that will identify the subject and verb and their respective genders, and determine if the genders match. If they do not, it will correct the verb's gender to match with the subject. The eventual goal is to create an intermediate processor for open-source translators so that it can check the gender verb agreement before producing a final translation.

KEY WORDS: gender, translation, devangari, translator,

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### Impacts of Nanomaterials on Bacterial Growth, Biofilm Formation, and Microbial Community Function

Presenter's Name: Yaolin Liu
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Patrick Ymele-leki, Kimberly Jones

Studying the interaction between nanoparticles and microbes along with their effects on biofilm formation and function allows us to gain a mechanistic understanding of the toxicity effects of the nanomaterials on the natural ecosystem. In this study, a combined microscopic and biochemical method is employed to study the bacterial behavior in controlled lab conditions and in mesocosm water upon exposure to a variety of nanomaterials known to have cytotoxic effects. The research involves three major tasks. The first task is to evaluate the impacts of nanomaterials on bacterial growth in an aquatic environment. The second task involves the examination of long-term biofilm formation. The third task is to investigate the major biofilm functions. The results from this study will provide critical knowledge on the design of engineered nanomaterials and insight for effective regulations for safe disposal of nanomaterials.

KEY WORDS: nano impacts, biofilm, graphene oxide, toxicity, antimicrobial

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### Benchmarking Local vs. Remote AES -128 Encrypted Databases

Presenter's Name: Magdalene McArthur
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Ivy Coggins, Elise Blackmon, Derrick McElwee

In 2001 AES (Advanced Encryption Standard) became the National Institute of Standards and Technology (NIST) standard of Encryption. AES has since been used to encrypt classified information for the US government, corporations, and health facilities. In this study, the AES – 128 bit standard of encryption was used to encrypt a Romanian health database "myhealth'. Benchmarking queries were then utilized to determine the difference in latency between a local and remote copy of the databases. The study found that in most cases the latency results for the local database were considerably smaller than the results for the remote database. Future studies could investigate how the separate database management systems used played a role in the latency results.

KEY WORDS: AES Encryption Database Benchmarking Computer

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### A Combination of Clustering Algorithms in Maximizing the Lifespan of Distributed Wireless Sensors

Presenter's Name: Derssie Mebratu
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Charles Kim

Increasing the lifespan of a group of distributed wireless sensors is one of the major challenging in today's research arena especially for wireless sensor nodes deploy in a harsh environment due to their impossibility of replacement or recharge of their batteries. In order to increase the lifespan of wireless sensor nodes, a popular low-energy adaptive clustering hierarchy (LEACH) algorithm uses the

"computation and communication energy model". However, we found that a combination of a few clustering algorithms could perform better than the LEACH algorithm. The clustering algorithms considered in the combination include: gap statistics, *k* -means, and *k* - means++. They are selectively used in the following manner: the gap statistics for selecting the optimal cluster number of a distributed wireless sensor network; the k - means for computing the optimal center of clusters; and the *k*-means++ for seeding the initial center for *k* -means algorithm. Our simulation shows that the clustering combination approach increases the lifespan of wireless sensor nodes by 15% compared with the LEACH algorithm. This research reports the details of the clustering algorithms we select in the clustering combination approach and the simulation methods for performance comparison.

KEY WORDS: Wireless sensor, clusters, lifespan, power, gap statistics

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**Characterizing Polyethylenimine Polymer Dynamics As A Ph Buffer For Its Use As Dna Aggregating Agent**

Presenter's Name: Danielle Miller
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Preethi Chandran

In recent years Polyethylenimine (PEI), a positively charged polymer, has gained much attention for its use as a DNA complexing agent. The PEI charge comes from the protonation of tertiary amine groups on its backbone. Since about 50% of the amines are still protonable at physiological pH, the polymer can act like a buffering agent. This buffering property protects the DNA-PEI complex in the acidic environment of cell-uptake vesicles. From a polymer biophysics perspective, PEI is a hydrophobic, semi-flexible, weak-base polyelectrolyte; it remains in equilibrium with an aggregated phase and the free polymer dynamics is governed by competing intra-and inter-chain charge repulsion. Our goal is to examine the role of PEI polymer biophysics in its biologically-important function as a pH buffering agent. Using Dynamic Light Scattering, the change in the PEI backbone elongation and its aggregation state was visualized as a function of H+ addition to the backbone. Separate concentration regimes will be examined for intra- and inter-chain charge repulsion.

KEY WORDS: Polyethylenimine Dynamics As Ph Buffer

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**Bridging Research and Education for Research STEM: Residential Precollege for Engineering Systems at the Center for Energy System and Control**

Presenter's Name: James Momoh
Classification: Senior Faculty
*Presentation Type: Poster Presentation*

Coauthors: James Momoh, Peter Bofah

Several pre-college programs in the field of engineering exist in the country to introduce 11-12 grade student to a career in STEM. The implementation of the program objectives is to attract, retain student's interest and promote STEM education. Hands-on exercises and field trips usually dominate the foundation of such programs. The projects are also very limited due to the background of the participants, the available resources and environment. To improve the existing exercises/programs, a new innovative program was proposed by the Center for Energy System and Control (CESAC) research team. The emphasis of the (Pre-College for Engineering Systems) PCES Program is to introduce students to the fundaments of core systems and engineering courses: systems and electrical engineering, mathematics, physics, chemistry, network analysis energy system, communication, Artificial Intelligence (AI) and sustainability concepts. Courses are taught with research based case studies to prepare students in the program to undertake minor/ major research projects which utilizes the concepts covered in the course in a just in time manner. Thus, bridging research with STEM courses taken within the 5 weeks program. Mentors and research experience for undergraduate students (REUs) from undergraduate programs in engineering, chemistry, mathematics and physics working with PCES students helps to ensure that the research projects are successfully done. The students are highly motivated and from STEM oriented and non-STEM-academies in the Washington Metropolitan area (DMV) and other states in the US and Nigeria. The research projects preformed uses methodology to answer the why question. Samples of projects include load management using renewable energy, systems control, and use of inverter for converting (direct current) DC to (alternative current) AC sources, fault detection and control of electronic boxes, application of artificial intelligence to disease diagnostics and control, as well as, career selection.

KEY WORDS: STEM, pre-college, engineering system, undergraduate student, education

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### Proper-Time Model for the Hydrogen Atom

Presenter's Name: Trey Morris
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Truth and reality are elusive constructs in science and engineering. All one can hope to ever garner is a reasonable model that, for a small but important set of cases, offers a good approximation to the physical system under study. Einstein's ability to provide model that provides an improvement in the prediction of Mercury's orbit along with a few other successes led to its general acceptance as an improvement for Newtonian approach. In the same vein, engineers and scientist are continually searching for better models, which are used to improve our understanding of basic physical processes. In this regard, the Dirac equation of quantum mechanics has been instrumental in our understanding and development of devices, such as the transistor; as well as, advances in quantum electronics, quantum optics and material science. Recently, we have found an improvement to this equation by choosing the local clock (propertime) of the system being studied instead of the observer's clock. This has led to a new Hamiltonian mechanics for the study of atomic systems. As our first test of this model, we have calculated the well-studied energy levels of a Hydrogen atom. A comparison of our values with those computed from the Dirac Equation shows that the new model offers a consistent improvement. It is hoped that this new model will offer us additional understanding of the fundamentally quantum processes and their application to more complex atomic systems.

KEY WORDS: nanotechnology, quantum electrodynamics, materials science

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### Effects of Growth Variables on Hot-Filament CVD Diamond Properties

Presenter's Name: Bokani Mtengi
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Gary L. Harris, James A. Griffin

The many existing and potential applications of diamond thin films have created research opportunities directed towards the understanding and optimization of diamond synthesis by chemical vapor deposition. Due to its favorable properties, extreme hardness, wide band gap and highest thermal conductivity, chemically inert, diamond is expected to be an excellent material for various device applications. The molecular properties and surface morphology of undoped and in situ nitrogen doped polycrystalline diamond films deposited by hot filament chemical vapor deposition are investigated with various spectroscopic techniques. Different growth variables will be investigated and their effects on the diamond film properties will be analyzed. Growth variables such as, distance between filament and substrate holder, the methane, and hydrogen, gases flow rates, the H2/CH4 ratio, substrate growth temperature, the filament temperature, growth time and process pressure, growth termination procedures, doping profiles are examined, and optimized. Raman spectroscopy will be used to give insights into the relative sp2 /sp3 bonding configurations, the residual strain and the crystalline quality. The scanning electron microscopy (SEM) will be employed to observe and determine the grain size and morphology. In-situ growth monitoring will be carried out using the laser reflectance interferometer (LRI) tool, which provides data for thickness, growth rate measurements and guidance for nitrogen doping. The nitrogen-doped samples will be analyzed using the confocal optical microscope to measure their spin-dependent photoluminescence intensity (IPL). Electrical properties of the undoped diamond films will be deduced from the current-voltage characteristics and the Hall effects measurement for resistivity and mobility.

KEY WORDS: Polycrystalline, Chemical Vapor Diamond, Nanodiamonds, Raman Spectroscopy, Scanning Electron Microscopy

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### The Hidden Russia

Presenter's Name: Tabia Muhammad
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

There are many parts of Russia that have yet to be discovered. Lake Vostok is one part of Russia that has not been touched for millions of years. Extending 143 miles long and 31 miles wide, Lake Vostok is the largest of Antarctica's sub glacial lakes. Within this lake remains hidden many solutions to the world's problems and discoveries yet unknown to man. One issue that we face globally is the lack of water. Out of all the water present on this globe, only three percent is fresh-water. Water purifiers have not been very popular over the past few decades. Therefore, clean water is not as accessible as it once was. In addition, many of our fresh-water sources have been poisoned by irresponsible companies and individuals, resulting in less clean water. Lake Vostok may solve the lack

of water on a global scale. Some have already touched the surface of this mysterious lake. Lake Vostok will change the way we view life and science. Certain qualities of this lake we have never seen before on earth. For example, in 1990 microbes were found in the water of the ice above the lake. This finding suggest that there are various life forms in this isolated water mass. Lake Vostok is below the freezing point, yet it remains liquid because of the pressure. However, how do the possible life forms flourish? How does the difference in pressure change forms of matter? What does the discovery of this lake mean for us?

KEY WORDS: Physics, Russia, Water source, Drill, Unseen

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### Growth of graphene on different substrates

Presenter's Name: Mpho Musengua
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Gary Harris, Crawford Taylor, James Griffin

Graphene is a two dimensional, one atom thick allotrope of carbon derived from natural graphite; it holds the potential to bring about a new era in material science. Importantly, graphene and its derivatives have been explored in a wide range of applications, such as electronic and photonic devices, clean energy, and sensors. The greatest challenge to commercializing graphene is being able to produce high quality material, on a large scale at a low cost and in a consistent reproductive manner. Past methods of graphene preparation such as exfoliation are efficient for lab purposes, but are not suited for mass production. With applications in mind, suitable substrates and methods for large quality graphene growth are necessary. This project focused on how various substrates affect graphene growth and which methods of graphene growth are suitable for different substrates. Graphene was grown by the following methods: simple chemical vapor deposition (CVD) and radio-frequency plasma CVD. Both methods were then modified to make them have a copper rich environment in order to improve the overall epitaxial growth method of graphene growth, by forming graphene directly onto the desired substrate. The modified systems promote the nucleation of graphene on the nonmetallic substrate. This helps to eliminate the transfer process, which is usually tedious and might bring impurities. Raman results have confirmed graphene on nickel evaporated on silicon dioxide. Raman results to verify graphene on the other substrates are ongoing.

KEY WORDS: Graphene, 2D materials, Chemical Vapor Deposition, Synthesis, Raman Analysis

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### Investigating 4.2K Cooling Approaches for 100W Load & Develop 4.2K/77K Dewar Design Concept

Presenter's Name: Narcrisha Norman
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Dr. Sonya Smith

This paper investigates Dewar configuration as an approach to maximizing the cooling of heat loads in 4.2K/77K Dewar's. Six variations in configuration are studied. Variants such as immersion versus conductive isolation, configuration, shape, closure size and insulation as they affect heat flow is discussed. Variation in configuration emphasizes the location of 4.2K with respect to 77K and 77K/4.2K with respect to the systems closure. An analysis of thermal isolation in each of the six design variations, considered both multi-layer insulation (MLI) and powder insulation. A summary and comparison of the six systems with Helium (He) as a cryogen for use at 4.2K and without He is discussed. A feasibility study based on cost and input power was conducted.

KEY WORDS: Cryogenics, Dewar, Cryogen, Helium, Insulation

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### MM-Based Algorithms for Landmine and IEDs Reconstruction Using Step-Frequency GPR Data

Presenter's Name: Henry Ogworonjo
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: John Anderson

Background: As long as improvised explosive devices (IEDs) remain one of the most accessible weapons available to terrorists, causing damage to critical infrastructure and inflicting casualties, cutting edge research aimed at developing mitigating technologies must progress. While several landmine and IED detection techniques are in existence, the U.S Army Research Laboratory (ARL) has favored the use of ultra-wide band (UWB) ground penetrating radar (GPR). However, a major setback of UWB GPR systems is the difficulty to transmit a signal with arbitrary bandwidth and shape. Method:

In this work, we investigate the step-frequency radar, which has been proposed by the radar community as a way to achieve precise control of bandwidth and spectral shape. We study the transmission and acquisition scheme of step-frequency radar, as well as the tradeoffs introduced. Finally, we develop a set of majorize-minimize (MM) based algorithms, using both the maximum a posteriori (MAP) and the regularized least-squares estimation methods that can be used to reconstruct GPR images from step-frequency radar data. Results: We apply our MM-based algorithms on simulated data generated from an available model of the step-frequency GPR data. The developed algorithm is able to provide sparse images on which detection can be carried out. Conclusion: Although in an infant stage, the step-frequency radar promises to address the challenges of the UWB GPR systems. The initial results obtained using our proposed algorithm are promising.

KEY WORDS: step-frequency, GPR, majorize-minimize, MAP, least-squares,

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## Evaluation of Path-tracking Algorithms for Autonomous Vehicles

Presenter's Name: Daniel Okegbu
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

The future of autonomous vehicle today is more promising than ever before. The high demands for robotic machines to perform tasks that are beyond human capability have attracted interest in the development of path tracking algorithms. An understanding of the mechanism in a path-tracking algorithm can be applied to applications such as defense, aerospace, undersea and biomimetic mobility. In this study, kinematic models were developed with MATLAB Simulink® to simulate the characteristics of "follow-the carrot" and "pure pursuit" algorithm. These two algorithms necessitate the navigation of an autonomous vehicle. Controllable variables such as distance, velocity and steering wheel angle for both algorithms were examined to better understand the characteristic behaviors of each algorithm. The algorithms account for the vehicle's geometrical shape and nonholonomic constraints, but do not account for external disturbance. The result of this study shows that at an elevated angle, the "follow-the-carrot" method reached a target point quicker than the "pure pursuit". However, "follow-the-carrot" method falls into a continuous circulation when it has to reach a shorter target point. The "pure pursuit" method applies a calculation of an arc's curvature to the steering wheel angle of the vehicle, which guaranteed that the vehicle would reach its target point even at a shorter distance.

KEY WORDS: Autonomous Vehicle, Path-tracking algorithms

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## Ozone Climatology

Presenter's Name: Kafayat Olayinka
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Mayra Oyola, Ricardo Sakai

Climatology of stratospheric and tropospheric ozone is derived from the soundings recorded between 2006-2014 at the Howard University Beltsville research campus (39.0375, -76.917778). Ozone is one of the major gaseous constituents of the atmosphere. The bad ozone is the man-made ozone which produces an air pollutants from automobile emissions and manufacturing operations when interact with sunlight. While the good ozone protect us from the UV radiation from the sunlight. In this research, the mean profile is calculated for each year; the comparison of yearly profile will be analyzed. Also, the contour plots of these soundings will be done to understand the pattern of ozone in the atmosphere with respect to height vs. time. This might enable us to understand the formation of either good or bad ozone in the atmosphere. The result might be useful for climate and validating air quality model and as a priori climatology for satellite data retrievals. We will also compare ozone profile from other locations and validate the geophysical data assimilation.

KEY WORDS: Ozone, Relative Hunidity, Wind Speed, Air Quality, Weather Forcast

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## A Wind Power Prediction Model

Presenter's Name: Roshil Paudyal
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Wind power accounts for a relatively small percentage of energy in the US distribution grid despite the fact that it constitutes one of the most promising sources of clean and renewable energy. When the percentage of wind energy in the grid is negligible, control room operators can schedule these resources without facing any serious issues. However, the percentage of wind energy usage within the grid has been steadily increasing, and

there is now a pressing need for more accurate forecasts of wind power production, which can then be exploited to make better informed scheduling decisions. The integration of wind energy in the power grid is a very difficult task because of its intermittent nature. One of the main challenges is the lack of predictability of the amount of power from wind turbines. This increases the spinning reserve requirements and unanticipated ramp events, causing elevated production costs and decreased reliability. In this work, we seek to address these problems by building a machine learning based wind power prediction model that uses multiple regression techniques. Our goal is to adequately predict the amount of wind energy produced at a given site using weather information from several meteorological stations in surrounding areas. The model is trained using several years of wind power and weather data. Current methods yield promising results, predicting the scale of power generation with up to 80% accuracy. We continue to look for even better approaches to optimize our results.

KEY WORDS: Wind power, Machine learning, Prediction, Data, Energy

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### Detecting Social Structure from Conversations can be Fuzzy

Presenter's Name: French Pope
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Rouzbeh Asghari Shirvani, Mohamed Chouikha

The idea of learning about social structure by studying conversations has gained increased interest in recent years. Due to the increased usage of social media, blogs, and other public forums, many companies and intelligence agencies would like to know how to analyze conversations to determine things like group membership and status hierarchies within groups. In this study we approached social structure analysis using Fuzzy logic. Fuzzy logic is a reasoning method that uses multiple features to determine meaning in an imprecise environment and hence it is well suited to the imprecise nature of human social relations. The data we used for our study was transcripts of the HBO TV show The Wire. Our task was to correctly classify group membership based on the linguistic features in the conversation. By assigning weights to conversation features we were able to set up a fuzzy logic relations which proved to be an effective way of moving from qualitative space to quantitative space and allowing us to measure the distance between any two characters. Using this distance measure we were able to classify all 14 of the main characters correctly into the 3 main groups to which they belonged.

KEY WORDS: Fuzzy Logic, Social Structure, Social Media, Group Classification, Feature Extraction

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### Fouling Control Strategies in Cross-Flow Microfiltration of Soluble Inorganics during Nuclear Waste Treatment

Presenter's Name: Malaisamy Ramamoorthy
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Ryane Rollock, Yaolin Liu, Kimberly Jones

High-level radioactive waste (HLW) generated at nuclear waste sites is comprised of several water-soluble non-radioactive inorganic compounds. Extracting these non-radioactive compounds would reduce the volume of the waste and make the storage and disposal much easier. Though membrane separation is an efficient separation tool, it has the problem of inorganic fouling and scaling. In this study, we addressed the problem by 1) introducing powdered activated carbon (PAC) in the feed in order to disrupt the surface cake later and 2) employing periodic in-situ hydraulic cleaning of the membrane surface. We used three model inorganic components often found in the HLW: boehmite, gibbsite and goethite. These compounds were independently and as a mixture fed at a concentration of 0.1wt%. The steady state normalized flux (J/Jo) values for boehmite was 0.4, for gibbsite it was 0.1, and for goethite it was 0.05 after 2 hrs of filtration. While the addition of PAC (5mg/L) was able to restore the flux by 96% and 88% for boehmite and gibbsite respectively, the recovery was only 44% for the goethite fouled membrane. With periodic cleaning for 10 minutes, the flux recovered significantly for boehmite and gibbsite, but not for gibbsite or the mixture. However, the combination of periodic cleaning and PAC addition was able to restore the flux of the mixture to 70% even after 10 run cycles. The particle size distribution studies indicate that the polydisperse nature of the goethite particles could lead to increased aggregation and fouling.

KEY WORDS: Inorganic fouling, microfiltration, nuclear waste, membrane separation, membrane scaling

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## Improving Music Encoding and Symbolic Representation

Presenter's Name: James Samotshozo
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Qamar Muhaimin

As a tool for music composition MIDI was the standard, but it has become less relevant for composers. One of the major problems with MIDI is that it cannot effectively represent a musical score. MusicXML was made to facilitate the transfer of scores between composers; unfortunately the interpretation is not standardized. When opened with different composing software the XML can be interpreted differently, which can result in loss of notes and their attributes from the score sheet. LilyPond is a freeware music engraving software that offers consistent interpretation and represents quality scores. In addition, this text-based software can convert MIDI files to their native format. For our research, we have developed two converters. Our first converter reads in a MusicXML file and parses its components for individual conversion. It converts encoded header, footer, and key components of the score to their LilyPond equivalents. The converter reads each note taking into account its pitch, duration, octave, type and other attributes. It then compiles the converted pieces together and exports them into an executable LilyPond file. When exporting a MusicXML file to MIDI some musical information can be lost or changed. Notes can be split into smaller tied notes or tempo can be lost. These changes to the score can change how the graphical score looks and how the music sounds when played. Our second converter works to fix these changes, including searching for two tied notes to convert to one note twice the length, and storing the tempo in MIDI metadata.

KEY WORDS: Music, Encoding, Converter, Computer Science, Music Composition

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## Paper Micro-Electro-Mechanical-Systems

Presenter's Name: Alexis Shepherd
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: William Rose PhD, Garry Harris PhD

Micro-Electro-Mechanical-Systems (MEMS), are miniature, integrated mechanical and electrical devices that are designed on a micro-scale, and constructed using micro-fabrication technology. Due to the cost effectiveness and relative ease of production, the Howard University Nanoscale Facility (HNF) has been exploring the use of paper as an alternative substrate for the development of various MEMS. Presently, HNF has developed paper devices for various MEMS applications including: an accelerometer, a microphone, and a micro-fluidic lab-on-a-chip device. Paper, instead of the traditional substrates such as silicon, allow for easier and cheaper production and disposal. The accelerometer and the microphone are both made from paper and the piezoelectric material. These devices exploit the relationship between force and capacitance/resistance in piezoelectric materials. The capacitance changes resulting from applied forces to the accelerometer were converted to voltage using an application specific integrated circuit. The force due to the sound waves on the paper microphone used the change in resistance to facilitate the modulation of current in a similar way to the moving coil in a magnetic field in a conventional microphone. The micro-fluidic lab-on-a-chip is made from chromatography paper and heated hydrophobic wax ink. The hydrophobic wax ink forms transport channels for the fluids, preventing contamination and controlling the flow to the proper site. The transport of the test fluid utilizes the strong wicking capabilities of the chromatographic paper, to deliver the biological fluid to the testing zone. This allows for multiple tests to occur quickly and simultaneously using extremely small amounts of fluid.

KEY WORDS: Micro-fluidics, micro-scale, cheap substrates, paper substrates, Micro-Electro-Mechanical-Systems (MEMS)

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## Role of high-order hydrodynamic interaction of semiflexible filament dynamics

Presenter's Name: Jyothirmai Simhadri
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Jyothirmai J. Simhadri, Preethi L. Chandran

Biopolymers like collagen, actin, microtubules, and aggrecan play a structural role in cells and tissues. They are considered semiflexible polymers because their bending stiffness is on the order of, and resists, the Brownian forces that randomize their conformation. The study of the collective dynamics of semiflexible assemblies has come to prominence because it underlies the physics of force-transmission and mechanotransduction in cells and tissues. We had previously proposed modeling a semiflexible filament as a string of beams that bend continuously under Brownian forces (Chandran et al, 2009). This idealization not only captures the high-order nonlinear bending of the filament, but it does so at reduced computational cost compared to current string-of-beads

idealizations. We had also proposed solving the relative solvent velocity along the filament as an implicit variable; which is equivalent to including several orders of hydrodynamic interaction and solvent-back reflection in the polymer dynamics (Chandran et al, 2010). In this presentation we compare the predictions of the string-of-beams model with implicit hydrodynamics against that of string-of-beads approaches for new insight on semiflexible polymer dynamics that is produced by the higher-order bending and interaction terms.

KEY WORDS: Semiflexible, mechanics, biopolymers, Brownian Dynamics, Hydrodynamic

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## Construction of a Confocal Fluorescence Microscope to Image Nitrogen Vacancy Centers

Presenter's Name: Jordan Stroman
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: James Griffin, Gary Harris

Long term atomic memory can be achieved using nitrogen vacancy centers (NV). Howard University is optimizing the process of creating nitrogen vacancy centers using hot filament chemical vapor deposition (HFCVD). In order to provide reliable feedback concerning the presence, concentration, and orientation of these color centers, an optical system capable of performing confocal laser scanning fluorescence microscopy has been constructed. This system consists of a 200mw laser that emits light with a wavelength of 532nm. This light is focused on a sample using a Nikon Oil Objective Lens with a numerical aperture of 1.3. The sample rest on a piezoelectric stage with a resolution of 20nm in the x, y and z direction. This optical system can confirm and locate NV centers with a resolution of 200nm.

KEY WORDS: NV Centers; Fluorescence Microscopy; Quantum Memory; Image Processing

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## Using Crowd Simulation to Suggest Efficient Evacuation in Emergency Situation

Presenter's Name: Roshan Thapaliya
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Brian Ricks
Effective preparation for evacuation can save lives in the panic following a disaster at a stadium. However, it is difficult for stadium security to know beforehand where to invest their resources to prepare for such an event. To help security directors answer these types of question, we built an evacuation simulation. We started by gathering data from the deadly 1985 evacuation at the Bradford City stadium fire. Using our analysis, we created a simulation of patron movement during a rapidly spreading fire. We studied the effect of a hypothetical stadium's preparation by varying factors such as speed of evacuation, speed at which patrons surmount barriers, fire growth rate, and the position of the barriers. We then analyzed how these factors affected the survival rates of patrons. Our result suggest that preparing patrons to choose appropriate exits and creating an environment where they can move quickly most dramatically increased survival rates.

KEY WORDS: stadium security, disaster prevention, survival rates of patrons

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## Biotransformation and Bioaccumulation of Polychlorinated Biphenyls (PCBs) in Earthworms in Vermicompost Bioreactors

Presenter's Name: Moses Ukaoma
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: John P. Tharakan, Ph.D.

In this study, the biotransformative capability of Eisenia foetida and Eisenia hortensis earthworms in the bioremediation and bio-treatment of polychlorinated biphenyl (PCB) contaminated media was investigated. This is important in the larger picture of addressing the environmental pollution caused by PCBs. Several studies have shown that the destructive effects of PCBs continue to persist in soils and sediments, especially at their original dumping sites. In spite of PCB production having been banned for almost forty years, the damaging effects remain. Previous work in our lab demonstrated the biotransformative capability of Eisenia foetida in the treatment of PCB-contaminated sediments

using vermicompost bioreactors, where we demonstrated that the reduction of PCB's comprised both bioaccumulation of PCBs in the earthworm biomass as well as biotransformation of the PCBs bioaccumulated in the earthworm biomass. In the present study, we focus on trying to understand how and where in the earthworm this PCB biotransformation occurs. We also investigate the biotransformation capabilities of a second earthworm species, E. hortensis. E. hortensis and E. foetida earthworms were exposed to different levels of PCBs in different vermicompost bioreactors. The level of PCB and total biomass was monitored and measured over time for all vermicompost bioreactors. The effects of supplemental food addition on PCB removal and earthworm viability were also assessed by feeding earthworms in one set of samples, while not in the other. The results of the study were analyzed by gas chromatography (GC), which demonstrated that bioaccumulation and biodegradation of PCBs was likely occurring simultaneously in the earthworms. Up to 58 % reduction in total PCB was observed in the vermicompost bioreactors. The data also showed that about 56 % of the PCBs present in the Eisenia hortensis earthworms' biomass was bioaccumulated in the distal section of their body.

KEY WORDS: PCB, Earthworms, Biotransformation, Bioaccumulation, Bioremediation

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### Combined optical solitons in nonlinear metamaterials

Presenter's Name: Jose Vega-Guzman
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

In this work bright-dark combined optical solitons are reported in nonlinear metamaterials. The nonlinear dynamical model that is given by the nonlinear Schrodinger equation is studied analytically by employing the complex envelope function ansatz. The perturbations that are spatio-temporal dispersion, parabolic law nonlinearity, detuning, nonlinear dispersion, inter-modal dispersion and third order dispersion are taken into account. As a consequence, the exact combined optical solitons are obtained along with several constraint conditions for the existence of those exact solitons. The influences of some controllable coefficients of nonlinear metamaterials, on the properties of combined solitons, are analyzed.

KEY WORDS: combined solitons; nonlinear materials; dispersion; nonlinear waves

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### Hetero-epitaxial Growth of Graphene by Way of Copper Initialization

Presenter's Name: Amber Wingfield
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Dr.Gary Harris, Mr. James Griffin

Graphene is the formation of carbon atoms into a 'sheet' like structure that is one atomic layer thick. Previous research has shown that graphene's high electron mobility, flexibility, and transparency makes it a perfect candidate for bringing semiconductor technology and the electronic device industries into a new age. A current and reliable method to acquiring graphene is through epitaxial growth on top of transition metals, such as copper and nickel, by way of chemical vapor deposition (CVD). However, in order to use graphene on other substrates, a tedious and at times imperfect transfer process must take place. In an effort to improve the overall growth of graphene, the concept of forming this material directly onto a desired substrate (e.g. silicon or silicon dioxide) is explored. Development of this capability will incorporate the use of a copper rich environment as a catalyst, to promote the nucleation of graphene onto a non-metallic substrate.

KEY WORDS: Graphene, Epitaxial-Growth, CVD,

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### Statistics of Ionospheric Amplitude Scintillation and its Correlation with Phase Scintillation over Bahir Dar using GPS-SCINDA during Solar Maximum Phase (2014)

Presenter's Name: Aara'L Yarber
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Ionospheric scintillation is one of the earliest known effects of space weather, and has a large-scale impact on radio communications and technologies today. These scintillations can reduce accuracy of GPS receivers, phase measurements, and result in complete loss of lock on a satellite. Scintillations are most likely to occur during solar maxima, affecting equatorial and aurora regions. This paper presents a study of ionospheric scintillations throughout the Bahir Dar equatorial region during solar maximum using the data collected from GPSSCINDA dual frequency receivers. The analyzed data is used to study the scintillation index (S4) and the vertical TEC (vTEC) retrieved by the receiver over a four month period (February 2014 to May 2014). The objective was to find the correlation between the scintillation index S4 and the vTEC.

Most of the data we considered had a positive correlation. In addition, the S4 value proved to vary by day and by month.

KEY WORDS: Ionosphere, scintillation, SCINDA, solar maximum

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## Green's Function Calculation for Retrieving Electric Parameters of Subsurface Objects with Landmine Detection Application

Presenter's Name: Ang Yu
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Mihai Dimian

Background: The SIRE radar system developed by ARL has the capability of 2-D image formation for landmine and IED detection. In order to extend the imaging ability to 3-D it is helpful to retrieve the electric parameters of the subsurface objects as well as the background soil by specifically devised inversion algorithms. Methods Inversion algorithms based on optimization techniques such as the Contrast Source Inversion (CSI) method need Green's function for layered media as an important tool for the inversion process. This paper provides an account of the calculation of the Green's function for multi-layer soil. We begin our calculation of the Green's function by obtaining the reflection coefficients as the first step. Then we derive asymptotic expressions of the Dyadic Green's function's components. Results For a bi-layer soil model having pre-defined parameters we have obtained the reflection coefficients, considering both lossless (zero conductivity) and lossy cases. We performed calculation for different conductivity values and polarization states of the incident wave. For a single-layer soil model, by setting the relative positions of the transmitter-receiver (TX/RX) pair and the soil electric property, we have the Green's function's components obtained at different frequencies. At each frequency, the components are calculated with different permittivity and conductivity values. Conclusion: We obtained conductivity effects on the reflection coefficient as well as frequency and electric parameters' effects on the Green's function for layered soil. These results can be applied to the estimation of soil properties and facilitate the inversion algorithm development.

KEY WORDS: landmine detection; inversion algorithm; CSI method; Green's function; reflection coefficient

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## Cheminfomatic and Molecular Docking Studies of CCR5 Antagonists for Anti-HIV Therapeutics

Presenter's Name: Abdullah Zubais
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Ronald Smith, Terry-Elinor Reid, Xiang Simon Wang

Background Human Immunodeficiency Virus (HIV) is a global health concern and remains a scientific challenge for over 30 years. A cure remains elusive and the drugs available for treating the disease are riddled with drug-induced toxicities and resistance. Chemokine Receptor 5 (CCR5) is a member of a large family of 20 chemokine receptor subtype. A major role of CCR5 is as a coreceptor for trafficking HIV virion into cells. CCR5 is a viable drug target for inhibiting HIV replication. This is evident with Maraviroc which is a CCR5 inhibitor currently on the market for treating HIV. In addition, the identification of a mutant allele of the CCR5 gene (CCR5Δ32) that cripples the ability of CCR5 to act as a co-receptor. Herein, we conducted extensive Quantitative Structure Activity Relationship (QSAR) modeling and molecular docking studies to thoroughly evaluate the binding profile of CCR5 inhibitors. Method QSAR models were built using machine learning algorithms such as random forest (RF), support vector machines (SVM), and Genetic algorithm k-Nearest Neighbor (GA-kNN). Robust models with ideal predictive ability were chosen for virtual screening of large chemical libraries to identify structurally novel CCR5 inhibitors. The binding mode of the QSAR hits was evaluated by molecular docking (MD) to further reduce the selection. Results Robust CCR5 models with CCR $\geq$ 0.7 and R2 $\geq$ 0.7 were used for virtual screening resulting in the identification of 10 hits. These hits were further validated by MD. Conclusion: Our results identified potential CCR5 inhibitors which will undergo experimental validation.

KEY WORDS: Cheminformatic, Molecular Docking, HIV, Modeling

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# Social Sciences

## Lifestyle Behaviors and Weight Gain Among First Time African American College Students

Presenter's Name: Judy Agwu
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Elizabeth Bester, Dionna Blocker, Shanteria Carr

First time college students have an increased susceptibility to weight gain compared to individuals who do not attend college. This research study investigated the lifestyle behaviors that contribute to weight gain among college students. One hundred male and female freshman college students from Howard University participated in the research study. An 18-item Likert scale survey was administered in the lobby of the freshman dormitories. The survey examined the lifestyle behaviors and activities adopted by students, such as exercise patterns, eating behaviors, stressors and relationship building. The data collected was analyzed using SPSS 22 to determine how these lifestyle behaviors impacted weight gain among first time college students at Howard University

KEY WORDS: weight, gain, freshman, college, African-American

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## Frequency Domain Estimates of Heart Rate Variability During The Presentation of Music of Varying Rhythms

Presenter's Name: JoAnn Alia
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

**Background:** My research is based on the master s thesis of Mr. Michael A. Leak, who studied the relationship between rhythm and physiology. By varying drum rhythm while holding tempo constant, he found that, from baseline, there was no significant difference in heart rate, but there was a significant decrease in parasympathetic and sympathetic nervous system activity, based on time domain measures, as participants listened to music. Time domain measures are simpler methods that assess variations in time intervals (in milliseconds) between heart beats. More complex procedures, frequency domain measures, view the heart rate pattern as a time series sequence of events. Power spectral density analysis determines how various frequencies are distributed across this sequence. **Method:** In the present study, we used frequency measures to re-analyze the cardiac data collected by Leak. We obtained estimates of the cardiac parasympathetic activity (high frequency) and cardiac autonomic balance (low frequency/high frequency) as participants listened to music with varying rhythms. **Results:** Consistent with Leak s findings, repeated measures ANOVA determined there was no significant difference in heart rate from the resting period to when the participants listened to music. However, in contrast to Leak s report, both cardiac parasympathetic tone and cardiac autonomic balance increased as participants listened to the rhythms. **Conclusion:** The results will be discussed in terms of the strength of the effect of music on the various measures of cardiac autonomic activity

KEY WORDS: heart rate variability, frequency, rhythm, parasympathetic, autonomic balance

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## Procedural Fairness and Reactions to Possible Outcomes of the 2008 Democratic National Convention (DNC) Presidential Nomination

Presenter's Name: Lauren C. Allen
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Janel M. Gill, Cassandra A. Shivers, Ja Mesha L. Morgan, Angela P. Cole

**Background:** When people perceive a process as fair, they are more satisfied with it and subsequent outcomes, even when those outcomes are unfavorable (i.e., the fair process effect). During the 2008 Presidential primaries, Democrats staunchly supported either Barack Obama or Hillary Clinton. Polls reported that people would vote for an opposing party's nominee if their preferred candidate did not win the democratic nomination. Thus, regardless of the process, the outcome did matter. This study examined the extent to which people's reactions to hypothetical outcomes of the 2008 DNC were impacted by the procedures used to choose a presidential nominee. Method: Participants were 474 undergraduates from Howard University, University of Maryland, and University of Kansas. Presidential nomination procedure was manipulated by having participants read one of four hypothetical scenarios in which a candidate (either Clinton or Obama) won the

most votes in the primary but lost the party nomination, or, won both the most votes and the nomination. The dependent measure was participants' ratings of these outcomes fairness. Results: A one-way between-subjects ANOVA revealed a significant effect of procedure on outcome fairness perceptions. Furthermore, pairwise comparisons revealed all mean differences were significant. **Conclusions:** The fair process effect was supported; a candidate winning the most votes and the nomination was seen as the most fair process. Furthermore, Obama winning the nomination was seen as more fair than Clinton winning the nomination even when the selection process was the same which suggests outcome favorability may play a role in outcome fairness perceptions.

KEY WORDS: Procedural fairness, outcome fairness, voting, social justice, decision making

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### African and Asian Traditional Medicine in a Comparative Modern Perspective

Presenter's Name: Mckincy Bass
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

This research investigates the impact of traditional remedies, healing, and health practices on modern medicine in a comparative perspective on traditional Asian and African Medicines. Issues raised include the divergent acceptance of the healing traditions in contemporary Western communities. There seems to exist, still, opposition to the value of traditional medicine in the West. However, the literature review reveals a stronger support for traditional Asian medicine than traditional African medicine. **Objective:** The purpose of this research is to examine the value of traditional medicine; particularly traditional African medicine. Users of traditional medicine in Africa have shown a slight advantage over users of modern medicine. As will later be confirmed in this paper, users of traditional medicine face less side effects or other post treatment disadvantages as compare to we users of modern medicine. It is a science that has not been aggrandized or given credit. This research could serve as a source to future researchers. **Method:** The research is based on secondary sources, not original field research. **Discussion:** The secondary materials collected will show that traditional African medicine has great value in advancing health and well-being for individuals and general communities. Evidence drawn from secondary sources support the thesis. A comparative perspective on the modalities of medicine indicates a greater acceptance for Asian medicine while African approaches are still undervalued or downright rejected. Conclusion drawn from the study has significance in advancing the view that traditional approaches can be effectively integrated with modern medicine in Africa. Findings can contribute for a greater understanding of the complexity involved in combining insights and knowledge systems developed over the centuries. Incorporating the experiences of traditional medicine clearly broadens the capacity of medical practitioners. Qualitative approach is adopted in this study.

KEY WORDS: African Asian Traditional Medicine Comparative

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### I am who I am because of my HBCU: What motivates alumni who give-back?

Presenter's Name: Anjerrika Bean
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Keadrick Peters, Anthony Miller

Historically Black Colleges and Universities, have played an important role in enriching the lives of not just African Americans, but the entire country. However, despite HBCUs success amongst the African American community, a growing number of HBCUs across the nation are plagued by disproportionately lower endowments, state and federal budget cuts, dwindling enrollment, and fundraising challenges, according to Insight to Diversity, the largest and oldest magazine in higher education (2014). Previous research on HBCUs alumni giving motivations has been examined but not at length within the age of social media. Objective: This study aspires to serve as a tool to stimulate HBCUs base for giving. In stark comparison to the HBCUs, the Predominantly White Institutions, have produced ample reports on how to engage annual giving efforts amongst their alumni base. Therefore, the purpose of this study is to determine if an HBCU effectively communicated and engaged its alumni base. **Method:** The process for conducting this study were divided into two phases. During phase one, the researchers developed and validated a survey instrument in order to collect the requisite data. In phase two, data were collected and analyzed to determine if there were statistical differences between four subdomains of alumni perceptions of communication and engagement based on gender and age. **Findings/Discussion:** The findings reveal

HBCUs alumni advocate for transparency from the university on how donations are allocated and how it contributes to the growth of the University. Lastly, they acknowledged that alumni that give back should be shown appreciation with incentives.

KEY WORDS: HBCU, Alumni, Giving, Communication, Motivations

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### "Is there a direct correlation between the mass incarceration of African-Americans and the destruction of the African-American family?"

Presenter's Name: Brandon Beasley
Classification: Graduate Student
*Presentation Type: Oral Presentation*

**Objective:** The focus of my presentation is to hone in on the effects of mass incarceration on the African-American community primarily the African-American family. African-American family life has been infringed upon by the growth of the nation's prison industrial complex. African Americans make up 13% of the population but an astronomical 40% plus of the nation's prison population. Most of the 40% plus are African-American men with African-American women gaining ever increasing numbers. These individuals are fathers, mothers, husbands, wives, sons, daughters, uncles, aunts, grandfathers, grandmothers, fiancés, etc. and because of their absence, the African-American family has been stifled in several ways. In the African American community there are things that are in lack such as economic stability and parental guidance, which are a direct result of the New Jim Crow better known as America s Prison System. The effects are vast from single parent homes headed by black women to the ever increasing rate of black children going into the foster care system. Method: By examining different documents, I will look at the policies that have led to this human rights issue such as the war on drugs; three strikes and you're out law, educational disenfranchisement and societal/structural economic racism. The purpose and question of my presentation is to answer the question "Is there a direct correlation between the mass incarceration of African-Americans and the destruction of the African-American family"?

KEY WORDS: mass incarceration, African American family, disenfranchisement.

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### Personality Type, Perceived Life Chances, their Relation to Maladaptive School Behaviors, and Possible Predictors of Criminogenic Personality Development in African American Adolescents.

Presenter's Name: Di eayyah Boney
Classification: Graduate Student
*Presentation Type: Poster Presentation*

For years Psychologists and Criminologists alike have pondered the question, "What makes one Criminogenic?" After centuries of studies and partial theories, there are still few integrative conclusions. Messner and Rosenfeld (2007), authors of the book Crime and the American Dream, attribute crime to high status social conditions that some have access to, may have access to, and may never have access to. This theory fails to address whether it is those who will never have access to status positions that participate in criminal behaviors without exception; or if it is those who perceive that they will never have access that participate in criminal behaviors. The lack of a perceptual component is where Psychology exerts its influence. Worrell and Cross (2004) found that higher scores on a Measure of Perceived Life Chances were related to healthy behaviors in adolescents, but that personality traits are also strongly correlated to scores on perceived life chances. Therefore, this study aims to discover the possible relationship between personality type, perceived life chances, and how the two can influence maladaptive school behaviors in African American Adolescents. All three aforementioned variables in sum, could also be predicting factors in Criminogenic Personality Development. Moreover, it is important that there are more studies assessing personality type culturally focused on African Americans. Since the development of personality studies, only nine have focused on African Americans (Worrell & Cross, 2004). Lastly, this review reflects the importance of integrating the Psychological and Criminological disciplines to obtain more conclusive theories.

KEY WORDS: Personality, Life Chances, Crime, Maladaptive, African-American

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### I Am Not My Hair?

Presenter's Name: Jaedyn Bonner
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

**Background:** African American self-perception and self-acceptance have been researched since the original Clark Doll Experiment conducted in 1939 (Gwen, 2013). Since then, studies in self-perception and acceptance have become more

specific. This particular review focuses on the relationship between self-esteem and hair in African American women. Method: I will conduct a meta-analysis of the results of existing research findings to determine the overall strength of this relationship. This study is a critical analysis of past research and concepts in relation to hair and self-esteem in women of African descent. Results There are over thirty articles addressing African American women's self-esteem and self-perception of hair. The studies analyzed focus on the relationship between these two factors. Conclusion: The articles reviewed affirm an existing relationship between subjective feelings about one's own hair and one's self-esteem. Implications for further studies are discussed.

KEY WORDS: African American, Black, Women, Self-esteem, Hair

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### Identity, Childhood Trauma, and Well-being

Presenter's Name: Sophia Boykins
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Background: A lot of people look at their lives and feel content and then there are others who feel a sense of resentment. The majority of people who feel resentment experience that feeling usually because they are yearning for someone else's life, and they truly want to experience if the grass is greener on the other side. A great number of people in the world are merely existing and not actually living their life to its maximum potential. The purpose of this study is to gain a grasp on how individuals interpret themselves and others in regards to various life situations. The study also aims to gain a greater understanding of whether individuals have a sense of self-acceptance, empathy towards others, and pursuit of happiness in life, whether past events hold an impact in their present life and overall well-being. Methods: Individuals will be selected to participate in an online assessment or survey. Participants will then answer questions that will be assessed on various scales such as: Cross Racial Identity Scale, Adverse Childhood Experience, Neighborhood Cohesion or Disorganization, Multidimensional Personality Questionnaire, Art Experience Questionnaire, International Personality Item Pool, and Ryff Scales of Psychological Well Being. Conclusion: This study aims to get a greater understanding of how individuals perceive themselves, others, and their environment.

KEY WORDS: Identity Trauma Personality Howard Research

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### Technology as a double edged sword:dissemination of misconceptions about Africa.

Presenter's Name: Sheila Brevard
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

"Africa, in all its splendor and in all the years before, and after colonialism, has maintained its reputation as a land that receives negative stereotypes in the minds of so many of its own inhabitants as well as people around the world". In the aforementioned quote by Henry Louis Gates, the first images that come to mind when one thinks of Africa, are war, poverty, famine, and flies. This is indicative of many of the thoughts of persons who are ignorant about the vastness and diversity of the African continent, and whose ideas and thoughts are fueled by social media, various entertainment and news media outlets, and the coverage of various issues and events that spew from American networks. The emergence of social media platforms as a means of communication and information sharing marks a fundamental change to how societies interact and how thoughts, ideas, and misconceptions are communicated. The thesis of the study is that social media, possessing the new traits of global reach and immediacy is related to the profound misconceptions of the Ebola Virus in Africa, and other negative misconceptions that continue to plague societal views of Africa. Qualitative methodology employing the content analysis of the media narratives of the negative misconceptions of Africa is adopted and compared with the differential impact of the new technologies of communication. Significance of the study lies with the insights gained from comparative approaches to understanding sociological and technological changes in communication.

KEY WORDS: Africa, Misconceptions, Stereotypes, Technology, Social Media

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### Adopting appropriate technology for Africa: learning to select the right fits for innovation and development

Presenter's Name: Mikala Burt
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Science and technology have been recognized as the most important determinants of national wealth and prestige. Yet, debates still rage on the policies needed to ensure the right mixes. Africa particularly has been beset with the burden of having to make the choices that select technological advances that do not contradict its unique needs and social

environments. The research examines problems involved in finding the right balance between appropriate technology and the goals of development in Africa. Africa has a rich history of advances in science and technology. It has, however, lagged behind other regions in building on its heritages for the modern era. Understanding the complex challenges involved in selecting technologies suited to the region's environmental and socioeconomic conditions is key to the vision of building a sustainably developed Africa. The thesis of the study is that African development is associated with the adoption of appropriate technology. Case studies from policies and projects for agricultural and infrastructural development are analyzed to arrive at findings that confirm the thesis that the success of a developmental model is dependent on the appropriateness of the chosen forms of technology. Examples that illustrate the findings include, the use of genetically modified crops that posed health threats to consumers and led to food shortages. Positive adaptations of technology, on the other hand, encompass areas of improvement in health, education and communication. The significance of the study lies in the benefits that are derived from formulating and implementing appropriate technology policy for Africa.

KEY WORDS: technology, Africa, innovation, new technology, advancements

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### Ain t I a Woman? The Impact of Race on Women Involved in Political Sex Scandals

Presenter's Name: Ashley Cleaves
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Background: In order to determine the impact of race on women involved in political sex scandals, I analyzed the lives of Christine Beatty and Paula Broadwell. Christine Beatty, former Chief of Staff for the city of Detroit, was one of the most powerful women in Detroit before news of her affair with Mayor Kwame Kilpatrick broke. Paula Broadwell was a best-selling author and a rising star in the fields of national and international security before the FBI discovered evidence of her affair with General David Patraeus. Methods: To determine the impact of the scandal on each woman's public image and personal/professional lives, I coded and classified media coverage of each woman's life 6 months, 1 year, and more than 2 years after each scandal. Results: I found that although Paula Broadwell was scrutinized heavily in the media, she was able to rebuild her life. However, Christine Beatty struggled to rebuild her personal and professional life in the aftermath of her scandal. Conclusion: This study adds rare commentary on the significance of the intersection of race and gender in political sex scandals.

KEY WORDS: sex scandals, political scandals, black feminism, oppression, women

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### Medicine: are we innovating or recreating?

Presenters Name: Daniela Cubillo
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

The development of Africa encompasses much more than we are taught to think of. In fact, many of the practices we know today stem from practices in ancient Africa. Many of the medications we take today are made either from African goods or African traditions. As a Western people, we are made to believe that we are innovating medicine rapidly, and with that, taking many new technologies and ideas to Africa. However, it is clear that that is not the case. Africa has produced many ideas that have been further cultivated, yes, in other regions. That being said, none of the credit has been given where it is due. With this, it is necessary to deeply evaluate the resources needed to allow the countries of the continent to continue to evolve. It is also crucial to bring to light the technological advancements that the continent is actively creating and promoting.

KEY WORDS: Africa, development, medicine, technology, advancement

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### Voter Identification Laws: A Poll Tax in the 21st Century

Presenters Name: Kayla Daniels
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

The purpose of this paper is to examine the effects of strict voter identification (ID) laws on minority, young, poor, and elderly voters. The 15th Amendment to the United States Constitution states that "the right of citizens of the United States to vote shall not be denied or abridged by the United States or by any state on account of race, color, or previous condition of servitude." Despite the fact that these words are bolstered by the Voting Rights Act of 1965 and included in the "supreme law of the land," signs of racial injustice at the polls are still evident in today's society. When voters go to the polls,

particularly African American voters, they no longer have to fear the threat of poll taxes or literacy tests; instead, they have to worry about strict voter ID laws. Those in favor of these laws argue that voter ID is a necessary means to prevent rampant voter fraud, but the small number of voter fraud cases simply doesn't provide enough justification to create laws that hurt more than help. This paper argues that voter ID laws are nothing more than a modern version of Jim Crow era voter intimidation tactics. To support this argument, this paper employs a qualitative analysis of various secondary data sources that examine the history of voter disenfranchisement, the costs and implications of voter ID laws, and voter fraud.

KEY WORDS: Voter ID Laws, Voter Disenfranchisement, Politics, Voter Fraud, Elections

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### War on Poverty and Turning the Tide of HIV among African Americans: Addressing Food Insecurity

Presenter's Name: Amber Davis
Classification: Graduate Student
*Presentation Type: Poster Presentation*

This poster presentation will examine research studies which document HIV disparities among African American minorities as impacted by the phenomenon of food insecurities. The anti-poverty, anti-hunger program of SNAP will be critiqued as it relates to HIV and food insecurity. Further, Structural change on a social policy-level will be explored as a way to turn the tide of the epidemic and its relation to food insecurity.

KEY WORDS: food insecurities, HIV, policy, poverty

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### Treatment via Tresses: How Natural Hair Blogs Provide Psychological Support for African American Women

Presenter's Name: Danielle Davis
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Afiya Mbilishaka, Terrisia Templeton

Background: Psychological health promotion does not need to be confined to an office setting, but may migrate to online forums where African-American women frequent natural hair blogs and websites. African-American women bloggers have created their own online community with a host of websites and blogs, where discussion is based around caring for oneself and one's hair. The blogs may serve as a forum for informal support group work derived from the bloggers own lived experiences fulfilling dual roles of peer and expert (Yalom, 2008). Method: Through investigating the theory of Psychohairapy (Mangum & Woods, 2011) that argues that hair can be an entry point into psychological interventions, this study investigates Yalom's (2005) Therapeutic Factors represented by African American women on their natural hair blogs. Results: Through a thematic content analysis of the "about me" section of the top 40 visited natural hair websites, 4 independent raters identified that 93% of the bloggers represented at least one psychotherapeutic factor. The most frequent factors were imparting information, instillation of hope, and universality. Conclusions: This study provides evidence that natural hair blogging can integrate formal and informal techniques of psychological health promotion, resulting in providing psychological support for a population otherwise missed.

KEY WORDS: Yalom s therapeutic factors, natural hair blog, hair, African American bloggers, online

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### "What Does Safety Look Like?" An Assessment of the Emotional, Social and Physical Welfare of Black LGBT College Students at an HBCU

Presenter's Name: Shaneda Destine
Classification: Graduate Student
*Presentation Type: Poster Presentation*

This study is an exploratory qualitative assessment of Black LGBT [lesbian, gay, bisexual and transgendered] college students' welfare at a Historically Black College and University (HBCU). Research evidences conservative and homophobic attitudes with regards to the treatment of LGBT college students at HBCUs; qualitative research exploring the difficulties faced by Black LGBT college students is very limited. This study seeks to identity the welfare of Black LGBT students at a mid-Atlantic HBCU Campus. The study sample consisted of nine respondents who participated in a 90-minute focus group in the spring of 2014. A thematic assessment outlines some key points. All respondents agreed that there was a lack of safe spaces on campus and accountability of the administration pertaining to their welfare. Most respondents directly or indirectly experienced discrimination by a member of faculty or staff because of their sexual orientation and/or gender identity. Two out of 9 respondents remarked that their physical appearance affected how they were perceived and

safety issues they were subjected. All participants agreed that they have not known or encountered any threats of physical harm on campus grounds because of their sexual orientation. This is an exploratory study and results are not generalizable to all LGBT students on HBCU campuses, White LGBT students, and LGBT students at predominantly White collegiate institutions (PWI). Study findings reveal a need for future research that would examine LGBT policy effectiveness at HBCUs and the overall school climate for this population. Implications for institutional changes are suggested.

KEY WORDS: LGBT, HBCU, Welfare, Health

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### Sport sells: Athletes, advertising, and pop culture

Presenter's Name: Christian Dotson-Pierson
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Media professionals gravitate towards professional athletes to evaluate their sporting performance. However, the role of the athlete—gender aside—extends beyond the playing field. American athletes in particular, have carved their place in popular culture, defined by Danesi (2012) as an emotional culture, one specifically created "by the people for the people." Athletes have created a niche in popular culture by way of advertisements, as companies seek to remain connected to the consumer market base. According to Choi and Rifon (2007), "celebrities bring their own distinctive images to an advertisement and its associated brand and can create, enhance, and change brand images." The researcher used textual analysis of sport advertisements to examine which brands relied on athletes to sell their products, how frequently these ads appeared and if the advertised product(s) could appropriately be tied to one's lifestyle and/or trends of social significance. Preliminary findings show that with steady support from the public and all involved parties—athletes, advertising companies, and the companies that produce the products—continue to have their hands in the pockets of the consumer through popular culture.

KEY WORDS: advertising, sports, pop culture, celebrities, product

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### Women Bear the Brunt of War and Disaster: An Analysis of Sexual Violence Against Women During Disasters

Presenter's Name: Michelle Dovil
Classification: Graduate Student
*Presentation Type: Oral Presentation*

The United States alone is susceptible to over eight different types of natural hazards throughout each of its geological regions. Hazards like earthquakes, volcanoes, snowstorms, floods are all natural processes or phenomenon that have the potential to cause loss of life, injury, or other health impacts, property, as well as environmental damage (UNISR, 2007). These hazards not only have the potential to cause human casualties and property loss, but also disrupt social order and community life (Zahran, 2009). While media outlets tend to focus much of their attention on the details associated with the unfolding of these events, sparse attention is paid to the crime affiliated with the onset of a disaster. The purpose of this paper is to elucidate the sociological factors that contribute to the criminal activity that arises after a disaster, and specifically sexual violence against women. The analysis is guided by the theoretical principles of anomie and social disorganization theories. This paper will examine a series of disasters that have occurred within the last ten years such as Hurricane Katrina, Earthquakes in Haiti, Sri Lanka Tsunami as well as the recent Philippine Typhoon to explain how the increase in sexual violence against women is a result of a lack of social cohesion, order, and stability generated by a disaster.

KEY WORDS: Disasters, Women, Crime, Sexual Violence

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### A Bittersweet Deal: Puerto Rican and West Indian Contract Labor in the United States 1940-1970

Presenter's Name: Gabrielle Downer
Classification: Graduate Student
*Presentation Type: Oral Presentation*

This study will explore discrimination practices towards West Indian and Puerto Rican apple farm laborers throughout the East Coast of the United States. It will explore the migration patterns of West Indians and Puerto Ricans migrants, and how their labor contracts were abused. Many West Indian and Puerto Rican migrant workers travel throughout the United States searching for work and are recruited for agricultural work under various farm labor programs. Extensive archival research, newspapers and several secondary resources are used to prove that West Indian and Puerto Rican laborers were exploited in the apple farm industry and how they were discriminated against.

KEY WORDS: Dislocated Peoples, Race and Ruptures in history

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### Slave Morality and Black America

Presenter's Name: Kareem El
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

This project seeks to examine Friedrich Nietzsche's concept of "Slave Morality" with regards to its manifestations in modern Black American culture. The purpose of this project is to support the assertion that the root failures in the Black struggle for freedom lie in the nihilistic mentality and moral contradictions that masquerade as Black Culture. Some of the lenses through which the Black community's moral valuation system is examined are Hip Hop, Christianity, Democracy, and Oppression. With these topics and others in mind, a qualitative analysis of Black morality will help to proffer a revolution of theory geared towards Black excellence.

KEY WORDS: Black Politics Philosophy Morality Culture

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### Moral Identity Salience Increases Liking of Target; Religious Identity Salience Increases Disliking of Hostile Targets

Presenter's Name: Amanda ElBassiouny
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Debbie Van Camp, Lloyd Sloan

Religious and moral identity often have been confounded as being the same, such that one cannot be moral without being religious, or religious without being moral. Based on evidence from atheists and agnostics, living a moral life doesn't require belief in religion and their morals are based on principles other than religion. This study investigated the distinctions between individual and social dimensions of religious and moral identities and their consequences on the evaluation of religious outgroup versus ingroup targets. Female Christian Howard University undergraduates' individual versus social identity and religious versus moral identity were manipulated by viewing word primes. Participants examined a religious ingroup or outgroup target's job application and evaluated the target's likeability. The 2 (individual/social dimension) x 2 (moral/religious identity) x 2 (religious target: ingroup/outgroup) ANOVA results revealed a main effect of moral/religious identity, which was moderated by the perceived target's attitude towards Christians, $b = .40$, $t(64) = 2.62$, $p < .05$. When primed with a religious, versus moral identity, participants rated the target, regardless of the target's group membership, as significantly less likeable, especially when they perceived that the target held negative views of Christians (which was the ingroup religious affiliation of all the participants). However, those with a moral identity salient rated ingroup and outgroup members as more likeable, regardless of the views they held of Christians. This is consistent with theories suggesting that moral awareness widens acceptance of others, while increasing religious outgroup awareness increases perceived distance and rejection, particularly when hostility is anticipated.

KEY WORDS: Morality, Religion, Prejudice, Stereotyping, Priming

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### African American Immigrants and Hispanic Latinos with or at risk for chronic diseases: A comparative study

Presenter's Name: Nkechi Enwerem
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Priscilla Okunji, Ellen Spratley-Edward, Magnus Azuine

**Background:** Chronic health conditions such as diabetes and hypertension are prevalent amongst racial/ ethnic minorities and individuals with low-income. Over 346 million people worldwide have diabetes mellitus. In the United States, about 25.8 million (8.3%) of the U.S. population, have diabetes mellitus. Of these, 18.8 million are diagnosed while 7 million are undiagnosed. Individuals, whose blood sugar is undiagnosed, have an elevated fasting blood sugar. Fasting blood sugar (FBS) level is a good predictor of pre-diabetes in adults over 20 years of age. Several studies, have investigated the prevalence of diabetes and hypertension in various ethnic groups. This study is designed to compare the prevalence of pre-diabetes, diabetes, prehypertension, hypertension and the incorporation of a daily physical activity amongst Hispanic whites and African-American immigrants in the U.S. **Methods:** This is a pilot, observational quantitative research. Convenience sampling method was used in recruiting participants. Participants were recruited from faith-based institutions. Informed consent was obtained from all

participants before the study. The age group was 20 years and over with a total sample of 43 individuals (23 = Hispanic Latinos, 20 = African-American immigrants). Participants fasted 8 hours prior to blood sugar testing. Blood pressure was measured electronically. Patients were asked if they exercise daily. Bivariate and multivariate statistic methods were used for data analysis. **Results:** The results showed that 13.0% of the Hispanic population was prehypertensive compared to 50% of African-American immigrants, $p < 0.009$. Conversely 73% of Hispanic population was normotensive compared to 35.0% of the African American immigrants, $p < 0.011$. Thirteen percent of Hispanic population was hypertensive compared to 15.0% of African American immigrants. In addition, 65% and 35% of Hispanic population had a normal blood sugar and high fasting blood sugar respectively while 80% and 20% of African American population had normal fasting blood sugar and high fasting blood sugar respectively. However, there were no significant differences noted across groups on the FBS and daily activity. **Conclusion:** Future research with specific ethnic screenings and large samples are encouraged for more robust analyses and effective preventive measures.

KEY WORDS: African American Immigrants, Hispanic Latinos, chronic disease, fasting blood sugar, hypertension

## The Voices of Incarcerated Women

Presenter's Name: Tamanika Ferguson
Classification: Graduate Student
*Presentation Type: Poster Presentation*

There is a general perception in mainstream media, dominant public discources and academic scholarship that incarcerated women are voiceless, politically powerless and invisible. However, women scholars and social justice advocates are making publicly known and documenting women's stories about their prison experiences and the impact of incarceration on their lives and that of their families. This cross-disciplinary research is the report of a year-long case study I conducted on the voices and perspectives of women incarcerated in Clifornia prisons. This research highlights California Coalition for Women Prisoners (CCWP) and its role as a grassroots social justice organization in providing a public space for incarcerated women to speak about their prison experiences through a quarterly newsletter publication, The Fire Inside.

KEY WORDS: women, race, crime and incarceration

## Engineering Africa

Presenter's Name: Vanessa Galani Kameni
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

The purpose of this research is to explore the rich heritage of the continent of Africa in the context of scientific and technological developments. This study investigates the economic and social factors that influence the flourishing of African made products, which implement appropriate technology for Africans. The approach here is very pragmatic. This study overviews science and technology in ancient African civilizations such as the Egyptian civilization, through the colonial period, as a background for understanding the material and psychosocial foundation of the process, then focuses on Africa today. This research focuses on inventions, inventors and entrepreneurs in Africa, and attempts to chart the technological future of Africa. This study attempts to uncover the shortcomings of the African economy in the broader context. The significance of this study lies in the benefits that can be derived from the strengths of the achievements as well as the lessons drawn from uncovering the shortcomings of Africa through the ages.

KEY WORDS: Science, Technology, Development, Africa

## The Role of Spirituality in the Lives of african america women exposed to multiple violence and trauma

Presenter's Name: Eleyna Garcia
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Denae Sampson

Numerous studies (Brown, 2006; Campbell et al. 2007) have documented the role of spirituality as a coping mechanism in the lives of African American women exposed to multiple forms of violence throughout their life time. The present study examines the role of spirituality as a potential moderator of the relationship between exposure to multiple forms of violence and trauma symptoms and depression in a community sample of urban African American women (N=125). It is hypothesized that there is an inverse relationship between spirituality and depression and trauma symptoms among women in this sample. Spirituality is expected to moderate the relationship between exposure to multiple forms of violence and trauma symptoms and depression. Results reveal a main effect for spirituality as measured by Daily Spiritual Experiences and mental health outcomes. Spirituality moderated the relationship

between a history of exposure to multiple forms of violence and poly-substance use and trauma symptoms. Implications for treatment are discussed and recommendations for future research.

KEY WORDS: african american women violence spirituality

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### Africa Reinventing Africa

Presenter's Name: Shari Gardner
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Shari Gardner

It is now widely believed that colonization has played a major impact on the underdevelopment of Africa. Technology is broadly defined as a tool or process that can improve, assist, or advance one's life or community. It has the absolute power to change lives and advance their stability and enhance economies. Despite the adverse economic effects of colonization, Africa has been presented with many opportunities, to advance through technological innovation. The research study argues that African technological advancements and innovations are serving as major catalyst to improve their economies and communities. The theses of the research traces African entrepreneurs taking initiative in Africa's technological revolution, which is resulting in new jobs and new opportunities to create income for their families and their communities. Finance, healthcare, and agriculture are major economic components that require attentiveness and transformation in order to transform the lives of people in Africa. Technology has been one area that has shaped and influenced the trajectory of African development.

KEY WORDS: Africa, Technology, Innovation, Colonization, Modern Day Africa

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### Outside Looking In: The Professional Sports Industry

Presenter's Name: Marissa Gentry
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

The purpose of this research is to examine an issue that has plagued the sports industry regarding difficulties that non-professional athletes and non-athletes encounter when pursuing careers in fields that are typically dominated by retired professional athletes. These fields include: sports commentary, athlete representation, general management, and head coaching positions. This research specifically considers the troubles encountered by non-professional athletes and non-athletes while pursuing careers in athlete representation and sports commentary. There are few articles and/or theses surrounding this issue, and this research serves to identify any valuable information that can be used by all those who are attempting to pursue a career in the aforementioned professional sports fields. This research is informational, as the interviews provide first-hand accounts of the professional journeys of those interviewed. During the interviews that were conducted with several sports professionals— some that are still active in the sports industry and others that have retired— numerous pertinent questions were posed that gave a full view of their experience working in the sports industry. The information obtained by this research is relevant to upcoming non-professional athletes and non-athletes, who are both commonly faced with the obstacles, and who do not know how to overcome them. It will be advantageous for them to have this information available.

KEY WORDS: Sports, professional, non-athlete, representation, commentary

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### The Role of Comfort with Uncertainty in H1N1 Vaccination Decisions

Presenter's Name: Janel M. Gill
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Cassandra A. Shivers, Lauren C. Allen, Angela P. Cole

**Background:** Decisions to receive a new vaccine can involve a great deal of uncertainty. Individuals worry about both the health threat the vaccine protects against and the safety of the vaccine itself. Considerable concern surrounded the H1N1 vaccine due to its rapid development, especially among African Americans whose H1N1 vaccine uptake was low. This study examined the effect of comfort with uncertainty on African-American college students' H1N1 vaccination decisions during the 2009-2010 pandemic. Method: Participants were 217 African-American Howard University undergraduate members of a CDC H1N1 high priority group, under 25 years of age. Participants completed electronic surveys including questions about (a) comfort with uncertainty, as measured by Kruglanski's NFC scale; (b) questions about H1N1

vaccination status; self-efficacy; perceived costs, benefits and efficaciousness of the H1N1 vaccine; and potential barriers to vaccination; and (c) demographic measures. Results: A sequential multinomial logistic regression revealed (a) a significant effect of NFC on vaccination status such that discomfort with uncertainty was associated with lower odds of being vaccinated or intending to be vaccinated, after controlling for demographic variables and several potential vaccination barriers; and (b) vaccination status was best accounted for by a model that included perceptions of the vaccine's costs, benefits and efficaciousness, and participants' self-efficacy for being vaccinated. **Conclusions:** The data suggests that comfort with uncertainty should be taken into consideration when trying to understand reluctance to receive new vaccines. Providing people with information regarding the safety of new vaccines may help to decrease uncertainty and increase vaccine uptake.

KEY WORDS: Health Decisions, Vaccinations, Uncertainty, Vaccine Uptake, H1N1

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### How Stress is Affected by Classification

Presenter's Name: Danesha Grady
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

This study delves into the different effects that stress has on students at Howard University based on their classification. Due to the expected level of stress associated with being in college for the first time as well as preparing to enter the work force, the study supposes that freshman and seniors at Howard University experience the most amount of stress while sophomores and juniors experience the least amount of stress. One univariate analysis, two bivariate analyses, along with one multivariate analysis were conducted on all of the collected data. The study results only partially reflect the expected relationship between stress and students at different stages of their Howard matriculation.

KEY WORDS: stress, classification, Howard, college, spss

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### Broadcast Ownership: The ongoing struggle for equal access by women and minorities

Presenter's Name: Aitza Haddad
Classification: Graduate Student
*Presentation Type: Oral Presentation*

This study employed a critical empirical approach to examine an ongoing struggle by women and racial minorities to own broadcast radio and television companies in United States. Aiming to provide a clearer and broader picture of who owns the media, and according to discourse analysis, the creation of language and knowledge, it focuses on a recent ownership report published by the Federal Communications Commission in Spring2014. Broadcast stations are those using airwaves, which the Communications Act of 1934 established as a public resource. That same legislation determined that those utilizing these airwaves should do so with the "necessity, interest and convenience" of the public in mind. However, the standard was so vague that it needed the creation of policies seeking specific protections. The deregulation and free market-competition era of the 1980s made the situation worse, and by the end of the 1980s, the FCC had already relaxed the elimination of the multiple ownership rule, the radio duopoly rule, and the relaxation of the one-to-a-market rule, which had a tremendous impact on vulnerable communities. Congress enacted the Telecommunications Act of 1996 with the expectation of transforming the US telecommunications policy landscape. However, rapid technological advances and business transformations led to the emergence of numerous diverse issues, unforeseen by all branches. This study illustrates the status of women's and minorities' ownership to advance the argument that policy reform is long overdue. It also seeks to be a starting point for an in-depth-exploration of why is the current-media not serving all groups in society.

KEY WORDS: women media ownership, minorities media ownership, equal access, FCC, Broadcast ownership

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## Supporting and Shampooing: The Emotional Labor of African American Hair Stylists as Beauty Therapists

Presenter's Name: La Trista Harris
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Afiya Mbilishaka, Monique Elliott

Hair stylists can spend hours consulting, cleaning, moisturizing, and styling the hair of their clients, which positions them to engage in emotional labor and earn the title of "beauty therapists." Emotional labor within the salon setting is a sociological phenomenon that describes the relational work of negotiating the emotions of the client and of the stylist's personal emotional experience simultaneously (Toerien and Kizinger, 2007). This research study explores the emotional labor between African American hairstylists and their clients to determine if there is a platform for psychological interventions within this cultural salon setting. The research aims to build on the theory of Psychohairapy (Mangum and Woods, 2011), where hair is viewed as an entry point into mental health services. Therefore, a research team of four independent raters analyzed interviews of African American hair stylists (N=12) about emotional expression with their clients. An emotional tone and thematic content analysis were conducted showing that 100% of stylists disclosed that clients open up emotionally. The majority express themselves during the washing phase (33%) of the hair care process. However, over 50% of the stylists only listen and do not give a verbal response to their clients' emotional expressions. The findings of this study suggest that African American stylists do engage in emotional labor and the salon may be a viable setting to address the emotional needs of the African American female community. However, "beauty therapists" may benefit from psychological training in the reflection of feelings and in emotional regulation techniques to engage in systematic emotional interventions.

KEY WORDS: African American hair stylists, beauty therapist, emotional labor, Psychohairapy, emotional tone analysis

## In Their Own Words: How African American Adolescents Explain Trauma and Healing

Presenter's Name: Zuleka Henderson
Classification: Graduate Student
*Presentation Type: Oral Presentation*

**Background:** The literature commonly privileges the voices of adults in discussions on trauma and African American adolescent mental health. Western frameworks for explaining trauma and mental health resilience typically dominate this dialogue. However, emerging scholars have demonstrated that teens can offer mature insights into wellness concepts that can be significantly different from adults and from Western conceptualizations. While some researchers have begun to investigate youths' general perspectives on mental health and service use, there is limited research that specifically examines African American adolescents' perspectives on trauma and on healing as an option. Therefore, this study explored the concepts of trauma and healing from the viewpoint of African American teens. **Methods:** Semi-structured interviewing and visual arts techniques were used to engage African American adolescents about their thoughts on these topics. Participants included 12 African American adolescents ages 15-17. A grounded theory, dimensional analysis approach was employed to analyze participant responses to interview questions and a drawing activity. **Results & Conclusions:** Preliminary findings highlight the importance of contextual factors in shaping African American adolescents' views on trauma and healing. Results suggest that what African American teens experience in their daily lives, and how they make meaning of these experiences, has direct implications for their trauma-related beliefs and behaviors. Findings also suggest that African American teens formulate very intricate perspectives on how traumatic events affect the mind and body. These ideas present important insights for mental health care providers regarding service delivery and treatment expectations for African American teens impacted by trauma.

KEY WORDS: trauma, mental health, healing, African American adolescents, mental health service use

## Closing the Gap: An Analysis of Parent—Adolescent Communication and Social Components Guiding Adolescents ' Academic Well-Being

Presenter's Name: Kelli Hill
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Debra D. Roberts

In disadvantaged minority families it is often believed that parents have little communication concerning the need for educational attainment. However, there is some research to indicate that minority parents, particularly Black American parents, participate in much communication with their children pertaining to academic well-being. In fact, Black American parents have more communication surrounding academic aspirations than their White and Asian counterparts. This research seeks to bring awareness to positive communication skills and social components that may be helpful with closing the persistent academic achievement gaps between White and Black students in junior high school and high school. Rather than focusing on negative factors such as racism and discrimination, we proposed a need to examine the positive impact of self-efficacy and social skills in the relationship between parent—adolescent communication and academic performance. Preliminary analyses were conducted using regression analyses to examine relationships among the variables. In addition, we examined a moderated-mediation using Preacher and Hayes' (2008) bootstrapping technique to concentrate on family dynamics of the Black American population such as parents' marital status and adolescents' grade level. Significant relationships found between parent—adolescent communication and our outcome variables demonstrate the need for more research on social components such as self-efficacy and social skills among the Black American population. Black American parents communicate aspirations for academic success expected from their adolescents often without specifying the critical social components necessary to perform.

KEY WORDS: Adolescence, academic performance, development, parental involvement, social skills

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## Reassembling Emotional Intelligence (EI): How Can Current EI Models Inform Future Theoretical Frameworks?

Presenter's Name: Ricco Hill
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Emotional intelligence (EI), generally conceived as the ability to identify and manage one's own emotions and the emotions of others, contributes to academic success, workplace efficiency, and overall life satisfaction. However, the emotional intelligence scholarship is often criticized for its multiple conceptualizations and many researchers have advocated for a reconciliation of current EI models and definitions. The purpose of this presentation is to address the need for reconciliation by comparatively and critically examining the following four predominant models of emotional intelligence: John Mayer and Peter Salovey's (1997) Ability Model, Reuben Bar-On's (2006) Model of Emotional-Social Intelligence, Daniel Goleman's (2006) Mixed Model, and K.V. Petrides' (2010) Trait Model. The central argument is that a "core" for EI runs throughout each model and that each model additionally offers unique "components" that can inform future theoretical frameworks. By taking into consideration how each model compares to its predecessor, a more holistic understanding of emotional intelligence can develop among psychologists and thus provide a more stable foundation for future academic and workplace reform.

KEY WORDS: emotional intelligence model theoretical framework

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## Matched Race Produces and Hypocrisy Judgments Only Under Mitigating Circumstances

Presenter's Name: Jeremy Horne
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Demi Osundeko, Jamie Barden

This research examines variables that influence how we judge others in terms of hypocrisy. In particular, what impact does sharing a race with people have on whether we judge them to be hypocritical or not? In the study, Howard University female undergraduate participants (N = 123) were administered a survey that included two pieces of information about an individual: a radio transcript where they made a statement against drunk driving and an investigative reporting piece

that described that person engaging in drinking and driving behavior. These events were presented in one of two orders. In the conventional order the statement came before the behavior but in the reversed order the behavior came before the statement. When presented with the reversed order, targets are seen as less hypocritical than those presented with the conventional order, because they could be turning over a new leaf (Barden, Rucker and Petty, 2005). The potentially hypocritical target was presented as either race matched (Black) or race mismatched (White) to the participant and all targets were female to control for gender matching. Results showed that in the conventional order, where hypocrisy was clear, both Black and White targets were judged as highly hypocritical. However, in the reversed order, where hypocrisy was more ambiguous, racially matched (Black) targets were judged as less hypocritical than racially mismatched targets. Thus, the impact of race matching was observed only when the reversed order offered a mitigating circumstance for the potential hypocrisy.

KEY WORDS: Hypocrisy, Race, Mitigating Circumstances, Judgement, Order

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### Writing Trauma Narratives Increases Temporal Organization & Decreases Subjective Distress

Presenter's Name: Mary Katherine Howell
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Jennifer Rae Myers, Dr. Thomas Mellman

Introduction:Emotional processing theory posits that the therapeutic benefits of exposure include habituation to the traumatic stressor and reduction of distress as well as reorganization of the trauma memory. Trauma narratives have also been observed to be deficient in time words. The present study hypothesized that an increase in time words would be associated with a decrease in distress across trauma narratives. Methods: Twenty-three African American participants with PTSD (n = 23) participated in four 30-minute writing sessions. Writing sessions 1 and 2 were 12 hours apart and session 3 and 4 were performed 1 week later, also 12 hours apart. Subjective Units of Distress (SUD) were assessed four times each session and narratives were analyzed for changes in rates of temporal word usage. Results: A repeated measures ANOVA revealed a significant effect of the sessions on 'time' variable words (e.g. "end," "until," "season," etc.), $F(3, 42) = 3.979$, $p < .05$, $\eta = 0.221$. 2 Moreover, an increase in time words from session 2 to 3 was strongly correlated with the minimum SUD score in session 4 (the last session), $r(12) = 0.59$, $p < 0.05$. Discussion: These preliminary data indicate increasing awareness of temporal relationships in association with distress reduction.

KEY WORDS: ptsd, trauma narratives, trauma memory, emotional processing, exposure therapy

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### African Dance and Healing

Presenter's Name: Aminah Jackson
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Studies indicate that traumatic experiences and unfavorable environmental circumstances can result in psychological and or traumatic disorders. Movement and dance throughout the African Diaspora have been utilized as a form of treatment and healing. The research will seek to find a correlation between African dance, movement, and healing. The focus will be research on movement's positive effects on psychological and or emotional disorders. The methodology uses primarily qualitative data with limited quantitative research. The research conducted confirms the healing benefits of African stylized movement and dance, in specific accordance with neutralizing psychological trauma and relieving symptoms associated with psychological distress. The significance of this research is to understand how and why African movement and dance facilitates mental, spiritual, and physical health, and the capability of this particular form of movement to treat and heal those suffering from psychological and traumatic distress.

KEY WORDS: African dance, trauma, psychology, healing, ritual

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### Exploring A Conceptualization of College Students' Religious and Spiritual Perceptions, Beliefs, and Practices for Spiritual Identity and Student Development in Higher Education

Presenter's Name: Monica R. Jackson
Classification: Graduate Student
*Presentation Type: Oral Presentation*

**Background:** Spirituality is a growing phenomenon that is researched within and outside religious institutions. Spirituality and religious issues, development, and practices within higher education have been a topic of interest on

and off college campuses. Thousands of college students have expressed the significance and value of spirituality and religious perceptions, beliefs, and practices as essential to their identity, cultural values, and well-being. Two UCLA Higher Education Research Institute - Spirituality in Higher Education longitudinal national studies (2003-2007) and (2011) indicated that there has been extensive research regarding college students' development during the past 40 years. However, there are limited "systematic" studies on students' spiritual development. Methods: This presentation will summarize the UCLA studies and review the "Religious Affiliation and College Student Development" literature, as well as explore relationships among college students' development, religion, spirituality, and well-being. The presenter will discuss how these concepts can influence student identity, development, and overall wellness, and provide recommendations and implications for enhancing psychotherapeutic approaches and spiritual and religious development. Conclusions: A new paradigm and dialogue for interdisciplinary research are needed to integrate spirituality and religious factors. This outcome is important to develop future collaborative research projects with psychology and other mental health professionals, educators, social workers, and spiritual and theological fields to address college students' identity and spiritual and religious development as part of their culture.

KEY WORDS: spirituality, religion, identity, college students, higher education

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### "It s Hotter Than July":An Analysis ofBehavioral Responses to Extreme Heat Alerts Using the Protective Action Decision Model

Presenter's Name: Rita Jacobs
Classification: Graduate Student
*Presentation Type: Poster Presentation*

With the exception of 2009, heat has been one of the top three causes of fatalities due to natural hazards for the past five years (NOAA 2013). In 2012 heat was the leading cause of death for natural hazards (NOAA 2013). Hence, the effect of high temperatures on humans is a major societal concern. This study examines public response to high temperature alerts using the protective action decision model (PADM). The PADM consists of factors that typically influence individuals' adoption of protective actions against natural and technological hazards and disasters. The PADM asserts that receiver characteristics (e.g. race/ethnicity, age, gender, education level) impact the decision to take or not take protective action (Lindell and Perry 2004) during extreme weather events. Previous studies have assessed how receiver characteristics influence behavior modification prior to or during floods and hurricanes and within a multiple hazard location (Dovil 2013; Lindell and Hwang 2008; Terpstra and Lindell 2012). However, no studies have applied this model within the context of extreme heat. Exploring the protective decision making process prior to or during a severe heat event will shed more light on the decision making process during a hazard or disaster. This study attempts to test the PADM in relation to a severe heat event using an African American sample.

KEY WORDS: social science, protective action, African Americans, PADM

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### Psychohairapy and Transitioning: The Psychological Stages of Change for African American Women Going Natural

Presenter's Name: Hope Jenkins
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Afiya Mbilishaka, Ashley Douglas

Chemically altering hair from its natural state can lead to both psychological (self-esteem, anxiety) and physical (hair loss, fibroids) consequences for African American women (Winfield, 2008). Transitioning to natural hair can stem from a variety of reasons, including an expression of ethnic pride, hair and scalp damage, aesthetic preference, or economic factors (Foster Davis, 2001). However, little is known about the psychological processes related to African American women choosing to transition from chemically altered hair to natural hair. This Psychohairapy (Mangum and Woods, 2011) study intends to link the psychological processes of African American women going natural to a stages of change assessment grounded in the Transtheoretical Model (TTM) of Change (Prochaska and DiClemente, 1982). Through a thematic content analysis assessed by four independent raters of 489 personal accounts from African American women on the most visited natural hair website to date, researchers identified the representation of pre-contemplation, contemplation, preparation, action, and maintenance. The results suggests that intervention models can be developed to provide assistance and reduce the stress associated with transitioning.

KEY WORDS: natural hair, transtheoretical model of change, African American women, Transitioning, Stress

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## Coping with Racism, Education, and Obesity in African-American Women

Presenter's Name: Victor Jones
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Denee Mwendwa, Clive Calendar, Alfonso Campbell

Overweight and obese conditions are at epidemic proportions, with the greatest prevalence among African-American women. As biology does not thoroughly explain these disparate conditions, the role psychological and socioeconomic factors play in the etiology and progression of obesity must be considered. Existing literature highlights a positive association between perceived racism and obesity in African-American women. Consequently, coping with perceived racism has been recognized as a notable risk factor of obesity; still, there exist few studies examining this association. In addition, studies have linked higher education to health promoting and self-maintenance activities. This suggests that education is a key determinant of future health outcomes, such as obesity. However, there is scant research investigating the role education plays in the association between coping with perceived racism and obesity in African Americans. As such, the current study sought to determine whether the association between coping with perceived racism and obesity varies as a function of education in African-American women. The study included a community-based sample of 110 African-American women and employed two measures of obesity (body mass index and waist-to-hip ratio). Hierarchical regression analysis revealed a significant, positive association between coping with perceived racism and BMI in these women (B = 2.08, p =.04). This association was moderated by years of education, but only for those women whose education attainment fell below 17 years. No significant association emerged between coping with perceived racism and WHR in African-American women (B = <.00, p =.91). Implications will be discussed.

KEY WORDS: Obesity, Racism, Education, BMI, WHR,

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## Psychological Effect of Military Sexual Trauma among African American Female Veterans

Presenter's Name: Alice Kersey
Classification: Graduate Student
*Presentation Type: Poster Presentation*

**Background:** According to the National Center for Veterans Analysis and Statistics, 2012, military sexual trauma prevalence is 23% among women in the military. An association between military sexual trauma and psychological diagnoses has been noted in numerous studies, but the race profile of these diagnoses has not been clearly established. These experiences have been found to be associated with adverse mental health outcomes, substance misuse and post-traumatic stress disorder (PTSD). Objective: This quantitative study develops and tests a theoretical model to explain military sexual trauma based on the Feminist and Trauma Theory. Hypothesis: There is a significant association between military sexual trauma and psychological diagnoses. The percentage of the study participants whose responses meet the screening criteria for mental disorder, PTSD, and substance misuse will be significantly higher after discharge from the military. Methodology: This proposed study seeks to predict the outcome of mental illness diagnoses among a small sample of African American female veterans who experienced military sexual trauma. An anonymous online survey will be administered to all participants that have been separated one month to five years from the military. A Multiple Regression Analysis will be used to predict levels of mental health outcomes based on multiple factors (age, rank, family support, marital status, salary, number of dependents and levels of education). Implications: This research study seeks to provide a preliminary view of mental health diagnoses among African American female veterans. Conceivably the findings will help social work professionals and others develop a treatment or intervention strategies.

KEY WORDS: trauma, sexual assault, female, veteran, mental illness

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## Black Woman in America: The Tragedy of Identity

Presenter's Name: Vedanna-Kaye Laidley
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

The concept of identity is very complex. The question of "Who am I?" is largely influenced by the answer to the question "How does the world see me?". When one searches Google for images of beauty, specifically with key words "beautiful

woman," one is bombarded with images of fair skin, long flowing hair, and thin lips, yes, all physical attributes that oppose the physical characteristics of the black woman. When one then searches "beautiful black woman," one is flooded with images of black women of darker complexions wearing little clothing (if any at all) in explicitly sexually inviting poses. Now considering that 1.1 billion people turn to the American search engine Google regularly to resolve their uncertainties and to provide factual information, what does that then reveal about how America identifies the beauty of the black woman? In a society that correlates the value of a woman with her beauty, what does the lack of representation and overt sexualization of the black woman then reveal about her value and thus identity? What is then the effect of taking on this identity? Psychologist Erik Erikson would proclaim this effect as an identity crisis, when the subjective sense of identity and world image fail to correlate. This paper seeks to examine secondary data collected from scholars as well as primary quantitative data obtained from a brief questionnaire and interview of females of and outside the Howard University community, to test the validity of Erikson's claims. Are black women experiencing an identity crisis?

KEY WORDS: Identity, Conflict, Black, Woman, Sexualized

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### Building a Culture of Peace through Dialogue in South Sudan

Presenter's Name: Benjamin Machar
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Building a culture of peace through national dialogue centered on justice and accountability is the viable mechanism for realizing peace in South Sudan. South Sudan needed a national dialogue immediately after the signing of the Comprehensive Peace Agreement (CPA) and it had another opportunity after the declaration of independence, but it was also missed. The on-going crisis calls for a comprehensive dialogue to resolve the political, military and civil grievances that lie at the root of the conflict. The ruling elite's manipulation of the military and ethnicity to maximize their power gain remains a serious threat to national cohesion and perpetuates violence. Peace should be anchored on deliberative dialogue at various levels of society with serious consideration for justice and accountability, which are essential to any process to end ethnic conflicts and impunity. This nation has inflicted serious wounds on itself and dialogue is a necessary catharsis to reset societal relations. Dialogue should address deep-seated ethnic rivalry, tackle the separation of the military from politics and treat the civil and cultural spheres as separate spaces from politics. When political actors are engaged in political discourse, these disputes tend to spill into the military; this is a recipe for political instability. Peace through dialogue should be anchored on three inter-linked dimensions: 1) Political dialogue—encompassing inter-party and intra-party dialogue, as well as intra-governmental dialogue 2) political-military-civil dialogue and 3) broad-based state-society dialogue. This three-pronged model is utilized to isolate the spillover of political, military or civic issues into each other.

KEY WORDS: Peace, Dialogue, South Sudan

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### Marriage Equality and African American Families

Presenter's Name: Kamilah Majied
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

Although marriage equality continues to be in the legislative and media spotlight, little scholarly attention has been placed on the significance of legalizing same sex marriage for Black families. This presentation will discuss research on Black lesbian and gay families, highlighting both the strengths of these families and challenges they negotiate. Focusing on the resources Black lesbian and gay families provide to the Black community, such as foster parenting and adopting Black children, mentoring runaway and throwaway Black youth and leadership on Black social justice issues, this presentation will highlight data that demonstrate what Black lesbian and gay families contribute towards the larger goal of strengthening Black families and communities.

KEY WORDS: African Americans, Marriage Equality, Family, Social Justice

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### The Roles of Fear, and Affective and Cognitive Appraisals in Determining African-American College Students' H1N1 Vaccination Attitudes

Presenter's Name: Christian A. Mallett
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Janel M. Gill, Cassandra A. Shivers, Lauren C. Allen, Jillian C. Hamilton, Angela P. Cole

**Background:** The 2009-2010 H1N1 pandemic was a deadly international health threat. The disease burden was greatest among individuals under 25 years of age. Though the CDC

recommended vaccination for people most at-risk for H1N1, vaccination rates were low. Public health officials sought to increase vaccine uptake among African Americans because influenza exacerbates many of the chronic diseases that disproportionately impact this population. However, vaccine uptake among African Americans remained low. This study sought to better understand the reluctance of African Americans to receive the H1N1 vaccination by examining the roles of fear, and affective and cognitive appraisals in determining African-American college students' attitudes towards H1N1 vaccinations. **Method:** Participants were 237 unvaccinated African-American Howard University undergraduate members of the CDC H1N1 high-priority group, "under the age of 25." Participants completed electronic surveys that included questions about (a) H1N1 vaccination status; (b) cognitive appraisals (e.g., perceived costs, benefits and efficaciousness of the vaccine); (c) affective appraisals (e.g., message derogation, perceived manipulation, defensive avoidance); (d) fear arousal; and (e) demographic measures. **Results:** A stepwise multiple regression analysis identified the best set of predictors for attitudes toward H1N1 vaccination as fear arousal, response efficacy and response costs. **Conclusions:** While previous research has focused primarily on cognitive factors, the data suggests that fear, and affective and cognitive factors predict African-American college students' H1N1 vaccination attitudes. Campaigns seeking to increase vaccine acceptance and uptake in this population should consider the roles of fear, and affective and cognitive factors in their efforts.

KEY WORDS: vaccinations, health decisions, cognitive appraisals, affective appraisals, fear

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## The Journal of Black Psychology and The Journal of Cultural Diversity and Ethnic Minority Psychology: A Co-Word Analysis

Presenter's Name: Chloe Martin
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Brieanna Moyd, Monique Major, Nikeshia Holt, Joshua Johnson, Di #039;Eayyah Boney

**Background:** Viedma Del-Jesus and colleagues (2011) conducted a co-word analysis to describe the density and centrality of keywords used in articles published in the Journal of Psychophysiology from 1964-2008. This type of analysis has not been extensively used to describe the history of themes researched in journals geared toward understudied populations. The Journal of Black Psychology and The Journal of Cultural Diversity and Ethnic Minority Psychology are two journals committed to such endeavors, yet co-word analysis has not been extensively used to analyze historically the keywords and themes within these journals. **Purpose:** The first study aim is to describe the centrality and density of keywords used in the articles published in The Journal of Black Psychology and The Journal of Cultural Diversity and Ethnic Minority Psychology from 1974 to 2015. Additionally, the centrality and density of themes across the two journals will be compared. Finally, the researchers will discuss the projected themes in these journals over the next five years. **Method:** A co-word analysis will be conducted using TI.exe to analyze the keywords from over 1,500 articles in these two journals between 1974- 2015. **Expected Results.** The results of the analysis will identify central and dense themes researched in the two journals, describe the similarities and differences in themes between the two journals, and predict the centrality and density of themes to be presented in these journals until 2018.

KEY WORDS: co-word analysis, centrality, density, keywords, themes

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## Cultural Analysis of the Likelihood to Breastfeed in Relation to the Duration of Time Spent in the United States of Afro-Caribbean, Hispanic and African-American Women

Presenter s Name: Mary Morall and Kori Burrell
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Mary Morall, Kori Burrell

**Background:** Breastfeeding has proven to be optimally beneficial to both mother and child by reducing the risk of disease, boosting immune health, establishing a close bond, amongst many other advantages in comparison to formula-feeding. Despite these benefits, the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) has reported that African descendent women in the United States are least likely to breastfeed. **Objective:** This study examines Afro-Caribbean, Hispanic, and United States born AfricanAmerican women in relation to: (1) prevalence of breastfeeding in their place of origin (2) the duration of their residency in the United States and (3) cultural implications that discourage breastfeeding upon arrival, if applicable. Methods: A systematic integrative review of research and meta-analysis was conducted of scholarly publications investigating breast-

feeding across cultures; CINAHL and PubMed were utilized within the timeframe of 2004-2014. Predictor variables of breast-feeding were the mother s place of origin, family support, and health care provider influences. Results: This study has concluded that the longer a woman resides in the United States, the less likely she is to breastfeed due to acculturation into a "formula-friendly" American society, social pressures, health care provider encouragement of formula, and increased availability of infant formula. **Conclusion:** The results indicate the need for greater breastfeeding promotions and more stringent formula distribution regulations in communities of color. Due to the undeniable health benefits that results from breastfeeding, it is important to address the predictor variables to facilitate an environment that would increase breastfeeding rates in the target population.

KEY WORDS: Breastfeeding, Culture, United States, Women's Health, Maternal Behaviors

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### Higher Education in Kuwait: A Case Study of Journalism and Mass Communication Curriculum at Kuwait University

Presenter's Name: Husain Murad
Classification: Graduate Student
*Presentation Type: Oral Presentation*

The purpose of the case study was to examine the curriculum of the Journalism and Mass Communication Department at Kuwait University and the teaching methods implemented in such government owned institutions, especially given the rapid growth of journalism and mass communication programs in Kuwait and the Middle East. The study examined the journalism and mass communication courses offered during the 2013-2014 academic year. It posed three research questions regarding the curricular program components, methods of teaching, and the incorporation of a critical approach in the curriculum design. The study revealed that most of the courses are taught in the Arabic language except for one reading course in English, and there is a shift toward theoretical courses from vocational ones in the Journalism and Mass Communication curricula at Kuwait University. Also, critical thinking approach is not implemented in the program.

KEY WORDS: critical thingking, critical pedagogy, curricula, Kuwait University, higher education

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### Re-Conceptualizing Rwandan Transitional Justice: A Qualitative Analysis of Civil Society, Local Norms, and Receptivity in Post-Conflict Reconciliation

Presenter's Name: Udodilim Nnamdi
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Successful transitional justice was once defined as a post-conflict nation's shift from a violent past to a democratic future. However, the affect that international influence has on a post-conflict nation's selection of a transitional justice mechanism remains undetermined. Retributive justice and criminal prosecutions are applauded by Western nations as the most favorable method of dealing with perpetrators of mass atrocities. The target population's justice and accountability beliefs are often neglected when selecting the appropriate transitional justice initiative. Scholars fear that Western nations and international NGOs will utilize norm diffusion and advocacy networks to persuade post-conflict nations to adopt criminal prosecutions as the most desirable form of transitional justice. The Constructivist theory states that civil society organizations serve as connective tissue that local populations utilize to advance their social purposes while localizing norms. This paper hypothesizes that if the civil society within a post-conflict nation is strong prior to the adoption of a transitional justice technique, then the socio-cultural justice and accountability norms held by the local population will be injected into the dialogue and successful reconciliation is likely to occur. Successful reconciliation is defined as local receptivity of the transitional justice approach coupled with an increase in rule of law levels. Rwanda's transitional justice process following the 1994 genocide, which consisted of local gacaca courts, domestic trials, and an international tribunal will be examined using data obtained from the World Bank Initiative's World Governance Indicators and the International Center for Not-for-Profit Law's NGO Law Monitor.

KEY WORDS: rwanda, transitional justice, civil society, local norms

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### The Revolution Will Not Be Televised It Will Be Tweeted, Instagramed and Vined: The Impact of Social Media and Citizen Journalism during Social Unrest In Ferguson, Missouri

Presenter's Name: Chinwe Obodo
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

**Background:** Every generation's revolutionaries have used the latest technology. From patriots such as Benjamin Franklin and Thomas Paine publishing pamphlets in 1775, the Egyptians using Facebook, blog posts, and videos in 2011, to now. This research examines the role of social media as a news outlet during the racial turmoil and strife that characterized Ferguson, Missouri, after the death of Michael Brown and its impact on the efficacy of national news media outlets' coverage of the events among African-Americans ages 18-30. It will examine how citizen journalists helped change the political discussion and culture of police brutality and policing of the African-American community. **Methods:** To explore the role of the social media in the political events of Ferguson, Missouri, this paper analyzes all available Tweets, Instagram posts, and Vine videos, published of Ferguson, Missouri from August 9th, 2014 – November 27th 2014 in comparison with national media coverage from major news outlets, coupled with qualitative polling of Africans Americans (18-30) and their views of both sources. **Conclusions:** Social media content was a leading force during the period and because of its ability to report raw unedited footage, many African Americans ages (18-30) have turned their backs on national media outlets' coverage of their community for good.

KEY WORDS: Social Media, Ferguson, Unrest, Journalism, Protest

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### The potential use of online counseling to improve and increase delivery of mental health services

Presenter's Name: Nicole O Brien
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Stigma and access to a qualified mental health professional continue to be major barriers to receiving adequate mental health care. Online counseling could provide an alternative route to access underserved populations who cannot or prefer not to engage in traditional face-to-face therapy. This review of the literature discusses the advantages of online counseling and identifies those populations who would best benefit from Internet-based therapy. Researchers have hypothesized that the anonymity afforded by the Internet would be appealing for introverts, those with social phobias, and those with anxiety and eating disorders (Leibert et al, 2006). Anonymity may also increase client self-disclosure and lower feelings of shame and client defensiveness (Rochlen et al, 2004). Clients with limited mobility and time restrictions, or who live in remote areas would benefit from the increased access and convenience the Internet provides (Rochlen et al, 2004). This paper also explores the limitations of online counseling such as missed verbal cues and the ambiguity and conflicts within ethical and legal regulations, including diminished crisis management and security of private information. Finally, the poster discusses the promising results of three Internet based cognitive behavioral treatment programs (Feel Better, Mood GYM, and Mood Garden). Online counseling is still a young field that requires more research and experimental study, especially in the U.S. Tapping into the potential of the Internet as a mental health delivery source could expand the limits of traditional services.

KEY WORDS: Online counseling, Internet, Mental Health, Adolescents, Adults

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### Imperialism, Rape and the Congo Predicament

Presenter's Name: Chioma Oruh
Classification: Graduate Student
*Presentation Type: Oral Presentation*

This research critically examines the intersection of feminism, neocolonialism and neoliberalism as a hindrance to empowering directly impacted women and girl survivors of the rape crisis in the Democratic Republic of Congo (DRC). By examining the different key players of globalization, this study provides empirical data demonstrating how the world courts, international nongovernmental organizations and international financial institutions utilize feminist ideology to further depress the DRC's economy. In narrowing the scope of rape to only reflect the rape of individual bodies and not the historic and material foundation of the rape of resources, feminist ideology has become a powerful weapon to misdirect the culprit of oppression to warlords and not the international system that have relied on classic colonialism and now employ neocolonialism to maintain hegemony on the DRC's material wealth. This study provides a historic narrative and contemporary examples of how this dynamic plays out in the political terrain of the DRC since the beginning of the crisis in 1994. Furthermore, this study explores an alternative matri-focal paradigm to reassess the wartime rape of women and

girls in eastern DRC as an extension of the centuries-long rape of DRC's mineral wealth. By finding linkage in the economic practices in pre-colonial matriarchal societies that granted women control over markets and familial/communal wealth, this study gives policy recommendations through the exploration of the case study of Justine Masika Bahimba – a modern day matriarch in eastern DRC.

KEY WORDS: imperialism, rape, congo, feminism, neocolonialism

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### The Economics of Segregation: The Racial Ecology of Hinds County, Mississippi

Presenter's Name: Jerard Paige
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

**Background:** Since the Residential Segregation in American Cities was published by Ernest Burgess in 1928, academia debated ways to measure segregation. In their culmination of previous discourse, Massey & Denton, in The Dimensions of Residential Preferences, describe spatial distributions of minority and majority populations as a matter of evenness, exposure, concentration, centralization, and clustering. These are five ecological levels of analysis used to evaluate the extent that areal communities are segregated. **Methods:** Hinds County, Mississippi was chosen for its contiguous enclave of black saturated cities, including Jackson, one of the highest black concentrated cities in America. 2010 census tract information was collected from Demographic Profile Data, the Race Total Population, and Tenure by Race of Householder Summary Files. With this, the dissimilarity and interaction indices were applied, in addition to statistical analysis, and a variation of the Lorenz Curve. **Results:** Certain census tracts in Hinds County had black populations up to three standard deviations from the mean. The likelihood of interaction between blacks and whites in certain areas were less than two percent. However, on the large scale, blacks own an inequitable share of housing stock. **Conclusion:** The Thomas Schelling model explains if blacks were to seize homeownership in Hinds they may become a super majority. This has electoral implications effecting potential black self-determination. The basis of continuing this research is to determine social, economic, and political incentives to attract black Americans to Hinds County.

KEY WORDS: segregation, economics, race, politics, statistics

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### "Down Goes Trayvon, Jordan, Mike, and Eric: Exploring how the Social Confines of Whiteness Kills Every 28 Hours and Strategies to Remain Breathing in the Era of Obama"

Presenter's Name: Keadrick Peters
Classification: Graduate Student
*Presentation Type: Oral Presentation*

"If I had a son, he'd look like Trayvon, "quipped the most powerful man in the world, President Barack Obama on March 12, 2012. Nearly seven years since the historic night of the election of the first Black president, Barack Hussein Obama, America's persistence of the color line remains a material reality for communities of color. In fact, every twenty-eight hours an unarmed black citizen is killed by law enforcement, or a quasi-legal authority, according to Malcom X Grassroots Movement. In the United States of America, post-racial society, in times of peace, an unarmed black citizen is killed by an entity purposed to protect. It seemed with the 2008 election abhorrent oppression had taken a backseat to a more tolerant, and just society. However, in this exploratory research, findings indicate black and brown Americans that do not adhere to the social construction of whiteness are in an imposition, and downright danger for their lives. How do Blacks' ability to assimilate to, and accommodate main social constructs affect their relationship with the police and legal authority? We explore the function of a double consciousness in Blacks as a defense mechanism, and factors related to White America's "perceived" fear of Blacks. I hope this contribution will inspire consistent advocacy for the most vulnerable in our communities and address the unique human class struggle.

KEY WORDS: White supremacy, colorblind ideology, double consciousness, class consciousness, prison-industrial complex

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### Women s Trust in Internet Cancer Sources: The Impact of Response Efficacy Efficacy, Self-Efficacy, Race, Age, Education, and Income

Presenter's Name: Elonn Rahdri
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Cancer is the second highest cause of death of women in the United States. As the pandemic grows, cancer-related information continues to flood the Internet. Problems arise because there are so many cancer prevention recommendations that it is difficult to know which ones to follow (response

efficacy). The inability to follow recommendations undermines women's trust in Internet cancer sources, depriving them of an important source of information. Self-efficacy, or the belief that one can lower one's chance of getting cancer, and the experiences associated with race, age, education, and income may influence women's trust in cancer data sources. This research focused on testing women's level of trust in Internet sources by asking: [1] Does a positive relationship exist between self-efficacy and the other predictor variables and women's trust in Internet cancer sources? [2] Does response efficacy mediate the effects of the predictor variables on women's trust in the Internet? Protection Motivation Theory, adapted from Rogers (1983), explains that through cognitive processes people make coping appraisal (choices) based on response efficacy minus response costs (health-related sacrifices), which are influenced by the predictor variables, leading to adaptive responses (compliance) or non-adaptive responses (non-compliance). This research used logistic regression to re-analyze the Health Information National Trends Survey (2003) through this theoretical lens. The results show statistically significant, but weak relationships, for the direct effect of all predictors on women's trust in Internet cancer sources, except for response efficacy and race, and for the mediating effect of response efficacy on everything but race and age.

KEY WORDS: Cancer Communications, Response Efficacy, Protection Motivation Theory, Social Health Inequalities,

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### The Lost Teeth of a Slave-Trading Site: Archaeological Finds from James Island, The Gambia

Presenter's Name: Sytonia Reid
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Ashley Lauren McLean, Alexis McConnell, and Dr. Flordeliz T. Bugarin

James Island and the surrounding mainland villages are listed as a UNESCO World Heritage Site and are important because of their role in the Trans-Atlantic Slave Trade. In the 17th century, the British established a slave-trading fort at the mouth of the Gambia River. Later, this area also became well known for being the region in which Alex Haley conducted his research for Roots: the Saga of an American Family. In order to fully understand the significance of the site, archaeological investigations were conducted on the island in the area that was allocated for slave huts. Amongst ceramics, metals, and architectural materials, the archaeological crew uncovered a significant amount of human teeth. Close analysis of a sample of teeth provided data that allowed us to test hypotheses related to environmental impacts, diet patterns, and health conditions. Specifically, our main goal was to elucidate whether lost teeth were due to a lack of nutrients, specific environmental conditions, or cultural traditions. Lab analysis entailed identification of human and non-human teeth, documenting typological frequencies, and investigating bone modifications. We studied the archaeological context surrounding each tooth. Archival research also complimented quantitative research and allowed for analogies that led to more complex explanations of past cultural behavior. This research is significant because it allows us to understand the pressures facing enslaved populations who remained in Africa.

KEY WORDS: Health, Environment, Slavery, Archaeology, Africa

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### German-Soviet Nonaggression Pact

Presenter's Name: Devin Riley
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

About a month before World War II, the world was stunned when two enemies signed a nonaggression pact, which assured both countries that they would not be invaded by each other. Within a month after Josef Stalin and Adolf Hitler signed this peculiar document, WWII began with the Soviet Union and Germany both invading Poland and splitting the territory into two. However, two years later in 1941 Germany deceivingly invaded the Soviet Union in an operation titled—Operation Barbarossa. This invasion was by all means expected by both Germany and the Soviet Union, however it is apparent of the Soviet Union's vulnerability to a surprise attack. Yet, this makes one wonder on how a country that was well aware of Germany's aggression for victory and territorial gains could be caught so off guard even after 2 years of war. This invasion shocked the Soviet Union so heavily that it is said that Josef Stalin had locked himself in his room for a week in mental breakdown before addressing the situation. The point of this presentation is to convey the Molotov-Ribbentrop Pact and its severe effects on WWII and WWII's outcome.

KEY WORDS: Molotov Ribbentrop Nonaggression Pact WWII

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### Economic Empowerment: A Triangulative Analysis of Techniques to Increase African American Wealth and Financial Stability Using the Capitalist and Elite Theories

Presenter's Name: Cortney Robinson
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

The economic self-empowerment of a community involves that community controlling the allocation of resources, the apportioning of goods and services, and the enforcements of economic decisions, among other things, within that community. Compared to others, African Americans lack economic power and are less financially stable and wealthy than their White American counterparts. The reasons for this disparity are numerous. However, this lack of economic power places the African American community at a disadvantage, politically and socially, in the United States. Overtime African American scholars have suggested methods of increasing the economic power of the Black community but none have been successfully implemented in a way to economically empower mass groups of African Americans. Using the Elite Theory, which proposes that wealthy groups of people have the power to facilitate coordination between top leaders in business, government and civic organizations, educational and cultural establishments, and Capitalist Theory, which suggests that a free market economy drives individuals to purse self-interests in order to be competitive in society, this paper hypothesizes that methods of providing the economic empowerment of the African Americans community, whether new or old, can only be successful if they result in an economically independent African American community, that is considered an elite group of people within America's capitalist society. This hypothesis is investigated by conducting a triangulative analysis of relevant primary and secondary sources collected using the document analysis technique and five expert interviews. The results generated after the systematic analysis suggest that the hypothesis tested is valid.

KEY WORDS: Economics, African Americans, Elite Theory, Capitalism, Empowerment

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### 38 Minutes, the Missouri Disaster: A meteorological and sociological analysis of the Joplin tornado

Presenter's Name: Shadya Sanders
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Terri Adams-Fuller, Everette Joseph

The tornado season of 2011 was especially active compared to previous years in the United States. April 2011 presented itself as one of the deadliest tornado months in 40 years. With national news attention, tornado safety was seemingly on the public's radar, when Mother Nature struck again in May, the high fatality rates were not expected. Recent advancements in weather prediction and a greater variety of information sharing mediums allows widespread severe weather warnings and increased public awareness. The public's perceptions of and reactions to forecast warnings issued may be an overlooked factor, given the fatality rates. We must ask if traditional forecast warnings are too contextually limited to convey the differences in severity and confidence in the severity of storms. This investigation will include an analysis of fatality demographics, track intensity ratings throughout the tornado, and community impact in Joplin, MO. Weather forecasts and local communications between counties and states are also analyzed.

KEY WORDS: tornado, protective action, severe weather, warning

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### Job search and migration in a system of cities

Presenter's Name: Benoit Schmutz
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Modibo Sidibe

We build an equilibrium job search model, where workers engage in both off- and on-the-job search over a set of cities, to quantify the impact of spatial matching frictions and mobility costs on the job search process. Migration decisions, based on a dynamic utility trade-off between locations, can rationalize diverse wage dynamics as part of forward-looking spatial strategies. Our estimation results allow us to characterize each of the largest 200 French cities by a set of city-specific matching and amenity parameters and to measure the impact of distance on spatial constraints. We find that after controlling for frictions, mobility cost parameters are significantly lower than previously reported in the literature. Additional results include a robust positive correlation between on-the-job arrival rates and local wage dispersion, which provides new empirical support to the wage-posting framework and suggests an alternative explanation for the city size wage gap.

KEY WORDS: local labor market; frictions; on-the-job search; migration

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### Neo-Colonialism at the Heart of the Pan-African Movement: Analyzing the Effects of China's Economic Practices in the Republic of Ghana Utilizing the Triangulative Approach and the Dependency Theory

Presenter's Name: Danielle Scott
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Ghana was founded on the principles of Pan-Africanism by its first President, Kwame Nkrumah. Today, Ghana struggles as other countries to enter and use its resources and manipulate the Ghanaian economy for its own specific use. The purpose of this paper is to delve into the People's Republic of China's ongoing practices of neo-colonialism in Ghana and understanding the country's foundations of Pan-Africanism. Utilizing the Dependency Theory, which states that poor nations provide goods and services for the markets of developed nations, and that wealthy nations actively perpetuate the state of dependence by any means, this paper hypothesizes that Ghana is a victim of its dependency on the People's Republic of China, despite the roots of the Pan-African philosophy embedded in the country's ideology. The major research questions considered are as follows: (a) Is China's economic interest in Ghana helpful to the Ghanaian economy? (b) Do Ghana's economic relations with China go against the Pan-African philosophy upon which the country was founded? To address these questions, usage of the triangulative method is essential. By analyzing the quantitative data of the two countries' economic activities, as well as the qualitative historical and cultural findings, the hypothesis in question was systematically tested. The data collected from books, journals, web sources, data bases, government records, and five interviews were scrutinized to address the validity of the hypothesis. The results generated from the analysis of these sources support the hypothesis.

KEY WORDS: Neo-Colonialism, Economic Development, Ghana, China

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### Enduring and emerging issues in mental health on college campuses: Addressing the student mental health crisis

Presenter's Name: Na'imah Sedegah
Classification: Graduate Student
*Presentation Type: Poster Presentation*

The stakes are high and much is expected, there is no wonder way many college students across America are faced with mental health challenges that may negatively impact their health and well-being. The trend and increasing number of students who develop mental health symptoms while attending college has gained the attention of college and university administrators, social and behavioral health researchers and practitioners, and public health policy makers alike. This presentation will review trends in college student mental health outcomes and attempt to shed light on the possible causes that have negatively impacted the mental health of college students on public and private campuses. The goal of this study is to examine the evidence that brings to bear an emerging epidemic of mental health problems among ethnically diverse college students' ages 18-24 years of age. Evidence suggests that this group has greater levels of stress and psychopathology than any time in the nation's history. This visual presentation should particularly benefit transitioning age college students, administrators, faculty, campus safety officers and mental health providers such that it is designed to promote awareness about persistent mental health problems among college students, diminish mental health stigma, bolster access to mental health services and encourage greater reporting efforts. Issues related to risk behaviors such as substance abuse, domestic violence and suicide will also be addressed.

KEY WORDS: Mental Health, College Students, Stigma

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### The Effects of Values on Security Policy Evaluations

Presenter's Name: Cassandra A. Shivers
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Janel M. Gill, Angela P. Cole

**Background:** Since 9/11, the US has struggled with simultaneously maintaining national security and protecting citizens' civil liberties. Legislation restricting civil liberties, such as the Patriot Act, was quickly passed in order to re-establish national security. Despite the importance of the values these liberties represent (e.g., freedom, independence), people sacrificed them to protect themselves from the threat of terrorism. This study examined the effects of values on fairness perceptions of and affective reactions to a policy that restricts civil liberties, and whether these relations depend on security threat seriousness. Methods: Participants were 111 Howard University undergraduates. Participants completed the Schwartz Value Survey, read a brief scenario in which a fictitious security threat on their college campus prompted the implementation of a highly-restrictive security policy, and then responded to dependent measures (e.g., fairness, affective reactions). Security threat was manipulated by creating low

security threat (i.e., dormitory break-ins) and high security threat (i.e., robberies and shootings occurring outside of dormitories) conditions. Results: Partial least squares path modeling revealed: values' effects on fairness perceptions depended on security threat seriousness; and perceived policy fairness was significantly related to affective reactions. Conclusions: Under low security threat, security values (e.g., national security, social order) were positively related to and self-direction values (e.g., freedom, independence) were negatively related to policy fairness perceptions. However, under high security threat, neither of these was related to policy fairness perceptions. Implications of these significant findings will be addressed in the proposed presentation.

KEY WORDS: Values, Security, Threat, Terrorism, Fairness

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### Warnings of Possible Racism Reduces Social Needs/ Moods Damage When Whites (versus Blacks) Ostracize African-Americans

Presenter's Name: Joanna Smith
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Dominique Hubbard, Candice Wallace, Ingrid Mood, Cathrin Green, Ebonee James, Dejanae Evins and Lloyd Sloan

Wallace and Colleagues (2011) found in earlier research that African-American participants reported greater social needs and moods damage when ostracized by White than by Black co-participants in an on-line game played during a break in larger study. This outcome suggests a greater likelihood of racist motive attributions when Blacks are ostracized by Whites (versus when ostracized by other Black participants). Would explicit forewarning of possible racism by the upcoming game's co-players change the typical social needs damage resulting from ostracism, suggesting support for racism construal explanations? African-American HBCU students (116) were forewarned, or not, of past racism by upcoming coplayers (from another university). Participants were then ostracized or included by a pair of African-American or White co-players in an on-line Cyberball game. Participants immediately completed social needs and mood measures and did so again after five minutes of other individual tasks. Ostracism from each ethnic group produced great, immediate damage to moods and social needs fulfillment. This damage diminished after a delay when Forewarning by Coplayer Race interactions emerged for negative moods and self-esteem damage. For both variable consequences, forewarning (versus no forewarning) produced milder mood and needs damage following White coplayer ostracism, but this was not observed following ostracism by Black coplayers. This set of outcomes suggests that prior suggestive warning of racism may reduce the moods needs damage produced by a racial out-group's ostracism, by creating anticipatory reconstructural, bracing for loss, or by increasing the participant's certainty that coplayer hostility inspired their rejection by the interracial coplayers.

KEY WORDS: Social Psychology, Ostracism, Intergroup, Prejudice, Forewarning

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### The Relationship between Stress Management Training and Academic Performance among Black College Students

Presenter's Name: Jeva St. Fort
Classification: Graduate Student
*Presentation Type: Poster Presentation*

It is well known that stress among African Americans can negatively impact heart disease, high blood pressure and over all wellness. Among African American college students stress can be just as impactful by negatively effecting academic performance, anxiety levels, and causing disruption of coping skills, all which may interfere with academic achievement. Purpose: The purpose of this study is to examine the effects of a stress management training program (relaxation training) (Charlesworth, 1980) on perceived stress, daily stress, interpersonal sensitivity as well as depression, test anxiety, psychological anxiety, hostility, and somatization in freshmen African American college students at HBCUs. The stress management training program consists of three audio cd's designed to progressively train students to manage stress through use of cognitive-behavioral techniques. These techniques include progressive relaxation training, deep muscle relaxation, and visual imagery training. Methods: A convenience sample of 30 male and female, African American college Freshmen at a HBCU. Participants will be solicited from introductory college courses to complete the questionnaires. Participants will be given battery of instruments to assess stress levels including Perceived Stress Scale, Test Anxiety Inventory, Symptom Checklist-90 Revised, Rosenberg Self-Esteem Scale and the Inventory of College Students' Recent Life Experiences. Expected Results: Results of the study will show reduction in psychological and physical symptoms of stress following the use of stress management skills.

KEY WORDS: stress, perceived stress, relaxaion, anxiety, stress management, hostility

## Risk Communication, Natural Disasters and Cultural Diversity

Presenter's Name: Carolyn Stroman
Classification: Senior Faculty
*Presentation Type: Poster Presentation*

Coauthors: Terri Adams-Fuller,Michelle Dovi, Denna Kowalek-Geppi, and Tia Tyree

Scholars have long been concerned with how best to communicate with racial and ethnic minorities during natural disasters such as hurricanes and earthquakes (Drabek, 1999; Lindell & Perry, 2004; Perry, 1985; Gladwin & Peacock, 1997). The purpose of this focus group research, which is part of a larger quantitative study, is to understand how best to deliver effective risk communication to diverse populations during times of severe weather events. With the assistance of university researchers and community representatives, focus groups were carried out in several cities, including Birmingham, Houston, Washington, DC, and Oklahoma City, OK. Thematic analysis revealed that participants: (1) had experienced many different kinds of natural disasters, including tornadoes, heat waves, hail storms, flash flooding, severe thunderstorms, and snowstorms; (2) took protective actions when they were warned that inclement weather was coming; (3) reacted in similar ways to threats as other people in their community and stated that their culture influenced how they viewed severe weather events; and (4) turned to social media first before making a serious decision in the event of a severe weather threat. In fact, social media, in particular is where participants gauged their satisfaction of the media in regards to severe weather. They also provided suggestions on how media coverage might be improved during natural disasters. The findings will help researchers and practitioners to develop better educational and outreach programs, as well as more efficient emergency management planning.

KEY WORDS: risk communication, natural disasters, cultural diversity,ethnicity

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## Hitting Close to Home: Analyzing the Political and Social Similarities between the Kurdish Question and African Americans Utilizing the Peace through Power Paradigm and the Stratification Theory

Presenter's Name: Kailyn Stuckey
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Having the opportunity to study and intern in Istanbul, Turkey during the summer of 2014 revealed much more than anticipated. The infamous Kurdish question has been a sensitive topic since the 1920s. Primarily located in the southeast of Turkey, the Kurdish people have been isolated from the rest of Turkish citizens in terms of education, social and economic status, and political access. Although it has had its political and military organization, the Kurdistan Workers' Party (PKK), it is seen in a negative light by the majority of Turkish citizens. Rebellions began to emerge as a result of the oppressive policies of the Turkish government that led to a military coup in 1980, resulting in kidnappings and murders of political and military personnel. In present day Turkey, the Peace and Democracy Party (BPD) is the only Kurdish party in parliament and has denied its support of alleged atrocities of the PKK. Utilizing the Peace through Power and Coercion Paradigm, which investigates the means of obtaining peace through the forceful imposition of order, and the Stratification Theory, which investigates the effects of class power, the similarities and differences between both ethnic groups are determined. This paper therefore hypothesizes that historically oppressed ethnic groups share commonalities involving the lack of political power which directly affects the social and economic structures. By utilizing qualitative research methods, five expert interviews, research abstracts, newspaper columns, and scholarly articles are utilized to test the proposed hypothesis. The results from the systematic analysis show that the hypothesis is tenable.

KEY WORDS: Oppressed Ethnics Political Representaion Global

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## Pauulu's Diaspora: Black Power & Pacific Crossroads

Presenter's Name: Quito Swan
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

*Pauulu's Diaspora: Black Power & Pacific Crossroads* is focused on Black Power, environmental justice and decolonization in the South Pacific through the experiences

of Roosevelt 'Pauulu' Browne. An ecological engineer from Bermuda, Browne was critically involved in indigenous political struggles in the Pacific. He invited Black activists from the region to Atlanta's Congress of African Peoples (1970) and Tanzania's Sixth Pan-African Congress (1974). These experiences greatly influenced indigenous movements in the Pacific. A 1969 trip to Australia "catapulted" Black Power into the country's public imagination. In 1975 British and French officials deported him from the condominium of New Hebrides for spreading "Black Power doctrines" as an adviser to the Melanesian Vanuaku National Party's independence struggle. Through an activist network of Fijian Black women of the Nuclear Free and Independent Pacific movement, he worked as a sustainable development officer in Melanesian Papua New Guinea, which had gained independence from Australia in 1975. Across southern hemispheric archipelagos and crossroads, Browne forged relationships with artists, exiles and activist scholars. Ships, airports, villages, immigration depots, buses, railway stations and street corners linked the Diaspora through crossroads such as Hamilton, Melbourne, Dar Es Salaam and Suva. In these dynamic hubs boundaries of race, power, class, colonialisms, identity, nationalisms, gender and ethnicity could be intensified and transformed. *Pauulu's Diaspora* shows how these "mobile metropoles" and travel spaces have historically functioned as dynamic sites of knowledge production, political transformation and Diaspora creation. Research was conducted across Africa, the Pacific, the Caribbean, Europe and the United States.

KEY WORDS: Diaspora, Black, Power, Pacific, Environment

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## The theoretical relationship between grit, racial identity and academic achievement in African American college students

Presenter's Name: Lauren Thompson
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Hope M. Hill, PhD

This study focuses on the relationship between racial identity, grit and academic achievement for African American college students. For decades the graduation rate of African American students has consistently been the lowest in comparison to other racial groups, including Native Americans and Latinos (National Center for Educational Data, 2012, DeAngelo et al., 2011). However, comparatively low achievement is not the trend for all Black students. The nationwide study, Condition of Education report by the National Center for Education Statistics (2012), reveals that African American female students attained the highest percentages of Associate's, Bachelor's and Master's degrees by at least 3 percentage points. While the literature has examined the reasons for these inter-racial and intra-racial gaps in achievement, only a handful of studies examine resilience in the African American community in terms of risks and protective factors (Doucette, Mellman, Lawson, & Charney, 2008). This paper introduces a stress and coping model that hypotheses that African American students with a positive racial identity and a high level of grit will achieve college success, as measured by socio-emotional functioning and GPA. Informed by Bandura's self-efficacy and Cross' Nigescence theories, this model describes the resilience literature's conjecture that a positive sense of self will yield favorable socio-emotional and educational outcomes. This study provides a unique approach to the pervasive problem of retention for African American college students that will impact psychologists and service workers at all levels of education.

KEY WORDS: African American, academic achievement, grit, racial identity

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## The Commodification of Diversity on Primetime Television

Presenter's Name: Alisa Valentin
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Alisa Valentin

"Television has gradually become our culture" (Postman, 1988). The relationship between television and people has allowed for media to not only exist for entertainment purposes, but it has also become a method in which we construct the reality of our world. Television perpetuates images of people of color on the small screen and those images are replicated and reacted to in the real world. African Americans and Latinos have not been seen on television at the same rates as their White counterparts (Hunt, Ramon, Price, 2014). The representation has especially been limited on primetime television, specifically on the "Big Three" television stations, which include ABC, NBC, and CBS. However, a change has occurred and audiences now see more diverse content on primetime television. Some of the most popular shows that have garnered attention are television shows on ABC including "Scandal," "How To Get Away With Murder," "Blackish," "Fresh Off The Boat," and "Cristela." Why have these changes occurred? Is it for the

purpose pleasing the diverse audience or is it for the purpose of pleasing large corporations' pockets? Audiences of color have flocked to these television stations in support of viewing television shows with characters that mirror their appearance; however, little attention has been paid to why the Big Three have increased diversity in their programming. The purpose of this research is to assert that audiences of color are seen as a profit, or audience commodity. Through the framework of communications political economy the findings demonstrate that media companies hinge their profits on the nature of the content they produce in order to make concrete sales packages for advertising companies. Thus, this presentation has the emancipatory potential of increasing viewer awareness about their position as consumers. Additionally, it shows that diversity is a commodified good repurposed and sold to the audience that yearns for the representation, with a byproduct of becoming hoodwinked for the purpose of profit.

KEY WORDS: Diversity, Political Economy, Television, Representation, Media

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### A Meta-Analysis of Food Insecurity among U.S. immigrant communities

Presenter's Name: Shaunice Wall
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Linda Thompson

Introduction: Hunger and undernourishment was noted to be heavily rooted in food insecurity. These issues were known to lead to decreased ability to resist infections and illnesses resulting in shortened life expectancy, increased maternal mortality, and low birth weight. Most estimates suggested that there are about twelve million unauthorized immigrants in the United States with the bulk of unauthorized immigration originating in Latin America and the Caribbean, particularly in Mexico. The presence and depth of the relationship between undernourishment/ food insecurity and immigrant communities in the United States of America was investigated to determine the severity as well as possible solutions to this perilous situation. Methods: This meta-analysis dissected selected articles from published scientific literature, statistical data from annual reports by various international organizations on immigrant populations. The aforementioned was utilized to unify separate findings on food insecurity and hunger. Results: Latinos – both immigrants and native-born – were found to have the highest food insecurity rates (twenty-seven percent) in the United States and new analyses indicated that levels of food insecurity were higher among infants and toddlers with immigrant parents. Three potential areas of consequence of food insecurity at the household level within immigrant communities were identified, namely; physical, psychological and socio-familial. Conclusion: This meta-analysis denoted that crucial aspects of human development depend on food security. Culturally appropriate policies are compulsory for immigrants to break the cycle of poverty thereby resolving the issues of food insecurity.

KEY WORDS: food insecurity, immigrants, hunger, poverty, undernourishment

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### Conservatism s Child: Examining the Reagan Presidency in Post- Civil Rights America

Presenter's Name: Devon Washington
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

This research examines the parallel journeys of Ronald Reagan and rising conservatism in America following the signing of the Voting Rights Act in 1965. The purpose of this research is to contextualize the Reagan presidency and its policies by showing how conservatism itself rose while civil rights gains made during the 1950s and 1960s were eroded following the passage of the Voting Rights Act in 1965. Although Reagan's policies—intentionally or otherwise—had a negative impact on the African-American community in the 1980s, those policies were neither the sole nor the principal actions in undermining civil rights legislation. In fact, the decision of Lyndon Johnson to pursue the Vietnam War, the ideology of conservatives like Barry Goldwater, and the policies of future presidential administrations—particularly the Nixon administration— set the stage for Reagan to enact his own policies. Ultimately, Reagan's actions followed the trends of marginalization and regression that African-Americans faced as conservatism surged to the forefront during the late 1960s and early 1970s.

KEY WORDS: reagan, civil rights, conservatism, african-americans, policy

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## The Use of the Apologia Theory to Mitigate Damage to a Celebrity s Image and Career

Presenter's Name: Taylor Washington
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

According to Pew Research Center for the People & The Press (2007), when asked about which issues, if any, get too much attention from the news media, fully 40% of the public cited celebrity news. Consequently, numerous celebrities find themselves in daily catastrophes seen and analyzed by the public. In order to combat this, there is a plethora of crisis management tactics that can be utilized including the Apologia Theory, consisting of a denial, evasion of responsibility, reduction of offensiveness, corrective action, and mortification technique. This study will focus on R&B singer Chris Brown, and various offenses in the media beginning in 2009 when he pleaded guilty to physically assaulting his former girlfriend, Rihanna. Through interviews and secondary analysis of data, this study will view each Apologia Theory technique that Brown has used following a crisis and determine which technique is most successful in mitigating damage to a celebrity's image and career. The findings reveal that the Denial technique yields the most forgiveness while the Mortification and Corrective Action techniques yield the least amount of forgiveness. Furthermore, it reveals that image reparation and the Apologia Theory are unrelated. Furthermore, the study shows that the first offense has the greatest impact on sales regardless of the Apologia Theory technique used. Additionally, when it comes to sales, the Apologia Theory has no significant impact. The results found that the severity of the offense plays the biggest role in sales, however, most are able to separate an artist from their music and/or career.

KEY WORDS: Crisis Management, Apologia Theory, Forgiveness, Chris Brown, Celebrity

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## Cognitive behavioral therapy influences HIV-infected youth perception of their diagnosis in psychosocial intervention

Presenter's Name: Angela Wilbon
Classification: Graduate Student
*Presentation Type: Poster Presentation*

**Background:** Human Immunodeficiency Virus (HIV) is an immune compromising infection affecting approximately 40,000 youth between the ages of 13 to 24 in the United States. In the US, youth represent 17% of the population and more than 26% of the newly diagnosed HIV infections in 2010. African American youth represent 60% of all youth infected with HIV. The CDC reports the adolescent population as one of the fastest growing groups infected with HIV. The aim of this study was to measure the efficacy a cognitive behavior therapy (CBT) intervention with African American youth. Methods: Ten African American youth (ages 16-22) diagnosed with HIV participated in a five stage cognitive-behavioral therapy (CBT) pilot psychosocial group. Each stage consisted of 12 ninety minute sessions. Participants were recruited through their medical social workers, medical providers or mental health therapists. The youth were HIV diagnosis disclosed and voluntary participants. The sessions examined youth attitudes, skills and behaviors regarding HIV. CBT activities focusing on HIV education, stigma, perceptions of HIV, goals setting, disclosure, diagnosis adjustment, problem-solving, safe sex and condom negotiation were implemented. Mixed-methods used to measure intervention. Anticipated Results: An increase in HIV knowledge; significant reduction in negative perceptions of HIV; and significant positive change in individual perceptions of future success. Conclusion: Internalized HIV stigma affects many HIV-infected youth. Further evaluation and development of effective HIV interventions may yield positive outcomes for HIV-infected youth medically, emotionally, socially, cognitively and behaviorally.

KEY WORDS: HIV, youth, cognitive-behavioral, psychosocial

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## Confidence in Test Performance Judgments Amplifies Their Impact on Math Engagement

Presenter's Name: Dana Williams
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Evan Harper, Jamie Barden

Previous research has illustrated that Asians are stereotyped as being highly competent, while African Americans are associated with low competence (Fiske, Cuddy, Glick, & Xu, 2002). This research study aims to investigate the plausible consequence of stereotype activation after an individual has performed a task focusing on the ramifications this stereotype activation has on one's math ability beliefs and future math performance expectations. The study assessed the performance of ninety-nine African Americans (73 women and 26 men) on a difficult standardized test made up of 12 challenging math questions. After the test, participants indicated their own perception of performing strongly or poorly. This was

followed by an experimental manipulation which presented the stereotype of Asian versus African American performance on math, or did not present a comparison between races. Participants who were confident that they performed poorly were even more confident of their poor performance and of perceived poor future performance when the stereotype of Asians was activated, validating their poor performance. Conversely, participants who were confident that they performed strongly were even more likely to perceive strong future performance. Thus, confidence in either strong or poor performance amplified the impact of existing performance beliefs on views of future math performance.

KEY WORDS: stereotyping, race, confidence, education, testing

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### A Buzzword for Gentrification: A Critical Ethnography of Historical Preservation as a Revitalization Strategy of LeDroit Park

Presenter's Name: Leticia Williams
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Aitza Haddad Nunez

Historic preservation as a revitalization strategy promotes the repair and restoration of deteriorated or abandoned buildings and residences in a neighborhood, resulting in economic and housing developments that increase property values and attract affluent residents to the updated and refreshed community. Thus, revitalization is a buzzword for gentrification. An exemplary case of this phenomenon is the neighborhood of LeDroit Park located in Ward 1 of Washington, DC (Office of Planning, 2014). According to Petrilli (2012), LeDroit Park is one of the fastest gentrifying neighborhoods in United States. An increase of 27.2% non-Hispanic White residents from 2000 to 2010 put LeDroit Park in tenth place of the fastest gentrifying neighborhoods nationwide (Petrilli, 2012). Thus, it is important to study how gentrification has affected LeDroit Park. This study examines an increase of the displacement of low-income and minority residents of LeDroit Park, Washington, DC, using critical ethnographic methods to explore the effects of gentrification in a historical neighborhood, and how residents are informed and communicate about these effects. On a cold day in January 2014, the researchers witnessed indicators that gentrification and displacement of residents is occurring in LeDroit Park. Ultimately, the gentrification of LeDroit Park is slowly diminishing the neighborhood's cultural identity and affinity for its historical significance. Based on these findings, the researchers developed several recommendations to guide increased neighborhood communication and involvement.

KEY WORDS: communication, gentrification, historical preservation, neighborhood

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### Cultural Learning in Post-racial America: A Triangulative Analysis of the Political Behavior of Blacks in the 21st Century Using the Social Closure Theory

Presenter's Name: D'Sean Williams-Brown
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

The term "post-racial" is a relatively recent term that is often used throughout the social structures of America. It has become relevant to all within American society because of the idea that it represents. In many ways, it implies that American society has progressed away from its troubling past of racism and inequality. The purpose of this paper is to examine the effects of this concept on the African American community and the political and cultural impact that it creates. Utilizing the Social Closure Theory, which proposes that there is an exclusionary closure group aimed at securing its privilege at the expense of a subordinate group, and a usurpationary group aimed at gaining a greater share of the resources, this paper hypothesizes that the signaling of a post-racial America has changed the nature of cultural learning in America which, in turn, has led to a negative impact on the political behavior within African American communities. Through the use of qualitative and quantitative methods, the paper analyzes the influence of both the post-racial proposition and cultural learning, and the effects that they have on a group's political behavior. The data collected from various books, Web sources, and surveys of African American communities were analyzed to determine the tenability of the stated hypothesis. The results generated from the systematic data analysis reveal that the hypothesis tested is valid.

KEY WORDS: Post-racial, Culture, Social Closure Theory, Black Political Participation, Deracialization

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### Effects of Culturally Relevant Pedagogy and Autonomy Supportive Climates on African American Reading Comprehension

Presenter's Name: Keenan Woods
Classification: Graduate Student
*Presentation Type: Oral Presentation*

I will be comparing reading comprehension performance and levels of task motivation among African American 7th grade students who will be placed in one of four reading conditions. Reading conditions included reading material that is either culturally neutral or culturally responsive, along with text reading instructions that will incorporate either autonomy supportive or autonomy controlling language. A 2X2 MANCOVA will be used to analyses which condition better facilitates student's task motivation and reading comprehension skills. The purpose of the research is to expand the small body of research on African American motivation through the self-determination theory (SDT), and add on to Boykin's Talent Quest Model (TQM) principle "over determination of success" by combining motivation techniques and culturally themed reading material. Based on prior research the Culturally Responsive/ Autonomy Supportive condition should produce greater levels of task motivation and task performance than all other conditions.

KEY WORDS: Motivation Culture Pedagogy Self-Determination Achievement

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### Exacerbating an Epidemic: Gentrification s Adverse Affect on HIV/ AIDS Viral Suppression and Prevention

Presenter's Name: Shareen Woody
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

The United Nations considers an area to be experiencing an HIV epidemic if more than one percent of the population has the disease. In the District of Columbia approximately 3 in 100 (3%) persons of the population is effected with HIV. When trying to control and treat a disease it is important to look at all factors that may be contributing to its spread. In the District of Columbia, gentrification makes it difficult for those individuals living with HIV/AIDS to maintain viral suppression, as well as increases the likelihood of at risk populations contracting the disease. Dr. Gregory Pappas stated that "gentrification in D.C. is an independent risk factor for HIV for vulnerable populations, as these populations' social capital is strained and displaced by the disruption of social networks due to the effects of renovation and restoration." (Seminar). Quantitative research will be used to further explain how changing demographics can cause health centers to close, prevent resources from being adequately distributed, and new neighborhoods to be exposed to HIV ;taking the District to where it was a decade ago in fighting HIV/AIDS. With an increase in D.C.'s capacity to treat HIV with affordable housing and prompting Congress to pass legislation that will help fund preventive measures, viral suppression can increase and the number of new HIV cases will continue to decrease.

KEY WORDS: HIV, Gentrification, disruption, treatment

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### African Americans living with HIV in the long haul: The Impact of Social Support and HIV Stigma on HIV Treatment Seeking and Parental Disclosure to Minor Offspring

Presenter's Name: Gerilyn Worthy
Classification: Graduate Student
*Presentation Type: Poster Presentation*

**Background:** This study is intended to examine the impact of social stigma and social support on help-seeking behavior in HIV-positive, adult African-Americans, and the impact of parental serostatus disclosure on the emotional wellbeing of their offspring. In 2009, African Americans comprised 14% of the US population, but accounted for 44% of all new HIV infections (CDC, 2011). It is therefore important to understand the help-seeking behavior of African Americans, in context of the barriers and supports for testing and treatment. Methods: This will be a cross-sectional study of 120 adults recruited from the metropolitan area. The preliminary plan of analysis is to use multiple regression analysis to examine the impact of the independent variables on help-seeking behavior in HIV positive parents. Differences in stigma and social support between disclosed and non-disclosed parental groups in the study will be evaluated with an ANOVA. Correlations between parental levels of stigma and social support and externalizing behavior in offspring will examined. Conclusions: The current literature reflects that perceived stigma (Pinel, 1999), medical mistrust (Obasi and Leong, 2009), and social support (Ncama et al., 2008) significantly impact HIV treatment seeking and adherence as well as status disclosure. Further, contemporary research posits a correlation between parental serostatus disclosure and mood symptoms in children (Brackis-Cott, Mellins, Dolezal, and Spiegel, 2007).

KEY WORDS: HIV Support Stigma Mood Children

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### It's in the Text, Pastor: A Policy Analysis of Black Denominations Attitude toward LGBTQ People

Presenter's Name: Verdell Wright
Classification: Graduate Student
*Presentation Type: Oral Presentation*

While much has been said about the theological morality of Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) people in the Black Church, little has been discussed concerning the policies that historically Black denominations have enacted to enforce their disapproval. In this case, policies serve as institutionalized beliefs. There has been little work done to discuss the policy aspects of this ban on LGBTQ people and how the policies themselves serve as an impediment to change. This research will provide critical analysis of the policies that Black denominations have created, implemented, and aligned with in respect to this issue. Background on the topic of LGBTQ people in Black Churches will be presented, situating the current inquiry in viewpoints and historical interpretations that Black denominations have traditionally held. Literature concerning this topic will be reviewed, discussing the major points that are commonly raised as well as any gaps in knowledge that present themselves. The policies of historically Black churches will be discussed by analyzing each denomination's polity. Their polities will be compared to other denominations with similar organizational structures. A critical undertaking of the policies that Black denominations align themselves with will also be analyzed, with particular interest in how Black denominational alignment with anti-LGBTQ political agendas have assisted these organizations at the expense of others. Finally, suggestions for new policies and practices will be offered.

KEY WORDS: Historically Black Denominations, Black church, polity, LGBTQ, Ordination

# Translational & Clinical Sciences

### Data Curation to Leverage Big Data: The Application to Chemogenomics Databases

Presenter's Name: Bernadette Abadejos
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: J'Ana Brady, Terry-Elinor Reid, Xiang Simon Wang

**Background:** Big Data is a broad term for data sets so large or complex that they are difficult to process using traditional data processing applications. Due to the growing availability of chemogenomics databases there is an increase in the use of Big Data analytic tools to aid modern drug discovery. ChEMBL is a well-known chemogenomics database comprising >700,000 small molecules with >2.7 million bioactivity data points. While publicly available database can provide substantial benefits, the user can incur significant computational losses due to data handling errors. Herein we evaluated the quality of the ChEMBL data by assessing CC chemokine receptor (CCR) and EPH data sets. Method: A random sample of at least 50 data sets was reviewed for each CCR and EPH subtype selected. Number of missing data, incorrect bioactivity data and chemical structures was recorded from which percentage accuracy was determined. Results: The results indicate over 60% accuracy of EPH data sets reviewed and over 80% accuracy of CCR data sets reviewed. The major contributor of error was missing data, which is typically restored during curation processes. There were occasional incorrect structures present in both data sets. Conclusion: The quality and accuracy of data collected from ChEMBL database for *in silico* applications are deemed to be satisfying with cautions for CCRs and EPHs. It is always recommended to implement rigorous data curation techniques prior to modeling efforts.

KEY WORDS: Chemogenomics, Big Data, ChEMBL

### Venous Thromboembolism and outcomes in Adults Sickle Cell Disease

Presenter's Name: Funmilola Adeyemo
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Kalyan Kancherla MD, Navdeep Singh MD, Yordanos Habtegebriel MD, Alem Mehari MD

**Background**: Sickle cell disease (SCD) is recognized as a hypercoagulable state; the frequency and outcomes of venous thromboembolism (VTE) in sickle cell adults have not been well-defined. **Purpose:** To establish the prevalence,

and consequences of VTE in a cohort of patients with SCD. **Methods**: This cross-sectional study included adults with SCD at Howard University Hospital. Demographics, SCD genotype, oxygen saturation, SCD specific co morbidity, Echocardiography, frequency of hospitalizations and VTE data were collected on all patients. All-cause mortality data was obtained from both medical records and social security death index. **Results**: 437 patients were analyzed. Mean age of the patients was 34.8±12.3yrs, 52% of the patients were females and the most common genotype was HbSS (70%). There were a total of 99 VTE events (22.7%); 48 (11%) patients had deep venous thrombosis (DVT) 51 (11.7%) patients had a pulmonary embolism (PE) and 21(5%) patients had both DVT and PE. On Doppler Echocardiography, patients with VTE had significantly higher estimated pulmonary arterial pressure (PASP) when compared to those without VTE 36.5 ± 13.6 vs. 28.9 ± 7mmHg; p <0.001. There were a total of 94 (21.5%) deaths, 24 in the VTE group and 70 in the non VTE group, when compared to those without a VTE, those with VTE had a significantly higher mortality 19.6% vs.30.8 %; p=0.033. Patients who died had a higher estimated pulmonary artery systolic pressure 38.1±13.5 vs.29.5mmHg; p = <0.001, worse creatinine level 1.8 ± 3.8 vs., 0.86 ± 0.87mg/dl; p = .001, elevated total bilirubin 3.84 ± 5.3 vs. 2.26 ± 2.21mg/dl; p= .003 and lower oxygen saturation 96.3 ± 5.4% vs. 98.6 ± 2.2%; p= .002. **Conclusion:** Venous thromboembolism (VTE) is prevalent and is associated with higher mortality in adults with sickle cell disease.

KEY WORDS: SCD VTE Mortality African American PE

## Infrainguinal arterial reconstruction is associated with significant postoperative morbidity

Presenter's Name: Derek Afflu
Classification: Professional Student
*Presentation Type: Oral Presentation*

Coauthors: Derek Afflu, Gezer Ortega, Kavita Deonarine, Thomas Obisesan, David Rose, Daniel Tran, Edward Cornwell, III, Kakra Hughes

**INTRODUCTION:** Whereas several studies regarding the outcomes of infrainguinal arterial reconstruction abound in the literature, there are relatively few multi-year nationwide studies in contemporary times. We sought to evaluate the multi-year outcomes of infrainguinal arterial bypass on a national level. **METHODS:** The American College of Surgeons' National Surgical Quality Improvement Program Database (ACS-NSQIP) was queried to identify all patients undergoing infrainguinal arterial reconstruction from 2005 to 2010. Outcomes including 30-day NSQIP-defined major complications were identified, and multivariate analyses were conducted to identify variables associated with adverse outcomes. **RESULTS:** The study included 32,922 patients who underwent an infrainguinal lower extremity arterial reconstruction over a six-year period. The mean age was 67 years, in a primarily male population (62%). The majority of patients were non-Hispanic white (75%). The most common indication for a leg bypass was intermittent claudication (20%), followed by ischemic rest pain (12%). Median length of stay was 5 days. Mortality following infrainguinal bypass was 3.2% and graft failure rate was 4.2%. The most common complication was surgical wound infection (10.4%). Additional postoperative complications included cardiac in 2.5%, pulmonary in 5.6% and renal in 3.7%. Overall, the rate of major complications was 27%. Factors associated with an increased odds of mortality included renal comorbidity (OR 3.65, 95% CI 2.99 – 4.44) and pulmonary comorbidity (OR 2.09, 95% CI 1.77 – 2.47). Female gender was associated with a slight increase in mortality (OR 1.18, 95% CI 1.01 – 1.37). Cardiac comorbidity (OR 1.94, 95% CI 1.36 – 2.78), black ethnicity (OR 1.45, 95% CI 1.27 – 1.72) and smoking (OR 1.20, 95% CI 1.06 – 1.37) were associated with increased odds of graft failure. **CONCLUSION:** Although the mortality rate is relatively low for infrainguinal arterial reconstruction in contemporary times, the high overall complication rate suggests that rigorous indications be utilized when deciding to perform these operations.

KEY WORDS: infrainguinal, leg bypass, reconstruction, arterial, morbidity

## Gender and Trends in Chronic Obstructive Lung Disease Prevalence, Morbidity, and Mortality among Adults - United States, 1999-2010

Presenter's Name: Samina Afreen
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Alicia N. Thomas, Wayne Davis, Vishal Poddar, Alvin Thomas, Isaac Biney, Alem Mehari

**Background**: Chronic Obstructive Pulmonary Disease (COPD) is a leading cause of morbidity and mortality. Despite increasing impact women COPD is significantly understudied. This surveillance summary reports gender and trends in

different COPD measures. **Reporting Period**: This report presents national data regarding physician diagnosed COPD prevalence (1999-2010) from National Health Interview Survey, ED visits (1999- 2009) from the National Hospital Ambulatory Medical Care Survey, hospitalizations (1999-2010) from the National Hospital Discharge Survey and COPD deaths (1999- 2009) from the Mortality Component of the National Vital Statistics System. **Results**: Prevalence of COPD from 1999-2010 was significantly higher among women than men. In 2008-2010, 5.4% (12.6 million) of U.S. adults had COPD: 6.4% of all women (7.9 million) compared with 4.3% of men (4.7 million). There were 698,000 hospitalizations in 2010 (397,000 women and 301,000 men) with COPD as first diagnosis. While overall death rates remained mostly stable, in 2009 COPD death rate was 74.7/100,000 for men and 56/100,000 for women. The most substantial change was decrease in male COPD death rate from 82.2/100,000 in 1999 to 74.7/100,000 in 2009. In contrast female death rate modestly increased from 54.6/100,000 (1999) to 56/100,000 (2009). Although COPD death rates declined for men and remained stable for black women, white women saw an increase. **Conclusion**: The last decade of has seen an upward trend in COPD among women. If unchecked, COPD might become a woman's disease. Moreover, to meet Healthy People 2020's objectives, additional efforts must be made towards reducing prevalence, morbidity and mortality, with greater emphasis towards females.

KEY WORDS: Gender, Trends, COPD, Prevalence, Morbidity

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## The role of intravenous immunoglobulin in the management of severe refractory thrombocytopenia in HIV infection

Presenter's Name: Onaopemipo Ajiboye
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Ajiboye, Onaopemipo MD, MPH; Odogwu, Cynthia MD; Tate, Kandie MD

**Methods**: We present a case study of a 63 year old female with a history of AIDS, hepatitis C virus, CKD stage 3, intravenous drug use, hypertension, diabetes mellitus and anxiety who presented to the ER on account of hypoglycemia of 18mg/dl on evaluation by EMS which improved to 183mg/dl after eating. On admission, ecchymosis was noted on extremities and trunk with platelet count of 11. Onset of thrombocytopenia seems to coincide with HAART cessation for over a year. Absolute CD4 a month prior to admission was 306 cells/ml, CD4% of 20%. She has had multiple re-admissions and platelet transfusion for refractory thrombocytopenia. HIV was diagnosed about 23 years ago. Multiple platelet transfusions and steroids given during this hospital stay were refractory hence ITP with overwhelming autoantibodies and splenic sequestration was considered. CT abdomen revealed mild to moderate hepatosplenomegaly. The patient subsequently got 2 rounds of Intravenous Immunoglobulin; IVIG with remarkable improvement and platelets peaked at 86L. **Conclusion**: IVIG is indicated for severe thrombocytopenia but it is expensive. More research needs to be done to determine the onset of HIV associated thrombocytopenia along the spectrum of the natural history of HIV and the need for HAART adherence and prophylaxis which may include medications and/ or splenectomy to mitigate the cost of recurrent non-curative therapy.

KEY WORDS: Intravenous Immunoglobulin, Refractory thrombocytopenia, HIV, Platelet transfusions, Autoantibodies

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## Is Endovascular Intervention for Claudication a Safe and Easy Option?

Presenter's Name: Stanley Aladi
Classification: Professional Student
*Presentation Type: Oral Presentation*

Coauthors: Stanley Aladi, BA; Derek Afflu, BS; Gezzer Ortega, MD MPH; David Rose, MD; Edward Cornwell III, MD; Kakra Hughes, MD

**Introduction**: Over the past decade, the success of endovascular intervention for intermittent claudication has become well established. Whereas operative treatment has generally been reserved for patients with severe disease, endovascular intervention is now being widely utilized for many patients with relatively mild symptoms. The overall complication rate for these patients, however, has not been clearly delineated. We sought to determine the overall complication rate associated with patients undergoing endovascular intervention for claudication on a national level. **Methods:** A query of the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) Database was conducted to identify patients undergoing endovascular treatment for claudication from 2005 to 2010. Patient demographics, preoperative comorbidities and postoperative outcomes were recorded, and multivariate

analysis was performed controlling for multiple variables. **Results:** There were 3,440 patients identified who met the inclusion criteria. The mean age was 68.1 years in a primarily male population (64.7%). The overall prevalence of a preexisting comorbidity was 24.5%. Postoperative mortality rate was 3.9%. Cardiac complications occurred in 2.9% of patients, 6.8% had pulmonary complications and 4.4% had renal complications. The overall postoperative complication rate was 25.0%. Upon multivariate analysis, the greatest likelihood of developing any complication was related to the existence of a cardiac comorbidity (OR 2.09, 95% CI 1.31-3.32). **Conclusion:** Endovascular intervention for claudication is associated with significant morbidity. Continued use of stringent pre-procedure indications is advisable.

KEY WORDS: endovascular, claudication, intervention, morbidity

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### Sister Mary Joseph Nodule A Rare Representation of Prostate Cancer, A Case Report

Presenter's Name: Haseena Mazhar Ali
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Kawtar Alkhalloufi, Farhan Khan, Carmen Coles, Fiedelia-lambert Marie,

**Background:** Prostate cancer metastasis to umbilicus is uncommon occurring less than 0.5% of cases and represent metastasis most commonly from stomach, ovaries, and colon. We are reporting a case of Sister Joseph nodule (SMJN) secondary to metastatic prostate cancer in an African American patient. **Methods:** Our patient is a 74 years old male with history of prostate cancer, treated with radiation and with leuprolide, Presented with weight loss, decrease appetite and abdominal pain. Examination was significant for a hard, non-tender umbilical mass. Computed tomography scan of abdomen-pelvis showed an ill-defined mass measuring 3.7 cm x 3.8 cm x 2.5 cm , and enlarged prostate gland of 7.5 cm x 5.2 cm. Esophago-gastro-duodenoscopy and Colonoscopy ruled out gastrointestinal malignancy Excisional biopsy of the umbilical mass showed evidence of metastatic adenocarcinoma. Immunohistochemical stain was positive for PSA and alpha-methylacyl-CoA racemase consistent with prostate primary adenocarcinoma. Bone scan showed diffuse metastases to bones. **Results:** Prostate cancer is the second most common cancer in men worldwide. SMJN as the initial manifestation of an internal malignancy has been reported in 14-45% cases in various series, and case reports. Etiology of metastases reach the umbilicus remains largely unknown. We reporting a rare finding of umbilical metastasis from prostate cancer, very few cases of umbilical metastasis reported, physician treating patients with umbilical finding should always include metastasis disease along with benign lesions and primary neoplasm as one of differential and evaluate further for diagnosis. **Conclusions:** Prostate cancer metastasis to umbilicus is a rare presentation, etiology unclear.

KEY WORDS: rare presentation, Prostate Cancer, umbilical metastasis, Sister Joseph Mary nodule, unclear etiology

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### Effects of Vitamin C Supplementation in a Sickle Cell Disease Mouse Model

Presenter's Name: Najlaa Almohmadi
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Celia De Souza Batista; Luis Almeida; Zenaide Quezado

There is growing evidence characterizing sickle cell disease (SCD) as a model of oxidative stress due to an imbalance between increased production of reactive oxygen species and a reduced content of antioxidants. Particularly, SCD patients have substantially decreased circulating levels of antioxidants such as vitamin C even in the presence of an adequate dietary intake. Therefore, we hypothesized that optimum levels of vitamin C could reduce oxidative stress in SCD and contribute to its treatment. We examined the effectiveness of vitamin C supplementation in a transgenic SCD animal model ("Townes"). A group of male siblings composed by controls, heterozygous and homozygous were randomly assigned to receive vehicle (saccharin 0.5%) or vitamin C (0.04%, v/v) for 1 or 4 weeks. Results indicated that vitamin C supplementation for 1 or 4 weeks did not change its levels in any tissue. Levels of glutathione were significantly elevated in spleen ($p<0.001$) and lung ($p<0.02$) in homozygous animals but not in any other genotype after 4 weeks of vitamin C supplementation. Hematological analysis demonstrated significant leukocytosis, decreased red blood cell (RBC) count, hemoglobin content and hematocrit in homozygous compared with all other genotypes ($p<0.001$). Supplementation of vitamin C for 1 week worsened the leukocytosis ($p=0.004$) and did not change any RBC parameters. Combined these results suggested that in sickle cell animals, vitamin C may

act as a pro-oxidant compound, particularly during short supplementation periods. Also, these findings may explain why clinical trials using vitamin C supplementation in sickle cell disease generated ambiguous results.

KEY WORDS: sickle cell disease, vitamin C

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### The Disparity Persists: Socioeconomic Status and Bariatric Surgery in African American Patients

Presenter's Name: Lauren Bacon
Classification: Professional Student
*Presentation Type: Oral Presentation*

Coauthors: Tafari Mbadiwe BASc, JD, Gezzer Ortega, MD, MPH, Chijindu C. Emenari, BS, Neh D. Molyneaux, MPH, Sylvonne A. Layne, MPH, Navin R. Changoor, MD, Daniel D. Tran, MD, Terrence M. Fullum, MD

**Background:** Bariatric surgery is an important tool in the management of refractory obesity and its associated comorbidities. However, the impact of socioeconomic factors on bariatric surgery outcomes, particularly in African-American patients, has not been thoroughly investigated. The aim of our study is to assess the effect of socioeconomic status on bariatric surgery outcomes in a predominately African-American population. **Methods:** We performed a retrospective review of prospectively-collected data describing patients who underwent bariatric surgery at a single, urban, teaching institution between August 2008 and June 2013. Data collected included BMI, preoperative risk factors, procedure type, excess weight loss and resolution of comorbidities. Median Household Income (MHI) in each patient's ZIP code was used as a proxy for socioeconomic status and to stratify patients. Descriptive and summary statistics were calculated to analyze relationships between socioeconomic status proxies and post-operative outcomes. **Results:** 284 patients met our inclusion criteria. African-Americans and females made up 90% and 85% of the population, respectively. Mean pre-operative BMI was 48.0 kg/m2. The five ascending MHI quintiles comprised 0%, 0%, 21%, 46% and 33% of the overall population, respectively. **Conclusions:** Our data does not permit us to draw generalized conclusions about the effect of differences in socioeconomic status on bariatric surgery outcomes. However, the skewed distribution of the MHIs reported in our sample suggests the presence of economic, social or other barriers interfering with the access of African-American patients in less-privileged socioeconomic groups to bariatric surgery. Further investigation is warranted to identify and characterize these impediments.

KEY WORDS: Socioeconomics, Health Disparities, Surgical Outcomes, Bariatrics, African-Americans

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### Colorectal cancer disparities between Blacks and Hispanics: Healthcare utilization versus biological differences

Presenter's Name: Dilhana Badurdeen
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Oral Presentation*

Coauthors: Rahul Nayani, MD, MPH, Angesom Kibreab, MD, Hassan Brim, PhD, Hassan Ashktorab, PhD, Edward L. Lee, MD, Andrew K. Sanderson, MD, Victor F. Scott, MD, Charles D. Howell, MD, Adeyinka O. Laiyemo, MD, MPH

**Background:** Despite comparable rates of putative risk factors for colorectal cancer (CRC) including poor access and lower screening uptake, Hispanic Americans have reduced burden of CRC when compared to Blacks. It is unknown if better healthcare utilization (when access is available) or biological differences are playing a major role in these disparities within minority groups. **Aim:** To compare the adherence to colonoscopy (Healthcare utilization) and the findings of neoplasia among compliant patients (biological differences) by race-ethnicity (Blacks versus Hispanics). **Method:** A total of 2,126 (88.2%) non-Hispanic Black and 284 Hispanic (11.8%) patients were scheduled for colonoscopy from September 2009 to August 2010. We compared Blacks to Hispanics in their rates of attendance, quality of colonoscopy and detection of neoplasia. **Results:** Blacks were slightly older (56.5 versus 52.7, P<0.001) and were less likely to be married (23% versus 32%, P=0.001), but there was no difference by sex (P=0.64). A lower percentage of Blacks were compliant (76.9% versus 82%, OR=0.76; 95%CI: 0.54-1.06). Blacks were more likely to have polyps (50.8% versus 33.2%, OR=2.10; 95%CI: 1.54-2.88) and adenoma (26.3% versus 18.8%, OR=1.53; 95%CI: 1.05-2.23). These differences were mainly from diagnostic procedures (Table). Nine (0.57%) Blacks and one (0.44%) Hispanic had CRC diagnosed (P=0.8). **Conclusion:** Although Blacks were borderline less likely to attend their colonoscopy, they were significantly more likely to have CRC. This suggests that biological differences may be playing more of a role in the increased burden of CRC among Blacks as compared to Hispanics.

KEY WORDS: CRC screening, Colonoscopy, Compliance, Disparity, Healthcare utilization

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## Managing the nutritional needs of patients with Alzheimer's Dementia: A Case Study Using the Nutrition Care Process

Presenter's Name: Mearaph Barnes
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Thomas V. Fungwe, Ph.D., CFS, Avis Graham, Ph.D., RD, LDN, Oyonumo E. Ntekim, MD, MHSA, Ph.D, Linda Thompson, Ph.D., LN, Chimene Castor, EdD, MS, RD, LDN

**Background:** As under-nutrition can affect a variety of organ systems indirectly/directly, disorders of the central nervous system can be treated with nutrition therapy. Malnutrition and weight loss are frequent complications of Alzheimer's disease (AD). African Americans made up 58% of persons with AD aged 85+ in 2014. Genetic factors do not appear to account for differences, instead, there is evidence that missed diagnosis, lower education level, chronic hypertension, depression and diabetes are responsible for increased risk of Alzheimer's in the African-American community. **Objective:** Assess the nutritional status of a hospitalized patient with a past medical history of multiple neurological/psychological disorders by using the nutrition care process to assess, diagnosis, and evaluate nutritional need. **Methods:** Data was collected using patient medical records, interviewing of medical staff, interview and meal rounds. Limited dietary interview of patient due to cognitive deficit. **Subject:** A 74 year old African American male admitted to the hospital with a fractured left hand due to a fall. Medical history includes seizures, multiple strokes, depression, Alzheimer's, hypertension, osteoporosis, and dyslipidemia. **Intervention** Liberalize patient diet, establish feeding assistance need, supplementation, and coordinate care with interdisciplinary team. Improvement of nutritional status by providing increased caloric intake, feeding assistance and remove dietary restrictions. **Conclusion:** Dietitians would play an important role in addressing and improving the nutritional health of individuals with neurological/psychological disorders such as AD. By initiating early nutrition-interventions and focusing in improving intake by working with the health care team and family members, patients with AD are improving with their health.

KEY WORDS: neurology, clinical, case, study, nutrition

## ICU Nurses and the Implementation of Chlorhexidine Bath

Presenter's Name: Cynthia Campbell
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Linda Biney, Alexander Ukaoma

**Background:** Central line associated blood stream infections (CLABSI) in ICUs are a major cause of hospital related deaths in the US, resulting in approximately 30,000 deaths per year. Prevention efforts to reduce CLABSI morbidity and mortality include chlorhexidine baths (CHB) and related central line bundle elements. The American Association of Critical Care Nurses issued a practice alert in April 2013, supporting daily CHB. To date, there is mixed evidence of CHB effectiveness and concerns about compliance with protocols. No studies related to ICU nurses experiences with CHB were identified. **Statement of the Problem:** While CHB can be effective in reducing the risk of CLABSI, the experiences of ICU nurses regarding this newly implemented method have not been explored. **Research Question:** What are the experiences of ICU nurses regarding newly implemented CHB protocol? **Purpose of the Research:** To begin to understand ICU nurses experiences with CHB and include that knowledge as part of the ongoing discussion related to the implementation of the protocol. **Conceptual Framework:** Theory of Reasoned Action

**Methods:**
Research Design: Qualitative exploratory study
Sampling Design: Convenience sample of local DC ICU nurses
Data: 2-3 audio recorded focus groups with 6-8 ICU nurses/ group over a six month period of time
Location/Access: The investigators are nurses working in local hospitals who plan to use their relationship with their nursing directors to gain access to ICU nurses.
Data Analysis: Grounded theory method to guide (1) qualitative coding, (2) constant comparison, (3) analytic memo writing, and (4) development of conceptual categories.

KEY WORDS: Central line associated blood stream infections, ICU nurses, chlorhexidine bath

## Claustrophobic Tendencies: A Risk for CPAP Non-adherence

Presenter's Name: Janalyn Cantey Edmonds
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Hyunju Yang, Tonya S. King, Douglas A. Sawyer, Albert Rizzo, Amy M. Sawyer

**Background:**Though claustrophobia is a frequently reported clinical problem among CPAP-treated OSA adults, few studies have examined the problem. **Objectives:** (1) Determine frequency of claustrophobia in adults with obstructive sleep apnea (OSA) after first CPAP night; and (2) determine if claustrophobia influences CPAP adherence. **Methods**: Secondary analysis of data from a prospective longitudinal study on factors of influence on CPAP adherence (n=97). Data from the CPAP-Adapted Fear and Avoidance Scale (CPAP-FAAS) collected immediately after CPAP titration polysomnogram was examined as the independent variable. The primary outcome was objective CPAP use at 1 week and 1 month. **Results:** Sixty-three percent had claustrophobic tendencies. Females had more prevalent and higher CPAP-FAAS scores than males (84% v 44%, respectively; p<0.001). CPAP-FAAS ≥25, which is a positive score for claustrophobic tendencies, was significantly influential on CPAP non-adherence at 1 week (aOR= 5.53, 95% CI 1.04, 29.24, p=0.04) and less CPAP use at 1month (aOR= 5.06, 95% CI 1.48, 17.37, p=0.01) when adjusted for body mass index and CPAP mask style. When CPAP mask style was examined by CPAP-FAAS score ≥ 25, there was not a significant association between CPAP mask style and CPAP-FAAS score ≥ 25. **Conclusions:** Claustrophobic tendencies, particularly among OSA females, are highly prevalent. Patients with claustrophobia are at risk for CPAP non-adherence. Therefore interventions are needed to effectively reduce this treatment-related barrier and potentially improve CPAP adherence in the adult OSA population.

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Institute of Nursing Research.

KEY WORDS: obstructive sleep apnea, continuous positive airway pressure, claustrophobia, anxiety disorders, treatment compliance

## Inverse Association Between Alzheimer's Disease and Cancer? A Study at the Gene Expression Level

Presenter's Name: Yuanxiu Chen
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Osigbemhe Iyalomhe, Joanne Allard, Oyonumo Ntekim, Sheree Johnson, Vernon Bond, David Goerlitz, James Li, Thomas O. Obisesan

Physical exercise improves cognitive functions by promoting brain-derived neurotrophic factor (BDNF)-dependent synaptic plasticity, neurotransmission and neurogenesis in animal studies (Sterniczuk R et al 2010), and it reduces the risk of AD and delays the onset or progression of AD with minimal cost and adverse effects (Geda YE et al 2010). However, biological mechanisms underlying the beneficial effects of physical exercise in AD-related cognitive declines are not fully understood. Furthermore, does this biological mechanisms support the findings that Alzheimer's Disease has an inverse association with cancer? **Methods:** We used global gene expression profiling technology to understand the changes at the gene expression level of patients with mild cognitive impairment by comparing blood samples from patients before and after 6-month monitored aerobic exercise program and analyzed the functional relationship of the up- and down-regulated genes based on their functional pathways. **Results:** We found that a total of 73 genes were up-regulated (fold change 2.0, P<0.01) and 8 genes were down-regulated (fold change 2.0, P<0.01). While almost all the down-regulated genes are proinflammatory/immunological function factors, majority of the up-regulated genes related cell proliferation and cycle controls. Our functional gene network analysis suggested that cancer and AD share common signaling pathways which may maintain a balance of cell survival verse death **Conclusions:** Our findings indirectly supported the inverse link between Alzheimer's Disease and cancer.

KEY WORDS: Alzheimer's Disease, Cancer, Gene Expression, Physical exercise, signaling pathways

## Improving the Nutritional Status of a Patient with Pancreatic Cancer

Presenter's Name: Yu Chung Chooi
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Allan A. Johnson, Ph.D, FASAHP, Ph.D. CFS, Chimene Castor, EdD, RDN

**Introduction:** An estimated 48,960 new cases of pancreatic cancer are expected in 2015.Cancer of the pancreas usually develops without early symptoms. Unintended weight loss and poor appetite are very common in patients with pancreatic cancer. **Objective:** The objective of this case study was to investigate how nutritional care process can be used to improve the nutritional status of a patient with pancreatic cancer. **Case Study/Methodology:** The patient is a 63-years old African American male with an invasive, poorly differentiated pancreatic adenocarcinoma. He has been receiving chemotherapy and was admitted to Howard University Hospital due to syncope. The patient experienced unintentional weight loss of 20-30 lb in the past 3 months. His current weight is 100 lb (BMI=13.4 kg/$m^2$). **Results:** The two selected priority nutritional problems of the patient were predicted suboptimal nutrient intake and unintended weight loss. Nutrition intervention of eating frequent small meals or snacks with high protein was aimed at increasing the total nutritional intake. Food choices focused on those that were easy to chew, swallow, digest, and absorb. Supplementation with an enteral formula was recommended to provide 360 kcal and 14 g of protein per day. The overall goal was to improve nutritional status and stabilize weight loss. **Conclusions:** The nutrition care process played key roles in assisting to improve the patient's nutritional status, and prevent or delay further decline. Such an approach may improve the quality of life even in a pancreatic cancer patient.

KEY WORDS: Nutrition Care Process, Pancreatic Cancer

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## Radiation-related pericarditis in a patient with lung malignancy.

Presenter's Name: Jericho de Mata
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Onaopemipo B. Ajiboye, MD, MPH, Brittany Brooks, MD, Cynthia Odogwu, MD, Kandie Tate, MD

**Method:** This is a case study of a 66 yearold female with a history of lung cancer diagnosed in 2009, statuspost chemotherapy, radiation therapy, and right lobectomy who presented to her pulmonologist for progressively worsening shortness of breath; from there she was referred to the emergency department for further evaluation and treatment. An initial impression of bilateral pulmonary embolisms was confirmed by CT angiography and therapeutic lovenox was started. On the morning of her second hospital day, however, her shortness of breath persisted and her vital signs worsened. To further evaluate her worsening dyspnea, a stat 2d echocardiogram was obtained which revealed a moderate pericardial effusion and tamponade. An emergent pericardiocentesis was performed via pericardial window. The pericardial fluid cytology was negative for malignant cells; hence her effusion was likely a complication of radiation therapy. Subsequently, her acute respiratory distress was attributed to her acute pericardial effusion as opposed to her chronic pulmonary embolisms. Conclusion: Radiation-related pericarditis is a late complication of chest radiation. Advancements in medicine and aggressive treatment regimens have lead to improved survival of lung cancer patients, thus physicians should anticipate a rise in iatrogenic complications of cancer therapy.

KEY WORDS: Lung cancer, radiation, malignancy, pericarditis

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## Sitting Screen Hours and C-Reactive Protein in a National Sample

Presenter's Name: Kristen Dodd
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: K Dodd, R Solomon, I Dodd, T Obisesan, RF Gillum

**Background:** Studies have shown that patients with elevated basal levels of CRP are at an increased risk for cardiovascular disease. Recent studies have shown sitting may also increase risk. **Methods**: In the 2005-2006 NHANES Survey, participants were asked TV/video and computer hours, which we summed to estimate sitting screen hours (SSH). NHANES quantified CRP by latex-enhanced nephelometry. We assessed the association of SSH and CRP in 1318 persons aged 60 years and over without missing survey data on screen hours, CRP or health status using non-parametric correlation. **Results:** In older adults, 59% reported 3 or fewer SSH, while 6% reported more than 5 SSH. Median CRP was 0.25 and the 95$^{th}$ percentile was 1.78. Spearman's rank correlation coefficient for SSH and CRP was 0.16 ($p=0<0.00001$). We assessed confounding by age, gender, race/ethnicity and health status by stratified analysis. Correlation coefficients showed little change and remained significant within STATA of age, gender and health status. However, the association was stronger in men (rho=0.22) than women (rho=0.09) and varied somewhat among race/ethnic group (i.e. whites rho=0.17; blacks

rho=0.11; Mexican Americans rho=0.11). **Conclusions:** SSH was independently associated with CRP level in older persons. Sitting may promote the inflammatory state leading to vascular mortality and morbidity.

KEY WORDS: CRP, sitting, sedentary, screen-hours, inflammation

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## Racial Disparities and Surgical Outcomes: Does the Level of Resident Surgeon Play a Role?

Presenter's Name: Mina Ekladios
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Navin Changoor, MD; Gezzer Ortega, MD, MPH; Mina Ekladios, MS; Cheryl Zogg, MSPH, MHS; Edward Cornwell, MD; Adil Haider, MD, MPH

**Background:** Despite the recognition of racial/ethnic disparities, few studies have considered the role of surgical residents. This study aimed to elucidate if disparities in post-operative outcomes associate with the presence/level of surgical residents involved in procedures. **Methods:** Patients undergoing laparoscopic cholecystectomy, laparoscopic appendectomy, and open hernia repair in the 2005-2010 ACS-NSQIP database were compared by level of provider (junior residents PGY 1-2, senior residents, attending alone) for differences in patient demographic, clinical case-mix and post-operative outcome information using descriptive statistics and multivariable logistic regression. **Results:** 196,770 patients met inclusion criteria. Attendings performed 43.0% of operations alone versus 37.5% with senior residents, 20.1% with junior residents. They operated on 44.1% White, 30.1% Black, and 43.9% Hispanic patients compared to 35.5%, 48.7%, and 41.3% and 20.4%, 2.3%, and 14.8% for cases with senior and junior residents. When compared to attendings alone, senior residents were more likely to operate on Black patients (adjusted OR 2.02, 95%CI: 1.95-2.09) and have major (OR 1.13, 95%CI: 1.06-1.21) and minor complications (OR 1.20, 95%CI: 1.11-1.31). Junior residents were also more likely to operate on Black patients but did not experience significantly worse outcomes. **Conclusion:** Higher risk-adjusted odds of complications among patients treat by senior residents need to be carefully weighed given the group's higher likelihood of operating on minority patients.

KEY WORDS: Health Disparities; Surgical Outcomes; Resident Involvement; Level of Training; Provider Factors

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## Tuberculosis Susceptibility Patterns in an Inner City Hospital in Washington, D.C.

Presenter's Name: Graham Ellis
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Maya Bryant, Mary Maneno

**BACKGROUND:** Concern for emerging drug resistance in Mycobacterium tuberculosis isolates due to the influx of immigrant populations to the United States warrants vigilance in monitoring susceptibility patterns among these groups. Given that increasing rates of resistance would impact empiric treatment strategies, monitoring susceptibility patterns within diverse immigrant communities is important. To address this knowledge gap, the susceptibility patterns among Mycobacterium tuberculosis isolates were evaluated at an inner city teaching hospital in the District of Columbia. METHODS: A retrospective chart review of Tuberculosis cases managed at Howard University Hospital from 2006-2013 is ongoing. To initiate data collection, drug sensitivity reports from each Mycobacterium tuberculosis isolate were matched to individual patient records. RESULTS: Of 61 Tuberculosis cases identified, 50.8% were found in patients born in North America, 34.4% in patients born in Africa, 11.5% in patients born in South America, and 3.3% from patients born in South-East Asia. Seven isolates (11.5%) showed resistance to the standard anti-tuberculosis drug regimen, five of which (71.4%) came from foreign-born patients. Multiple–drug resistance was found in four of the seven cases; three of these cases were from foreign-born individuals. CONCLUSION: Data from our ongoing study shows that drug-resistant tuberculosis is uncommon in our population. An empiric treatment strategy for tuberculosis followed by definitive therapy tailored to susceptibility reports remains a good treatment approach.

KEY WORDS: Tuberculosis, drug-resistance, MDR-TB, susceptibility pattern

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## Successful Outcomes After Bariatric Surgery in Black Patients

Presenter's Name: Chijindu Emenari
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Terrence M. Fullum, MD, Chijindu C. Emenari, BS, Gezzer Ortega, MD, MPH, Neh D. Molyneaux, MPH, Sylvonne A. Layne, MPH, Akere C. Atte, Pharm. D, Navin

R. Changoor, MD, Monique Y. Turner, BS, Tiffany N. Preer, MD, Denia Tapscott, MD, Daniel D. Tran

**Introduction:** The incidence of obesity has reached epidemic proportions affecting one-third of US adults. Few studies evaluate the outcomes of bariatric surgery on Black patients. **Objective**: Our study aims to evaluate outcomes of bariatric surgery at an urban academic institution serving predominantly Black patients. **Methods:** A retrospective review of prospectively collected data was performed on patients who underwent bariatric surgery from August 2008 to June 2013. Data was collected on 284 patients of whom 90% identified themselves as African American. Data collected included BMI and co-morbidities. Outcomes of interest included mean BMI and resolution of co-morbidities. **Conclusion:** Black patients receiving bariatric surgery have successful outcomes at one year. In a population with higher rates of obesity and obesity related co-morbidities bariatric surgery can serve as a viable option for treatment.

KEY WORDS: Bariatric Surgery, weight loss surgery, Ethnicity and weight loss, Black weight loss patients, African American weight loss patients, gastric bypass surgery, and resolution of obesity related comorbidities

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## Pharmacogenomics as a Clinical-Decision Support Tool in Comorbid Depression in Diabetes

Presenter's Name: Earl B. Ettienne
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Gail Nunlee-Bland, Georgia Dunston, Adaku Ofoegbu

**Background**: Diabetes mellitus and major depressive disorder (MDD) are chronic, noncommunicable diseases (NCDs) with an adult prevalence of 9.3% and 6.7%, respectively, and they account for approximately $395 billion in total healthcare costs in the United States. Though the relationship has not been elucidated, comorbid depression in type 2 diabetes is associated with difficulty in managing diabetes and a higher mortality rate. Pharmacogenomics studies the impact that genetic variations have on medication therapy and drug metabolism. Pharmacogenomic testing as a clinical decision support tool may improve therapeutic outcomes in patients with comorbid depression in diabetes. **Projected Methods:** Using the electronic medical record (EMR) of the Howard University Hospital Diabetes Treatment Center, we will examine glycated hemoglobin A1C (HbA1c) levels and Patient Health Questionnaire9 (PHQ9) scores identifying patients with moderate to severe depression. We will perform buccal swabs to collect genetic information, and generate a pharmacogenomic profile. We will retrospectively analyze the medication histories of these patients to determine whether pharmacogenomic testing conducted at the initial patient screening would have changed medication choice. Finally, we will conduct pharmacoeconomic analyses to determine whether the introduction of pharmacogenomics testing would have been cost effective. **Projected Results:** We expect to find a correlation between depression and diabetes commensurate with the literature while showing that pharmacogenomics can improve outcomes and reduce costs.

KEY WORDS: pharmacogenomics, depression, diabetes, EMR, PHQ-9

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## The Influence of Adiposity and Depressive Symptomatology on Cognitive Inhibition in African Americans

Presenter's Name: Olga Herren
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Denee T. Mwendwa, Ph.D., Regina C. Sims, Ph.D., Clive O. Callender, M.D., and Alfonso L. Campbell, Ph.D.

African Americans are at increased risk for accelerated cognitive decline, stroke, and dementia, as compared to other racial/ethnic groups. African Americans are also disproportionately affected by obesity, a risk factor for cognitive decline and correlate of depressive symptoms. Decrements in cognitive inhibition are associated with depressive symptoms and obesity. In addition, African Americans and obese individuals tend to report more somatic, rather than cognitive, symptoms of depression. The current study attempted to address the following questions: 1) are somatic depressive symptoms more strongly associated with cognitive inhibition than cognitive symptoms? and 2) does the association between somatic depressive symptoms and cognitive inhibition vary as a function of body mass index (B MI)? A community-based sample of 185 African Americans completed the Stroop Test and the Beck Depression Inventory II (B D I-II). Height and weight were obtained to calculate BMI. Hierarchical regression analyses showed no significant associations between somatic or cognitive depressive symptoms and Stroop performance after controlling for age, gender, and education. There was, however, a significant interaction between

BMI and somatic depressive symptoms, such that at a BMI of 34.15 kg/m2 or above, greater somatic depressive symptoms were associated with poorer Stroop performance (B = -.406, p=.010). Results suggest that depressive symptom type and degree of adiposity should be considered when assessing the role of depression in cognitive inhibition. Treating depression and losing weight may help to maintain cognitive well-being among African Americans.

KEY WORDS: cognitive inhibition obesity depression somatic

## Primary Mediastinal B Cell Lymphoma: A Case Series of a Rare Malignancy in an Urban Hospital

Presenter's Name: Margaret Howard
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Asare M.D., Mariette, Taddesse-Heath M.D., Lekidelu, Oneal M.D., Patricia

**Background:** Primary mediastinal B-cell lymphoma (PMBCL) is a rare type of non-Hodgkin lymphoma (NHL), comprising 2.4% of all cases. Unique features include young age, female predilection, mediastinal involvement with compressive symptoms of adjacent structures and characteristic tumor morphology. Systemic involvement is uncommon at initial presentation. Diagnosis is based on evaluation of the tumor morphology and immunophenotype, interpreted in the context of the clinical presentation. Due to the rare occurrence of PMBCL, optimal treatment is more controversial than other subtypes of NHL, including first line chemotherapy and the role of consolidative radiotherapy and autologous stem cell transplantation. **Case Series:** Three patients with PMBCL were identified at HUH from 2004-2014. The median age was 54, with a M: F ratio of 1:2. All patients had the characteristic clinical presentations with large anterior mediastinal masses and compressive symptoms, including one with superior vena cava syndrome. The morphologic features of infiltrating lymphocytes with fibrosis, immunophenotypic features (positive for B-cell markers) and clinical presentations were diagnostic. Two patients were treated with chemotherapy, with additional mediastinal consolidative radiation treatment in both. Complete remission was achieved in both patients (1 year and 10 years, respectively). The oldest patient had findings suggestive of a second malignancy, and died prior to treatment. **Discussion:** We report cases of PMBCL, a rare subtype of NHL with distinct clinical and morphologic features. The cases demonstrate the unique features of PMBCL, the importance of the clinical and morphologic criteria to establish a diagnosis, as well as chemotherapy and/or radiation treatment, with very good clinical outcome.

KEY WORDS: Primary Mediastinal B Cell Lymphoma

## A Standardized Randomized 6-Month Aerobic Exercise-Training Down-regulated Pro-inflammatory Genes, but Up-regulated Anti-inflammatory, Neuron Survival and Axon Growth-Related Genes

Presenter's Name: Osigbemhe Iyalomhe
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Yuanxiu Chen, Joanne Allard, Oyonumo Ntekim, Sheree Johnson, Vernon Bond, David Goerlitz, James Li, Thomas O. Obisesan

**Background**: There is considerable support for the view that aerobic exercise may confer cognitive benefits to mild cognitively impaired elderly persons. However, the biological mechanisms mediating these effects are not entirely clear. As a preliminary step towards informing this gap in knowledge, we enrolled older adults confirmed to have mild cognitive impairment (MCI) in a 6-month aerobic exercise program. **Methods**: Male and female subjects were randomized into a 6-month program of either aerobic- or stretch (control) exercise. Data collected from the first 10 completers, aerobic exercise (n=5) or stretch (control) exercise (n=5) were used to determine intervention-induced changes in the global gene expression profiles of the aerobic and stretch groups. Using microarray, we identified genes with altered expression (relative to baseline values) in response to the 6-month exercise intervention. Genes whose expression were altered by at least two-fold, and met the *p*-value cutoff of 0.01 were inputted into the Ingenuity Pathway Knowledge Base library to generate gene-interaction networks. **Results**: After a 6-month aerobic exercise-training, genes promoting inflammation became down-regulated, whereas genes mediating anti-inflammatory properties, modulating immune function or promoting neuron survival and axon growth, became up-regulated (all fold change $\geq \pm 2.0$, $p < 0.01$). Conversely, we observed no significant changes in gene expression profile in the stretch control group. **Conclusions**: We conclude that three distinct cellular pathways may collectively influence the training effects of aerobic exercise in MCI subjects. We plan to confirm these effects using rt-PCR and correlate such changes with the cognitive phenotype.

KEY WORDS: Alzheimer's Disease, Cancer, Gene Expression, Physical exercise, signaling pathways

## Platelet-activating factor (PAF) and lung inflammation: effects of hyperoxia

Presenter's Name: Alana Jones
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Namasivayam Ambalavanan, Tamas Jilling

High-pressured oxygen exposure (hyperoxia) is commonly administered to preterm, low birth weight neonates with respiratory distress, but prolonged exposure can lead to hyperoxia-induced inflammation which in turn can result in chronic lung injury (e.g. bronchopulmonary dysplasia). Platelet activating factor (PAF) is one of the primary mediators of inflammation and may contribute to the hyperoxia-induced inflammation in lung injury. The objective of my research was to expose two types of cells known in the lung (epithelial & macrophages) to hyperoxia at multiple time points, isolate their RNA, and analyze their cDNA for gene expression of PAF-producing and degrading enzymes, as well as inflammatory cytokines. We also pre-treated some cells with a PAF-receptor antagonist to analyze its impact on PAF Production during hyperoxia. Results indicated a time-dependent increase in expression of PAF-producing enzymes and inflammatory cytokines and a time-dependent decrease in the expression of the PAF-degrading enzyme. Additionally, the PAF-receptor antagonist almost completely abolished PAF Expression during hyperoxia.

KEY WORDS: hyperoxia, platelet-activating factor, inflammation, lung injury, neonates

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## Anxiety and Anticipated Pain in Minority Patients Prior to Common Dermatological Procedures

Presenter's Name: Abrahem Kazemi
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Dr. Sharon Bridgeman-Shah, Dr. Renato Goreshi

Dermatological procedures such as shave or punch biopsies are relatively common and performed on a daily basis. Although skin biopsies are performed rather quickly and with relative ease by the dermatologist, the patients undergoing the procedure tend to worry about their anticipated pain levels and are in a state of anxiety. Research has yet to be performed on anxiety and pain levels in patients of skin of color in the realm of dermatology. As such, this research project explores anxiety and anticipated pain in minority patients prior to the aforementioned common dermatological procedures. Minority patients at the Howard University Hospital (HUH) dermatology clinic requiring a skin biopsy were recruited into this research project. The same short, questionnaire-style survey was utilized for every recruited patient and asked the patient to rate their level of anxiety and expected pain prior to and after a skin biopsy from zero-to-ten, and provide demographic information such as age, race, gender, education level, and surgical history. The collected data was then analyzed with a power analysis using a 1-sample Z-test which includes an 80% power, alpha at 0.05, presumed Cohen's effect size of 0.5, and presumed standard deviation of 1.0 cm results in a sample size of at least 32 patients which will serve as the recruitment goal. This project desires to expand the survey to not only minority patients at HUH, but also white patients at the Veterans Affairs (VA) Hospital.

KEY WORDS: Anxiety/Anticipated Pain Dermatology Research

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## Will charging a penalty for no show to outpatient colonoscopy appointment improve compliance?

Presenter's Name: Adeyinka Laiyemo
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Adeyinka O. Laiyemo, MD, MPH 1, Kolapo A. Idowu, MD 1, Carla D. Williams, PhD 2, Clinton Burnside, BS 2, Rabia Cherqaoui, MD 1, Ricardo Caldera, MD, 1, Tonja Gadsden, MD 1, Kyle Anders, MD 1, Debra White-Coleman, MD 1, Shelly McDonald-Pinkett, MD 1

**Background:** Lack of compliance to scheduled outpatient colonoscopy appointment is particularly high among underserved populations. We evaluated whether charging patients a monetary penalty for missed colonoscopy appointments can be a useful intervention to improve compliance. **Methods:** We conducted a **P**atient **E**ducation **A**nd **C**ompliance **E**valuation (**PEACE**) survey among adult patients and their escorts at Howard University Hospital Ambulatory Care Center between June 2011 to November 2013. Demographic, lifestyle and health-related information was obtained from respondents. Colonoscopy and the processes involved were explained to the respondents. They were asked if being charged $200 "restocking fee" penalty if they did not show up for their procedures would increase the likelihood that they will come for their tests. **Results**: There were 370 respondents (mean age=50.9 years, 67% female, 92.6% blacks, and 90.4% had health insurance). 216 (58.4%) respondents felt that a penalty for no show will make them

more compliant. Demographic factors were not associated with respondents' reported likelihood of keeping their appointment to avoid a penalty for non-compliance (age: OR = 0.99; 95% CI: 0.97-1.00, female: OR = 1.10; 95% CI: 0.65-1.84, black race: OR = 0.55; 95% CI: 0.19-1.60, more than high school education: OR = 1.51; 0.89-2.57, married: OR = 0.92; 0.56-1.50, and has health insurance: OR = 1.17; 95% CI: 0.49-2.77). **Conclusion**: Instituting a surcharge penalty for missed colonoscopy appointments may not improve compliance.

KEY WORDS: Colon cancer; Health Disparities; Compliance; Screening

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### An exploratory analysis of comorbid conditions associated with hospital admission among patients with head and neck cancer

Presenter's Name: Brian Laurence
Classification: Senior Faculty
*Presentation Type: Oral Presentation*

Studies to date have provided evidence that comorbid conditions increase mortality and also adversely influence disease specific survival in patients with head and neck cancer. Comorbidity may also adversely influence quality of life and how health care resources are utilized in patients with head and neck cancer. To date there are currently no standardized measures for the assessment and inclusion of comorbidity in routine clinical practice. However, the Elixhauser method has been shown to be a valid and reliable measure of comorbidity that can be used with administrative data to predict mortality, length of stay and hospitalization-related outcomes. In previous analyses of the Nationwide Emergency Department Sample (NEDS), we observed an association between the presence of a dental infection and an increased likelihood of hospital admission among adult patients with sickle cell disease and among adult patients with pneumonia. Using a similar robust methodology, this exploratory study seeks to examine the conditions and complications associated with an increased likelihood of hospital admission among adult patients diagnosed with head and neck cancer using the comorbid conditions included in the Elixhauser method as a guide.

KEY WORDS: comorbidity; head and neck cancer; Elixhauser comorbidity method; administrative data

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### Do Urban Residing Young Adults Sleep Better in the Lab than at Home?

Presenter's Name: Joseph Lavela
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Bryonna Wilson, Ameenat Akeeb, Ihori Kobayashi, Thomas Mellman

**Background:** Laboratory polysomonographic (PSG) studies of people with posttraumatic stress disorder (PTSD) have not consistently documented sleep disturbances despite frequent reports of sleep problems. The 2 home PSG studies of PTSD did document disrupted sleep. Therefore it is possible that home environments contribute to these sleep problems while the perceived safety of the sleep lab ameliorates them. **Methods**: 14 urban-residing young adult African Americans (ages 18-35) had overnight sleep recordings in lab and at home. Ten participants had been exposed to trauma (4 had current full or subthreshold PTSD and 4 had past PTSD) and, 4 were trauma negative. Participants were asked to go to bed at the usual time. Sleep measures were compared between lab and home using paired-sample t-tests. **Results**: On average, participants went to bed at 12:17am at home and 11:30pm in the lab ($t = 1.84$, $p = .089$). There was a tendency that total sleep time in the lab was longer than at home 383 minutes vs. 335 minutes ($t = 1.9$, $p = .079$). Participants had more Stage 1 (2 vs. .6%; $t = 4.7$, $p < .001$) and greater eye-movement density (0.7 vs. .15, $t = 2.3$, $p = .039$) in the lab than at home. **Conclusion**: A larger sample could confirm that participants go to bed earlier and sleep longer in the lab than at home. The increased stage 1 (light sleep) and eye-movement density suggests that participants were more alert in their new environment but this did not interfere with their sleep.

KEY WORDS: PTSD, Sleep, Stress, Trauma, Restful

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### "IVC Filter Placement in High-Risk Bariatric Patients: A Part of the VTE Prevention Continuum"

Presenter's Name: Sylvonne Layne
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Gezzer Ortega, MD, MPH, Chijindu C. Emenari, BS, Neh D. Molyneaux, MPH, Ololade O. Ogundimu, BS, Navin R. Changoor, MD, Daniel D. Tran, MD, Kakra Hughes, MD, Terrence M. Fullum, MD

**Background:** Morbid obesity is a well-established risk factor for the development of venous thromboembolism and inferior vena cava (IVC) filter placement prior to bariatric surgery has been utilized in high-risk patients. Our objective is to evaluate the outcomes of IVC filter placement in high-risk bariatric patients at a single institution. **Methods:** A retrospective review of prospectively collected data was performed on patients who underwent bariatric surgery from August 2008 to June 2013. Demographic data including BMI was collected for high-risk bariatric patients who received prophylactic IVC filter placement were identified. The outcomes of interest were deep venous thrombosis (DVT) and pulmonary embolism (PE). **Results:** Of 284 bariatric surgery patients, 26 (9.2%) were identified as high-risk for VTE and received prophylactic IVC filter placement. The majority of patients were female (88.5%), Black (88.5%), and had a mean BMI of 60.1 kg/m2. The operative morbidity and mortality was 0%. Patients were followed for one year and the rate of post-operative DVT was 3.8% (1 patient) and the rate of PE was 0%. **Conclusions:** DVT prophylaxis along with IVC filter placement in high-risk bariatric surgery patients demonstrates low rate of post-operative VTE. Prophylactic IVC filter placement is feasible and should be considered.

KEY WORDS: bariatric surgery, obesity surgery, weight-loss surgery, African American, IVC filter

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## Influence of Hemispheric Preference and Ethnicity on Self-Reported Interpersonal Problems

Presenter's Name: Sharlene Leong
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

People's Hemispheric Preference (HP) can be seen in their behaviors. The modal model suggests approach behaviors are associated with left preference & avoidance behaviors associated with right. HP & ethnicity influence how individuals view such behaviors to be normal or problematic. While many studies examine HP & learning behaviors in minorities, few studies have focused on the effects of HP in the social context. This study examined whether racial & ethnic differences are reflected in HP & self-reported interpersonal problems, primarily with African Americans. Methods: Participants completed an online battery of measures which included demographic questions. The Zenhausern Preference Questionnaire (ZPQ) measured HP, while the Inventory of Interpersonal Problems (IIP-SC) measured self-reported interpersonal problems. The IIP-SC assesses 8 domains of problems associated with approach & avoidance behavior. Results: 72 right-handed participants completed the battery. Correlations between the ZPQ & the IIP-SC showed left preference was negatively associated with problems being nonassertive $rs(68)=-.26$, $p<.05$, while measures of right preference were negatively associated with problems being cold $rs(68)=-.24$, $p<.05$ & socially avoidant $rs(68)=-.27$, $p<.05$. When grouped by ethnicity, ANOVA showed differences in the IIP-SC subscales for problems being cold $F(2,69)=3.44$, $p<.05$ & dominating $F(2,69)=2.81$, $p=.07$. Independent *t*-tests revealed that African-Americans report more problems being dominating ($M=4.95$, $SD=2.85$) & cold ($M=6.53$, $SD=3.86$) than Caucasians ($M=2.85$, $SD=2.53$; $M=4.23$, $SD=4.37$ respectively), $t(43)=2.21$, $p<.05$ & $t(43)=1.83$, $p<.05$ respectively. Standard regression revealed the predictive quality of ethnicity & right preference on problems being cold ($F(2,67)=5.81$, $p<.01$), with an $R2$ of .148.

KEY WORDS: Hemispheric Preference, Neuropsychology, Interpersonal Problems, Psychology, Ethnicity

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## Pediatric Melanoma: Staging, Surgery and Mortality in the Surveillance, Epidemiology and End Results (SEER) Database

Presenter's Name: Becky Li
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Patrick H. Lam, Augustine C. Obirieze, Gezzar Ortega, Stephanie D. Purnell, Becky S. Li, Imudia D. Ehanire, Tolulope A. Oyetunji, Lori L. Wilson

**Introduction:** the problem here!! Current guidelines for pediatric melanoma management are not well defined. Our study aims to identify patient/disease characteristics, outcomes, and treatment modalities using a national population-based database. **Methods:** We reviewed the Surveillance, Epidemiology, and End Results database (2004 to 2008). Patients ≤ 21 yo with melanoma were included and grouped by age (≤12, 13-18, and 19-21 yo). Descriptive statistics were used to analyze and compare stages, surgeries, and mortality within groups. **Results:** 1,255 patients met our inclusion criteria. Most were female (63.27%), White (85.02%), and on the trunk (38.41%). The mean age was 17 ± 4 yo. Most patients had stage I (47.65%). The highest proportion of stage I was in 19-21 yo (50.53%) vs. 48.25% in 13-18 yo vs. 31.88%

in ≤12 yo (p≤0.001). 16.81% (n=211) had wide excisions only, 15.14% (n=190) had wide excisions and sentinel node biopsies, and 5.90% (n=74) had no surgeries. 19-21 yo had the highest proportion of patients receiving wide excisions only (34.82%) vs. 28.91% 13-18 yo vs. 26.42% ≤12 yo, and 13-18 yo had the highest proportion of wide excision and sentinel node biopsies (30.08%) vs. 27.80% 19-21 yo vs. 24.53% ≤12 yo (p=0.169). Of the 1,255 patients, 26 (2.07%) died of melanoma. ≤12 yo had the highest mortality rate (2.90%) (p=0.026). On adjusted analysis, 19-21 yo were five-fold more likely to live longer than ≤12 yo (HR: 5.26, p=0.017, 95% CI 1.34-20.65). **Conclusion:** Patients ≤12 yo had later stage melanomas when compared to the older age groups, less invasive surgery, and higher mortality.

KEY WORDS: Pediatric, Melanoma, Treatment modalities, Outcomes, Health disparity

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## Stability Investigation of anti-HIV-1 Small Molecule (1E7-03) Using Nano-Liquid Chromatography/Fourier Transform Mass Spectrometry

Presenter's Name: Xionghao Lin
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Tatiana Ammosova, Amol Kulkarni, Namita Kumari1, Sergei Nekhai

**Background:** Analysis of drug stability plays a critical role in drug discovery and development. It can reduce risks and costs of pursuing labile chemotypes, guide structural modification, and diagnose *in vivo* results. We recently identified 1E7-03 small molecule inhibitor of HIV-1 transcription that prevented the interaction of HIV-1 Tat protein with host protein phosphatase-1 (1).We analyzed stability and degradation products (DPs) of 1E7-03 using liquid chromatography mass spectrometry (LC/MS). Methods: Fragmentation patterns of 1E7-03 were elucidated by Fourier Transform mass spectrometry (FT-MS), and the degradation dynamics of 1E7-03 in different media were profiled. The DPs of 1E7-03 were systematically identified by a combinatorial LC/MS/MS method including Full (FL) scan, neutral loss (NL) scan and multiple reaction monitoring (MRM) scan. Finally, the main DPs were synthesized, and their impacts on the transcription and replication of HIV were evaluated. Results: A total of 20 DPs were identified, and their degradation pathways were elucidated. The instability of 1E7-03 in the mouse serum and buffers with different pH could be attributed to the presence of labile sites such as amide bonds, ester bond and the cyclopentene ring. 1E7-03 was stable in cell culture, which could be partly attributed to the presence of albumin in complete tissue culture media. Conclusion: The main degradation product, DP1**,** was proved to have a moderate anti-HIV activities without any toxicity, which could be a promising candidate for subsequent *in vivo* experiments.

KEY WORDS: Drug stability, HIV, LC/FT-MS, Degradation dynamics, Degradation products

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## Patient Attitudes toward the Use of Tablet Computers in Orthopaedic Outpatient Centers

Presenter's Name: Stephanie Maestre
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Augustine Obirieze MBBS, MPH, Robert H. Wilson MD, Marc Rankin MD

**Background:** Recently, the U.S. health care system has been implementing Health Information Technology (HIT) to improve the quality of documentation and cost-efficiency of health care. There is a widespread adoption of computers in clinics and patient rooms over the past few years, specifically tablet computers (which include tablet laptops and iPads) for their portability and integration into the clinical workflow. Previous studies on patients' attitudes toward computers suggest that patients have mixed opinions. Even though there are more studies revealing positive patient perception towards the use of computers, only a limited number of studies have analyzed the patient's attitudes toward the use of new-computer technology in a clinical setting. The field of orthopaedic surgery has been noted for its cutting-edge technology in the operating room, but no study has been done to examine the patients' attitudes toward the use of computers in orthopaedic outpatient centers. The objective of this study was to determine the patient's attitudes toward the use of tablet computers in an orthopaedic outpatient center. Methods: We administered an exit questionnaire to patients at Rankin Orthopaedic and Sports Medicine Center located in Providence Hospital in Washington, DC during July 2013. The questionnaire was adapted from a previously published and validated study addressing patient attitudes toward physician use of tablet computers in a primary care clinic. However, three additional questions were added to the validated questionnaire. **Results:**

The results showed that patients had positive attitudes towards the use of tablet computers during their patient visit, regardless several socioeconomic factors (show measures!). Conclusion: With positive attitudes toward the use of computers in an orthopaedic outpatient center, more orthopaedic surgeons will utilize tablet computers in their practice. The success of redesigning the practice of orthopaedic surgery outpatient care will rely on further evaluation on implementation strategies of these new devices.

KEY WORDS: computers, tablet computers, patient visit, patient attitudes, orthopaedic

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### Necrotizing Enterocolitis: Does perforation matter?

Presenter's Name: Sarah Mohamedaly
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Varun Bhalla, Gillian Abrams, Gezzer Ortega, Margaret McGuire, Seth Goldstein, Navin Changoor, Mariam Said, Faisal Qureshi

**Introduction:** Necrotizing enterocolitis (NEC) continues to cause significant mortality and morbidity in neonates despite evolving surgical management over the last decade. The aim of our study was to evaluate the early (<30 days) outcomes of management strategies at a single referral institution. **Methods:** A retrospective review of a medical database at Children's National Medical Center (CNMC) from 2011-2014. Inclusion criteria were neonates diagnosed with NEC > stage I or perforation. Patients were grouped by peritoneal drainage (PD), exploratory laparotomy (EXLAP), and non-operative (NOP) management. The primary outcome was mortality. **Results:** 163 patients were evaluated (58.9% male) with an average age at admission of 16.9 days, birth weight of 1139.9 g, and gestational age of 27.8 weeks. 53.4%(n=87) presented with perforation. These were smaller, more premature, and presented earlier than non-perforated (p<0.02). Overall early mortality was 20.2%(n=33) with 27.6%(n=24) in the perforated group and 12%(n=9) in those non-perforated (p=0.001). Neonates without perforation but requiring laparotomy had the highest mortality rate (p=0.002). On adjusted analysis, neonates with perforation had a higher likelihood of death (OR 2.81, 95%, CI 1.16-6.84). **Conclusion:** Smaller and more premature neonates presented with perforation and had a higher mortality. Exploratory laparotomy was preferred in the older, larger newborns that presented later with perforation but had no difference in mortality. Neonates without perforation failing medical management presented late and may be reflective of delayed referral.

KEY WORDS: necrotizing enterocolitis, perforation, peritoneal drainage, exploratory laparotomy, non-operative management

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### Pulse Pressure and Systolic Blood Pressure Associated with Hippocampal Volume by Apolipoprotein ε4 (APO ε4) Carriers and Alzheimer Disease Status: Alzheimer's Disease Neuroimaging Initiatives (ADNI) Study

Presenter's Name: Julius Ngwa
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Oral Presentation*

Coauthors: Oyonumo Ntekmim, Ph.D., Thomas V Fungwe, Ph.D, CFS., Sheree M. Johnson, Ph.D., Joanne Allard, Ph.D., Chimene Castor, EdD., Richard F. Gillum, M.D., Thomas O. Obisesan, MD, MPH.

**Background:** It is increasingly evident that high blood pressure (BP) levels may be associated with brain volume reduction. We examined the relationship of BP to hippocampal volume (HV) by Apolipoprotein (APO) ε4 carrier status from the Alzheimer's Disease Neuroimaging Initiative (ADNI) data. **Methods:** ADNI data included 1308 subjects: Alzheimer's disease (AD = 237), late mild cognitive impairment (LMCI = 454), early mild cognitive impairment (EMCI = 254) and control group (CN = 365). Univariate analysis was conducted to examine data distribution and validate assumption for normality. Mixed Effects Model was used to elucidate the relationships of HV to BP according to APO ε4 carriers and AD status while accounting for the effects of education, gender, history of hypertension, ethnicity and body mass index. **Results:** Baseline characteristics of participants showed a mean age of 74.6±7.9 (AD); 73.3±7.5 (LMCI); 70.8±7.2 (EMCI) and 74.4±5.6 (CN). AD subjects had lower HV: 5726.54±1003.26 (AD), 6491.91±1107.01 (LMCI), 7308.37±1027.11 (EMCI), 7361.12±920.69 (CN). Increased diastolic BP was significantly associated with decreased HV among the controls who were non-APO ε4 carrier (β = -9.40, SE = 3.51, p = 0.008). EMCI non-APO ε4 carriers with high diastolic BP had significantly higher HV (β = 17.10, SE = 7.94, p = 0.03). Increasing pulse pressure (PP) was positively associated with HV (p = 0.002) in EMCI non-APO ε4 carriers. **Conclusion:** In these ADNI data, a statistically significant association of diastolic BP and PP was observed with HV in

non-APO ε4 carriers with EMCI, suggesting a possible role for elevated BP and PP in amyloid mediated early cognitive decline.

KEY WORDS: Hippocampal Volume, Blood Pressure, Pulse Pressure, Alzheimer's Disease, ApoE4

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### Hepatitis C Screening and Treatment: Perspectives of Individuals Experiencing Homeless in DC

Presenter's Name: Benedette Nnaji-Aniekwe
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Jacqueline L. Skinner, Carolyn Stone, Fatmata Ware, Nancy Murphy

**Background:** Hepatitis C virus (HCV) is the leading cause of end-stage-liver disease and the leading indication for liver transplantation in the US, resulting in billions of dollars in healthcare cost. Approximately 3.2 million people in the US have been diagnosed with HCV. However, the estimate of true HCV prevalence is closer to 5 million people when high-risk groups such as people who are homeless and incarcerated are considered. Left untreated, chronic HCV can results in significant morbidity and mortality. Newly approved screening and treatments have revolutionized care and the possibility of cure. No studies were identified that addressed HCV screening and treatment with individuals who are homeless in DC. **Research Question:** What are the perspectives of DC individuals who are homeless, regarding screening and treatment for HCV? **Conceptual Framework:** The Health Belief Model and a Social Justice Model. **Methods:** Research Design: Qualitative exploratory study. **Sampling Design:** Convenience sample design. Individuals who are homeless within the DC area. **Data:** 2-3 Focus Groups, 6-8 individuals/ group over a six month period. **Location/Access:** The PI has done volunteer work at a DC shelter and has a relationship with the director of the shelter, which will be used to gain access to the population. Inclusion criteria: Shelter resident and English speaking. **Exclusion criteria:** Non-English speaking, cognitive or mental impairment. **Data Analysis Method:** Grounded theory method to guide: (1) qualitative coding, (2) constant comparison, (3) analytic memo writing, and (4) development of conceptual categories.
Expected Results!!!

KEY WORDS: Hepatitis C, Homelessness, Social Justice

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### Burden of Chronic Obstructive Pulmonary Disease in Black women in the United States

Presenter's Name: Yewande Odeyemi
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Clarence Glenn, Alem Mehari, Richard Gillum

**Background:** The rate of death is higher in black than white women in the US. However, the mortality rate of chronic obstructive pulmonary disease (COPD) is higher in white than black women. This study details the paradoxical racial differences in measures of COPD in women. **Methods:** We obtained the following data from the National Center for Health Statistics for 1999-2013: (1) COPD prevalence (2) Physician office-visits (3) Emergency department visits; (4) death. **Results:** The ratio of the prevalence of COPD in white versus black women averaged about 1.2 while the ratio of mortality due to COPD in white women versus black women averaged about 1.68. In contrast black women had a higher rate of emergency room visits and higher rate of physician office visits compared to white women. Smoking rates have been similar in black and white women since 1965. More black women died from cardiovascular disease and cancers at earlier ages than white women indicating black women may die from these causes before they can die from COPD. **Conclusions:** Black women have higher mortality and morbidity rates from most leading causes of death. Paradoxically, that is not the case for COPD. Further research is needed to explain racial differences in COPD statistics.

KEY WORDS: COPD, Burden, Black, Women, US

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### A Cost-Effectiveness Analysis of Dapagliflozin in Comparison of Dipeptidyl Peptidase-4-Inhibitors Using a Meta-Analysis

Presenter's Name: Tanjinatus Oishi
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Noor Salam Saeed Shubar Ali, LaMarcus Wingate

**Background/Objectives:** Proper glycemic control reduces the frequency of microvascular and macrovascular complications in type 2 diabetes. Many patients require more than one medication to reach goal glycated hemoglobin (A1c) levels. The objective of this study was to assess the cost-effectiveness

of dapagliflozin versus the dipeptidyl peptidase 4-inhibitors in regards to cost per unit of A1c lowered. **Methods:** Data for clinical outcomes were abstracted from a meta-analysis comparing the effectiveness of oral diabetes medications added to metformin for type 2 diabetic patients failing to achieve goal Alc levels with metformin alone. All comparisons in the meta-analysis were for a 52 week period. A random effects regression model was utilized to compare dapagliflozin to dipeptidyl peptidase 4-inhibitors in their ability to lower glycemic levels after adjusting for baseline Alc and additional covariates. The costs for the antidiabetic agents were based on published wholesale acquisition costs data for 2014. An incremental cost effectiveness ratio (ICER) was calculated to determine cost per additional percentage point for lowering the A1c from the health payer perspective. **Results:** Dapagliflozin was more effective than dipeptidyl peptidase 4-inhibitors in lowering A1c levels and was associated and additional 0.07% lowering of the A1c level after adjusting for covariates. Dapagliflozin was more expensive at an annual cost of $3,470.40 while dipeptidyl peptidase 4-inhibitors had an annual costs of $3,405.60. The resulting ICER indicated that there was a cost $926 for each additional percentage point that the Alc was lowered by using dapagliflozin. **Conclusions:** Dapagliflozin was more effective than dipeptidyl peptidase 4-inhibitors in lowering A1c levels, yet it was also more expensive. Decision makers trying to decide whether or not to use these medications must be prepared to decide if the additional benefit is worth the cost.

KEY WORDS: Diabetes, Cost-Effectiveness Analysis, Dapagliflozin, A1c, Meta-Analysis

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## Thyroglossal duct cyst: does surgical specialty impact complication rates?

Presenter's Name: Vanessa Pinard
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Mehmat Arda, Gezzer Ortega, Eric Jelin, Faisal Qureshi

**Introduction**: Thyroglossal Duct Cyst (TGDC) is the most common congenital neck in children often treated by the Sistrunk procedure. The impact of surgical subspecialty has not been studied as ENT surgeons often core out the foramen cecum. The aim of our study is to evaluate surgical outcomes of children undergoing Sistrunk procedures based on surgeon type at an academic pediatric institution. **Methods**: A retrospective review of children diagnosed with TGDC from 2004-2014 was conducted. Basic demographic, preoperative clinical signs, surgeon type, operative characteristics, postoperative complication and recurrence rates were extracted. Statistical analysis was conducted via descriptive statistics, t-test, and Pearson chi-square with $p < 0.05$ deemed statistically significant. **Results**: 165 patients met our inclusion criteria. 53.3% were male with swelling being the most frequent preoperative sign (92.7%), followed by infection (17.4%) and fistula (15.7%). ENT surgeons performed 106 procedures (64.2%). The complications were swelling (GPS 18.6%, ENT 17.9%, p=0.90), seroma (GPS 8.5%, ENT 9.4%, p=0.83), and wound infection (GPS 6.8%, ENT 8.5%, p=0.69). The recurrence rates were 11.7% and 6.6% for GPS and ENT, respectively (p=0.25). **Conclusion**: Our study demonstrates that there is no difference in recurrence rates for TGDC excision between GPS and ENT specialties. There was no added benefit of foramen cecum resection. Furthermore, no preoperative predictive factors for recurrence were identified.

KEY WORDS: Throglossal duct cyst, General Pediatric Surgeon, ENT, two more words needed!

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## Response to Handwriting Intervention in Kindergarten to 1st Grade Children.

Presenter's Name: Esther Poswal
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Hawah Conteh, OTS, Tsehaye Habtelasie, OTS, Alyssa Hank, OTS, Giana Jenkins, OTS, Bryan Richley, OTS, Chinyere Odigwe, OTS, and Chidibere Onkoronkwo, OTS

**Background:** Handwriting is an important skill for children to acquire and for academic success. It has been estimated that around 60% of instruction within a typical school day involves pencil and paper tasks. Studies have shown that the amount and type of handwriting instruction is inconsistent or non-existent in U.S. schools. There are numerous general education students who have handwriting difficulties but receive no additional instruction, unlike those receiving special education services. This pretest and posttest design research project will determine if a four week handwriting intervention program will improve legibility and in-class written work in kindergarten and first grade general education students. Interventions will serve as a model for the school

educational team, with the goal being implementation of handwriting instruction within the classrooms. **Methods:** The Evaluation Tool for Children's Handwriting (ETCH) will be administered as a pretest and posttest for students identified by teachers as having difficulty with handwriting legibility and written class work. Work samples will be assessed for legibility. The four week intervention program will include multi-modal sensory warm-ups, Handwriting without Tears curriculum, and class-based writing practice for the children. Teacher training will be provided and pre and post intervention surveys will be administered to determine if teachers have learned instrumental handwriting methods and remedial strategies. **Results**: Being collected. **Conclusions:** It is expected that a structured handwriting program provided to teachers will increase knowledge in intervention techniques to employ in the classroom.

KEY WORDS: Handwriting, Intervention, Kindergarten, Grade, one more word needed!

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### Revision of Roux-En-Y Gastric Bypass for Weight Regain: A Systematic Review of Techniques and Outcomes

Presenter's Name: Stephanie Purnell
Classification: Professional Student
*Presentation Type: Oral Presentation*

Coauthors: Ifeanyi Nwokeabia, Stephanie Purnell, Nabeel Zafar, Augustine Obirieze, Gezzer Ortega, Kakra Hughes, Terrence Fullum, Daniel Tran

**Background:** Weight regain has led to an increase in revision of Roux-en-Y gastric bypass (RYGB) surgeries. There is no standardized approach to revisional surgery after failed RYGB. We performed an exhaustive literature search to elucidate surgical revision options. Our objective was to evaluate outcomes and complications of various methods of revision after RYGB to identify the option with the best outcomes for failed primary RYGB. **Method:** A systematic literature search was conducted using the following search tools and databases: PubMed, Google Scholar, Cochrane clinical trials database, Cochrane Review Database, EMBASE, and Allied and Complementary Medicine to identify all relevant studies describing revision after failed RYGB. Inclusion criteria comprises of revisional surgery only after the primary RYGB for weight regain. **Results:** Of the 1200 articles found, only 799 were selected for our study. Of the 799, 26 studies, with a total of 987 patients, were included for a systematic review. Of the 26 studies, 6 were conversion to Distal Roux-en-y gastric bypass (DRYGB), 5 were revision of gastric pouch and anastomosis, 6 were revision using an adjustable gastric band, 3 were revision to biliopancreatic diversion/duodenal switch (BPD-DS), and 6 endoluminal procedures (i.e. stomaphyx). All studies revealed excess weight loss (EWL), varying from 20%–79.4% after 6–60 months follow-up. Mean EWL after revision at 12 months follow-up for DRYGB is 60.8%, gastric pouch revision 54.1%, gastric banding 34.6% and endoluminal procedures 38.1%. In the included cohort of study, major complications occurred in 15.6% (153/987) and minor complications in 13.0% (129/987). Band revision resulted in the lowest complications rate at 0.1% and DRYGB in the highest complication rate 0.4% when compared to the other revisional procedures. The overall mortality rate was 0.005% (5/987). **Conclusion:** All 987 patients in the 26 studies reported significant weight loss after surgical revision for failed RYGB. However, of the five surgical revision options considered, revision to band resulted in the lowest mortality rate and the fewest major and minor complications. DRYGB resulted in the highest mean EWL, however it also had the highest complication rate of all the revisional procedures.

KEY WORDS: Roux-en-y, gastric bypass, revision, outcomes, one more word needed!!

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### Intraosseus meningioma

Presenter's Name: Ryan Rabilall
Classification: Post Doc/ Resident/ Fellow/ Research Associate
*Presentation Type: Poster Presentation*

Coauthors: Folsade Osagie

KW is a 51 year old immigrant from Eritrea who presented to the clinic for left eye proptosis. The patient stated she had 2 surgeries for apparent meningiomas in 2007 and 2010 in her home country. After the first surgery the patient noted she maintained some vision in the left eye however her visual acuity in the left eye steadily decreased after she had the second surgery, subsequently resulting in complete loss of vision in that eye. Pt maintained vision in the right eye and denied any flashes, floaters or visual acuity loss. Computer tomography (CT) scan of orbit without contrast shows large intraosseous lesion involving the left sphenoid bone with extension into the left frontal sinus and left ethmoidal air cells, and left orbital apex, and left anterior clinoid process. There is intraconal and extraconal soft tissue extension of tumor into the left orbital

apex and left posterior globe resulting in severe narrowing of the orbital apex structures. Severe left orbital proptosis. Both soft tissue and osseous components of the tumor results in moderate narrowing of the left optic canal and left superior orbital fissure. Top differential is an intraosseous meningioma of the left sphenoid wing. Also consider an aggressive fibro-osseous lesion.

KEY WORDS: left eye, proptosis, intraosseous, meningioma, fibro-osseous lesion.

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## Challenges in Imaging of Carotid Artery Stenosis

Presenter's Name: Faezeh Razjouyan
Classification: Professional Student
*Presentation Type: Poster Presentation*

Coauthors: Jean S. Rowe, BS; Motahar Basam, BS; Noreen Islam, MPH; Brittany Bryant, BS; Isaac Dodd, MS, Sanchez Colo, PharmD-MBA; Weonpo Yarl, MS; Shakita Crichlow, BS; Osvaldo Mercado, BS; Jonathan Nakata, BS; Kamyar Sartip, MD; Han Y. Kim, MD; Bonnie Davis, MD

**Background:** Stroke is the fourth leading cause of death in the United States according to the Centers for Disease Control and Prevention. Evaluating carotid artery diseases is an important step in assessing the etiology of stroke. There are several imaging modalities to screen for carotid stenosis including sonography which is one of the least expensive and most well-established imaging modalities to achieve this goal. Performing successful carotid ultrasound studies requires an awareness of commonly encountered pitfalls such as technical factors and interpretation errors. We reviewed the world literature on the advantages and disadvantages of ultrasound imaging to detect and characterize carotid diseases. **Methods:** We performed a comprehensive search of the world literature on imaging modalities used in detecting carotid stenosis. We focused specifically on limitations and artifacts of sonography reported in major radiology publications from various countries. **Results:** Critical drawbacks of carotid ultrasound that prohibit accurate assessment of stenosis include: Missing a major lesion due to spatial under-sampling, Misidentification of internal and external carotid arteries, Aliasing artifact, Presence of normal velocity in near occlusion, Resolution artifact, Tandem lesions, Occlusion versus stenosis, Heavily calcified arteries, Tortuous artery and Bifurcations**. Conclusion:** Based on a comprehensive review of world literature, ultrasound is an excellent modality for diagnosis and surveillance of carotid stenosis since it is non-invasive, relatively accurate and inexpensive. Knowledge of pitfalls, limitations, and artifacts encountered during an examination will improve the accuracy of the study and enhance risk stratification for stroke therapy.

KEY WORDS: Carotid Stenosis, Stroke, Carotid Ultrasound, Carotid Imaging Pitfalls, Ultrasound

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## Assessing Continuity of Care Using the National Ambulatory Medical Care Survey (NAMCS) in an Urban Minority Practice-Based Research Network

Presenter's Name: Finie Richardson
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Pamela L. Carter-Nolan, PhD, Victor Apprey, PhD, DC PrimCare Practice Based Research Network

**Background:** DC PrimCare is a practice-based research network of primary care continuity practices in the Washington, DC Metropolitan Area. Defining visit data from these practices is essential to establishing generalizability and applicability of future studies, as well as the quality of the continuity practices. **Methods:** Each DC PrimCare practice collected visit data on a sample of 30 patient visits using the NAMCS (in full) methodology during a 1-2 week period. Outcomes included patient demographics, presenting symptoms, physician's diagnoses, and patient management. In determining the continued use of a medical doctor by patients, we consider patients factors in the context of a medical doctor. Results: The patients are nested within medical doctors which lends to hierarchical modeling. We consider three models: model 1 as the standard logistic with individual patient's information; model 2 (hierarchical model) as individual patients are nested within medical doctors and model 3 (hierarchical model), variation of length of visit within medical doctors. Conclusion: Model 2 was the best model. Why?

KEY WORDS: Continuity Clinic, Practice-Based Research Network, Standard Logistic model, Hierarchical model

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## A Bivalent Recombinant Immunotoxin Exhibiting High Potency against Tumors with EGFR and EGFRvIII Expression

Presenter's Name: Liang Shan
Classification: Junior Faculty/ Lecturer/ Instructor
*Presentation Type: Poster Presentation*

Coauthors: Jie Meng, Stephen Lin, Xinbin Gu, Paul C Wang

**Background**: The high frequency of epidermal growth factor receptor (EGFR) and EGFR variant III (EGFRvIII) overexpression in various types of cancer has sparked development of monoclonal antibodies and tyrosine kinase inhibitors for targeted therapy of cancer, but the results are generally disappointing. **Methods**: By capitalizing upon the high specificity and sensitivity of humanized antibody 806 (mAb806) to the EGFR and EGFRvIII overexpressed in cancer, but not to the EGFR in normal tissue, we generated a recombinant immunotoxin (RIT), DT390-BiscFv806, by fusing the mAb806-derived bivalent single-chain variable fragment with an engineered diphtheria toxin fragment, DT390. The cytotoxicity and anti-tumor efficacy of DT390-BiscFv806 were then investigated with U87 glioblastoma cells and EGFRvIII-transfected U87 (U87-EGFRvIII) cells. **Results**: *In vitro*, DT390-BiscFv806 efficiently internalized into the cells and showed high cytotoxicity against the U87 and U87-EGFRvIII cells with a half maximal inhibition concentration of 1.5x10-9 M and 2.3x10-14 M, respectively. Notably, DT390-BiscFv806 was four orders of magnitude more potent against the U87-EGFRvIII cells than against the parent U87 cells. In animals, systemic administration of DT390-BiscFv806 significantly inhibited the growth of established U87-EGFRvIII and U87 tumor xenografts, showing a growth inhibition rate of 76.3% (59.82-96.2%) and 59.4% (31.5-76.0%), respectively. In pathology, the RIT-treated tumors had a lower mitotic activity than the control tumors ($P$<0.05); and exhibited a large number of degenerative tumor cells throughout the tumors. **Conclusions**: The results indicate that DT390-BiscFv806 is promising for treatment of various types of cancer, especially for those with EGFR overexpression or with EGFR and EGFRvIII co-expression.

KEY WORDS: Recombinant immunotoxin, EGFR, EGFRvIII, targeted therapy, glioblastoma multiforme

## Nutritional Interventions for addressing the health disparities of Obesity

Presenter's Name: Michelle Smith-Hawley
Classification: Undergraduate Student
*Presentation Type: Oral Presentation*

Coauthors: Taylor Johnson

**Background**: A dramatic rise in obesity rates with a corresponding increase in disparities across socioeconomic groups have been progressively reported and well known in the past three decades in the United States. **Objectives**: To identify and address the etiologies and socioeconomic health disparities that influences the ongoing; increase in obesity within the United States of America and related altered nutritional status. To address the health disparities of obesity using evidence-based guidelines of Medical Nutrition Therapy; recommend nutritional interventions that promotes weight improvements and BMI within healthy weight range. **Method**: This case presentation involves two obese adult patients in a clinical setting. Data collection via reviewing the patients' electronic and medical records; interview with the patients and/or the patient's caregivers and registered nurses to ascertain: usual dietary habits; food preferences; food accessibility and availability; identification of possible barriers to food security. Nutrition counseling via application of The Trans Theoretical Model-Stages of Change was applied in nutritional counseling to impart knowledge on the health benefits associated with making lifestyle modifications. **Results**: Utilizing strategies like the provision of nutrition education to promote lifestyle and environmental changes such as healthy eating and active living; as well as addressing the existing barriers to intervention such as food security; and imparting information about ways to effectively utilize available resources can help to reduce the health disparities of obesity. **Conclusion**: The risks of Obesity and its health disparities can be minimized through diet and lifestyle changes.

KEY WORDS: Obesity, Health, Disparity, Nutrition, Intervention

## Metabolism Studies of Specific a4b2 Nicotinic Acetylcholine receptor Ligands

Presenter's Name: Keeshaloy Thompson
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Xiang Wang, Milton Brown, W.M. Yengonda, H-S. Kong, Amrita Cheema

**Background:** During the efforts in drug discovery development in recent years, human Nicotinic receptors have become vital targets because of their implications with neurological disorders. As with any drug that is taken into the body, the liver plays a key role in metabolizing such xenobiotics. Determining metabolic stability in liver is therefore a strategy used to assess the metabolism of a compound and its potential to form metabolites. In this work, *in vitro* metabolic stability studies have been applied to a specific α4β2 Nicotinic acetylcholine receptor ligand, as the main test compound. **Methods:** Strategic *in silico* studies predict a complete metabolic transformation for this compound. *In vitro* metabolic stability studies also validate the predictive studies. High Performance Liquid Chromatography (HPLC), coupled with the Mass Spectrometry (MS), HPLC-MS, has been used to successfully detected and analyze parent compounds and metabolites. **Results and Conclusions:** Results show over 90 percent of the original drug metabolized, with the formation of an intermediate peak and key metabolites within a three hour period of study. Our cheminformatic tools aid in elucidating the CYP450 mediated metabolic pathways to show how well the generated data correlates to the oxidative metabolism of the test compound by Cytochrome P450s. Molecular docking is also able to highlight key interactions of the test compound with various isozymes of CPP 450s that might potentially be responsible for the biotransformations.

KEY WORDS: Metabolism, Drug Discovery, HPLC, in silico, pharmaceutical

## Transculturalism and Resilience

Presenter's Name: Brandi Walker
Classification: Graduate Student
*Presentation Type: Oral Presentation*

Coauthors: Linda Berg-Cross, Travette Mckonnen, Victor Jones, Joshua Johnson, Kelsey Ball

Transculturalism is a developmental process in which one's identity is a kalideoscope of cultural experiences, changing slowly or quickly according to time, place, and context, and allowing for a core sense of self that is not reliant on any one defining internal or external feature; promoting resiliency and a sense of social justice due to a naturally empathic world view. Transcultural identities understand that what we see in the media is but a slice of a person or event that is surrounded by many mitigating and modifying factors both within the actor as well as within the cultural context in which the event takes place. Most importantly, transcultural identities acknowledge that conflicting and contradictory feelings, behaviors and attitudes exist in all of us. We grow by connecting the best in us with the best in others as well as by finding the pain and rage that others feel in ourselves. This global shift in consciousness towards transcultural identities, the end of black and white thinking, has to be harnessed to make sense of various media elements. In an effort to promote an inclusive and deep appreciation for the multiple aspects of others as well as oneself, we propose the following four newly developed interventions which are based on a transcultural model: 1) "I AM…" Youth Identity Push, 2) C.P.R Campaign, 3) PGA TouR (Protest with your Gifts, Abilities, Talents and Resources), 3) PEACE methodology for parents, & 4) a Transcultural Checklist.

KEY WORDS: Transculturalism, CPR, PEACE Model, Media

## Overcoming Cross-reactivity of Class I HDACs Isoforms with Tropolones: A Structural Study of Subselectivity to HDAC2

Presenter's Name: Shalonda Williams
Classification: Graduate Student
*Presentation Type: Poster Presentation*

Coauthors: Xionghao Lin, Xiang Simon Wang

**Background:** Histone deacetylase (HDAC) inhibition proves to be a valuable drug target for treatment of various disease states. Selective inhibition of HDAC 2 is a promising avenue in the reversal of debilitating clinical outcomes associated with Alzheimer's disease. However, due to the highly conserved nature of the classes of HDAC Class I proteins in whole as well as the active sites, the subselectivity of the isoforms proves to be problematic in the drug discovery process due to cross-reactivity of potential small molecule inhibitors with multiple isoforms. Tropolones, a group of compounds derived from beta-thujaplicin, show selective inhibition toward HDAC2 over other HDAC Class I isoforms. **Methods:** Using molecular docking, the binding modes of tropolones with Class I HDAC isoforms, HDAC1, HDAC2, HDAC3 and HDAC8 have been investigated. **Results and Conclusions:** Analysis of the binding patterns and protein sequences of these isoforms, specifically at the active sites, unveils potential interactions and regions of HDAC2 that convey selectivity of tropolones to HDAC2 in comparison to the other Class I HDAC isoforms. Novel therapies to treat Alzheimer's diseases as well as other diseases specifically associated with HDAC2 can be developed after fully understanding the isoform selectivity that is resultant from the binding mode of tropolones to Class I HDACs.

KEY WORDS: Histone deacetylase (HDAC) Tropolones Alzheimer's Disease

## The role of Nutrition care process in addressing health disparities in End Stage Renal Disease

Presenter's Name: Yingying Yip
Classification: Undergraduate Student
*Presentation Type: Poster Presentation*

Coauthors: Devon Reilley

**Background:** Approximately 23 million Americans have some form of chronic kidney disease, with African Americans having an incidence of end stage renal disease (ESRD) of 3.5 times higher than that of white Americans. The nutritional status of ESRD patients is a crucial issue in the disease progression. The management of ESRD requires significant lifestyle adjustments that often result in noncompliance, which in turn contributes to poorer nutritional status and health outcome. **Objective:** The objective of this study was to evaluate the nutritional status of an ESRD patient using current nutrition evidence-based guidelines. **Methods:** Patient data was collected from medical records, and by interviewing the nurse and patient. The Nutrition Care Process was used in this study. **Subjects/Participants:** A 49 year old African American female with past medical history of hypertension, type 2 diabetes mellitus, dyslipidemia, and ESRD. Patient was admitted for left ankle fracture and dislocation status post fall. **Nutrition Diagnosis:** Two nutrition problems were identified: Limited adherence to nutrition related recommendations; Impaired nutrient utilization **Intervention:** Provided nutrition education focusing on low potassium food alternatives; Increased adherence to nutrition recommendation by involving patient in the nutrition care process. **Main Outcome Measure:** Adherence of nutrition recommendations, improved clinical laboratory values, and <5% interdialytic weight gain. **Conclusion:** Dietitians play an important role in maintaining ESRD patients' health and quality of life. Dietary intervention aims to minimize the complications of ESRD and increase adherence of nutrition recommendations.

KEY WORDS: End stage renal disease, health disparities, nutrition, dietitian, dialysis


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