



HOWARD UNIVERSITY

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# RESEARCH DAY

*Abstract Book*

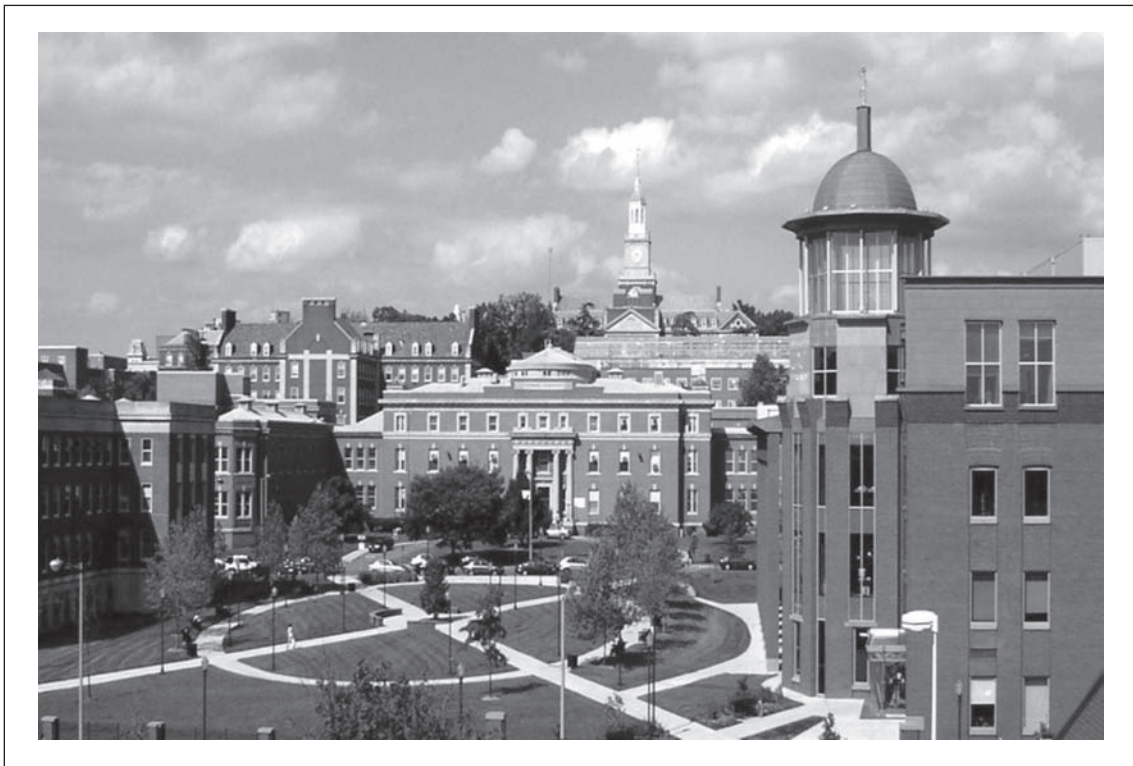
APRIL 4, 2014



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# RESEARCH DAY



## *Abstract Book*

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# Biological & Biomedical Sciences

## **Bacteriophages (Phages) Versus Bacteria**

Presenter's Name: Christianah Ademuwagun

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Phages are obligate intracellular parasites that multiply inside bacteria by making use of some or all of the host biosynthetic machinery causing the bacteria to burst. Most phages are specific to a single bacterium and there are a lot of antibiotic-resistant bacteria that can be destroyed by phages. They are being explored as tools to treat antibiotic resistant bacterial infections by targeting and destroying infectious bacteria. In this research, the prime goals were to isolate, purify, and analyze a unique phage from soil. The isolation and purifying methods were enrichment, spot test, streak test, phage-titer assay and final plaque purification. From a high titer lysate of purified phage, DNA was isolated and analyzed by restriction enzyme digestion and gel electrophoresis. The morphology of the purified phage will be determined by electron microscopy. From each of the honors laboratory sections, one sample of pure phage DNA was sent to a sequencing center for sequencing. The resulting phage discovered from the experiments done from August to December, 2013 is called Maxy and its details are on the Mycobacteriophage Database (PhagesDB.org).

**KEY WORDS:** Bacteriophage, Bacteria, Isolate, Destroy, Phages

## **Synthesis, characterization and biological activity of paclitaxel-loaded, poly (lactide)-based nanoparticles**

Presenter's Name: Simeon Adesina

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

Coauthors: Emmanuel Akala

Poly(lactide) macromonomer was used to prepare crosslinked, paclitaxel-loaded PLA- PEG (stealth) nanoparticles by free-radical dispersion polymerization. Nanoparticle fabrication with poly(lactide) is limited to the dispersion of preformed

polymers method; hence it is difficult to attach targeting moieties to the surface of the nanoparticle and to introduce crosslinked networks. In situ dispersion polymerization method overcomes the limitations. Scanning electron microscopy was used to confirm nanoparticle synthesis. Particle size distribution was determined by dynamic light scattering. Zeta potential of the optimized formulation was determined using Zetasizer nano Zs. The in vitro release isotherm of paclitaxel from nanoparticles was determined by high performance liquid chromatography and reveal that encapsulated drug is released over 168 hours. In vitro cytotoxicity studies were carried out using the CellTiter@glo luminescent cell viability assay in MCF7, MDA-MB-231 (breast cancer) and SK-OV-3 (ovarian cancer) cell lines. The cytotoxicity assay shows that the blank nanoparticle is biocompatible with no toxicity for the duration of the assay compared to medium-only treated controls and that the paclitaxel-loaded nanoparticle formulation exhibit similar cytotoxicity compared to free drug in solution against the cancer cell lines tested. In vitro intracellular localization of nanoparticles by confocal microscopy also demonstrated that the nanoparticles are rapidly internalized by MCF-7 cancer cells within one hour probably by non-specific endocytosis. Data from preliminary biodistribution studies show nanoparticle accumulation in a tumour xenograft model. The stealth nanoparticles are suitable for delivery of bioactive agents.

**KEY WORDS:** Macromonomer, Stealth nanoparticles, Free-radical dispersion polymerization, Cytotoxicity studies, Biodistribution studies

## **Mass Spectrometry of Urine Proteins for Early Detection of Renal Complications in Sickle Cell Disease**

Presenter's Name: Elena Adjei

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Namita Kumari, Tatiana Ammosova, Sharmine Diaz, Marina Jerebtsova, Patricia Oneal, Sergei Nekhai

## A B S T R A C T S

**Purpose:** Sickle cell disease (SCD) is an autosomal recessive genetic disorder caused by a single G6V mutation in the  $\beta$ -globin gene. SCD patients have various complications including chronic renal failure and nephrotic syndrome which can develop in 30-50% of sickle cell patients. Currently there are no reliable methods to identify the risk for renal complications in the early stages for the subset of people who will develop renal failure. It is essential that new noninvasive prognostic biomarkers be discovered to help assess patients for risk of renal failure which may lead to early interventions and greater survival rates among SCD patients. **Methods:** Urine samples were collected from 16 SCD patients and 4 healthy controls. Trypsin digests of urine proteins were analyzed by nano LC coupled in-line to LTQ Orbitrap XL tandem mass spectrometer. Proteins identified with Proteome Discoverer software were further quantified using SIEVE 2.1 (Thermo). **Results:** About 80 proteins were detected in urine. Among those, about 10 proteins were found at higher levels in SCD patients, including ceuloplasmin, transferrin and alpha-1-acid glycoprotein precursor. **Conclusion:** Several of the detected proteins may cause early changes in glomerular permeability and be a potential biomarker for early renal manifestations in SCD. Further studies are needed to form a more conclusive relationship between renal complications and the proteins present in urine of SCD patients. **Support:** NIH Research Grants 8G12MD007597 and P50HL118006-01.

KEY WORDS: Sickle Cell, Mass Spectrometry, Renal, Proteins, Urine

### Small Compounds targeting Arabidopsis RACK1A protein regulate diverse Environmental Stress resistance in crops

Presenter's Name: Joanna Akinlosotu

Classification: Undergraduate Student

Presentation Type: Poster Presentation

Coauthors: Hemayet Ullah, Deborah Fadoju, Joanna Akinlosotu

RACK1 (Receptor for Activated C Kinase 1) is a WD-40 type scaffold protein, conserved in eukaryotes, from plants to humans, and plays regulatory roles in diverse signal transduction and stress response pathways. Loss of

function mutant in Arabidopsis indicates that RACK1A—the predominant isoform, negatively regulates diverse environmental stress signaling pathways including the salt stress resistance. 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 indicated that the key post-translational modifications like sumoylation at K273 and tyrosine phosphorylation of Y248 residues dictate the RACK1A's potential to interact with other proteins. In order to facilitate the identification of small compounds binding to the functional pocket, the crystal structure of RACK1A protein is deduced at 2.4 Å resolution. Deduced crystal structure of RACK1A is used to identify small compounds that could potentially bind to the Y248 pocket. The compounds could potentially inhibit Y248 phosphorylation and bind to purified recombinant RACK1 proteins with a  $K_D$  value in the micro-molar ranges. The effectiveness of the compounds in regulating diverse environmental stress responses are evaluated in different crop plants. RACK1 is involved with the growth hormone auxin's signal transduction pathway. The small compounds raised to regulate the function of RACK1 are expected to regulate auxin. Preliminary results indicate that SD29, one of the key small compounds, positively regulates the pathway of auxin. RACK1 is involved in many stress response pathways, and many of the environmental stresses are mediated through the production of reactive oxidative species (ROS). Preliminary results using diaminobenzadine (DAB) assay indicate that the compounds inhibit the generation of ROS in response to specific stressors, like salt. Here we present evidence that the compounds are effective in regulating stress responses in a wide variety of crop plants.

KEY WORDS: Arabidopsis thaliana, auxin, reactive oxidative species, scaffold protein, RACK1



## A B S T R A C T S

**Locked- in Syndrome Secondary to Post- Infectious Encephalomyelitis**

Presenter's Name: Suzanne Al- Hamad

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Mohankumar Kurukumbi MD, Kim Han MD, Annapurni Jayam-Trouth MD

**Background:** Locked- in syndrome (LIS) is a clinical condition characterized by quadriplegia and anarthria with preserved consciousness and vertical eye movements. The etiologies of locked- in syndrome include infarction, hemorrhage, brainstem trauma, demyelinating disease, tumors and encephalitis. Here we present a unique case of a patient with post-infectious encephalomyelitis resulting in the rare outcome of LIS. **Methods:** The case is presented on a 35-year-old male with post-infectious encephalomyelitis resulting in LIS. **Results:** The patient initially presented with headache and flu-like symptoms. He soon began to experience weakness that progressed to paraparesis followed by quadraparesis leading to respiratory failure and coma three weeks after initial presentation. Extensive investigation, including brain biopsy, did not reveal the etiological diagnosis however, based on the natural course of the disease post-infectious encephalitis was suspected. Initial MRI brain revealed T2 hyperintensities in the pons, inferior midbrain and upper medulla. T2 signal abnormalities involved the bilateral middle cerebellar peduncles and to a lesser extent the superior cerebellar peduncles. He had a poor response to IV Ig, steroid therapy and plasmaphoresis. Currently, seven months after the initial presentation, the patient's cognition has improved, however, he remains in a locked-in state. His current MRI shows marked atrophy and increased T2 hyperintensity of the pons, inferior midbrain and upper medulla. Extensive worsening T2 signal abnormalities involve the bilateral middle cerebellar peduncles and superior cerebellar peduncles. **Conclusion:** Post-infectious encephalomyelitis resulting in LIS is extremely rare. We are reporting this particular case to bring awareness to unique outcome of this disease.

**KEY WORDS:** Locked- in syndrome, coma, post- infectious encephalomyelitis, quadraplegia, neuroimaging

**Role of the inhibitory kinase WEE-1.3 in regulating the meiotic cell cycle and fertility in *C. elegans***

Presenter's Name: Anna Allen

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

Meiosis is a specialized cell cycle by which the haploid gametes are produced. It is of crucial importance for sexual reproduction and human health, as defects during the meiotic divisions have serious deleterious outcomes such as infertility, birth defects, and tumorigenesis. Meiosis is controlled via dueling regulatory phosphorylation events on the cyclin-dependent kinase (Cdk1) component of maturation promoting factor (MPF). The Wee1/Myt1 family of kinases provides inhibitory phosphorylations that keep MPF inactive, halting the meiotic cell cycle until it is stimulated to resume and coordinate oocyte maturation with fertilization. We have previously shown in *C. elegans* that depletion of the Myt1 ortholog WEE-1.3 causes precocious oocyte maturation and a very penetrant infertility phenotype. By qPCR we demonstrated that WEE-1.3-depleted germlines containing precocious oocytes have begun to transcribe embryonic genes and exhibit inappropriate expression of proteins normally limited to fertilized eggs. In addition, we performed an RNAi suppressor screen of the infertile phenotype exhibited upon WEE-1.3 depletion to identify novel factors that when co-depleted with WEE-1.3 restore fertility to the animals. We screened ~1900 essential genes and identified 150 that are suppressors of the WEE-1.3 depletion phenotype. Many of the genes identified in this screen could be important, previously unknown, players in both the meiotic and mitotic cell cycles due to their interaction with a known cell cycle inhibitor. These studies are providing valuable input into how the cell cycle is appropriately regulated and potential ways to bring an abnormal cell cycle back under control.

**KEY WORDS:** reproduction; infertility; cell cycle regulation

## A B S T R A C T S

**Lower Extremity Arterial Reconstruction in Patients Older than 80**

Presenter's Name: Batul Al-zubeidy

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Abdul Rahman Hamdi, MD; Augustine Obirieze, MBBS, MPH; David Rose, MD; Daniel Tran, MD; Thomas Obisesan, MD, MPH; Edward Cornwell III, MD; Kakra Hughes

**Background:** Despite previous studies showing that lower extremity arterial reconstruction in octogenarians may be undertaken with postoperative morbidity and mortality comparable to younger patients, there continues to be controversy regarding the safety of such procedures in the elderly population. The aim of this study is to determine whether a significant difference exists in the outcomes of arterial reconstruction in octogenarians compared with younger patients. **Methods:** We utilized the American College of Surgeon's National Surgical Quality Improvement Database to determine patients undergoing Lower Extremity Arterial Reconstruction between January 1, 2005 and December 31, 2009. Multivariate analysis was performed to investigate for statistically significant differences in octogenarians and older compared with younger patients. **Results:** The study analyzed 19,028 patients comprised of 18.32% older than 80 years and 81.68% younger than 80 years. The multivariate analysis showed that patients over 80 years of age had slightly higher likelihoods of death (OR 1.79, 95% CI 1.42-2.26), renal complications (OR 1.57, 95% CI 1.27-1.95), cardiovascular complications (OR 1.46, 95% CI 1.12-1.89), and respiratory complications (OR 1.37, 95% CI 1.12-1.67). However, there was no significant difference in the likelihood of graft failure (OR 1.04, 95% CI 0.86-1.27), wound infection (OR 0.92, 95% CI 0.79-1.06), or amputations (OR 0.59, 95% CI 0.13-2.74) between the two groups. **Conclusion:** Although patients older than 80 years undergoing lower extremity arterial reconstruction had higher likelihoods of death, cardiovascular, respiratory and renal complications in the postoperative period, they had the same or lower rates of wound infections, amputations and graft failure.

KEY WORDS: Lower Extremity Arterial Reconstruction, LEAR

**PEDF Prevents LPS-induced Apoptosis in Renal Endothelial Cells and Ameliorates Renal Injury in the Mouse Model of LPS-induced Acute Kidney Injury**

Presenter's Name: Tatiana Ammosova

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

Coauthors: Marina Jerebtsova, Anton Nekhai and Sergei Nekhai

**Purpose:** Sepsis associated with gram-negative bacterial infection is a leading cause of acute kidney injury (AKI). Presently, there is no effective treatment for septic-caused AKI. Endothelial injury is one of the major manifestations of sepsis induced by lipopolysaccharide (LPS), a major component of bacterial cell wall. LPS induces apoptosis in different types of endothelial cells including renal glomerular endothelial cells. Recently we demonstrated that pigmental epithelium derived factor (PEDF) prevents a serum-starvation induced apoptosis in HGEC. In this study we analyzed whether PEDF prevents LPS-mediated apoptosis in endothelial cells in vitro and in vivo. **Methods:** We analyzed the effect of PEDF on activation of p53 protein and caspase 3 in LPS-treated HGEC and apoptosis inhibitors Bcl-2 and Bcl-xL. We also administered PEDF to mice that was injected with LPS and evaluated renal endothelial injury, inflammation, and renal function. **Results:** LPS induced apoptosis in cultured human glomerular endothelial cells (HGEC) by activating p53 and caspase-3. PEDF inhibited LPS-induced apoptosis in HGEC through up-regulation of apoptosis inhibitors Bcl-2 and Bcl-xL. Treatment of mice with PEDF significantly reduced LPS-induced renal endothelial injury and inflammation, and improved renal functions. **Conclusion:** Our findings indicate that PEDF protects renal glomerular endothelial cells against LPS induced apoptosis in vitro and also ameliorates LPS-induced AKI in vivo in mouse model. Our findings point to a possibility of future PEDF treatment that may protect against acute renal injury associated with sepsis. **Support:** NIH Research Grants 8G12MD007597 and P50HL118006-01

KEY WORDS: Apoptosis, acute renal injury, PEDF

## A B S T R A C T S

**Design and Synthesis of A Stimuli-responsive Polymer For Site-specific Nanoparticle Delivery of Sirna**

Presenter's Name: Felix Asamoah-darko

Classification: Professional Student

*Presentation Type: Poster Presentation*

The main limitation to the successful utilization of siRNAs for therapy is the inability of naked siRNA to cross the cell membrane and the lack of methods to safely and efficiently deliver siRNA to induce the RNAi response. Current siRNA delivery vectors such as polyethylene-imines (PEI), poly-L-lysine (PLL), and polyamidoamine (PAMAM), face obstacles such as; low cellular uptake, poor endosomal escape, substantial liver and renal clearance, inefficient gene silencing, and facile enzymatic degradation. Other challenges include inefficient long-term expression, low transfection rates, reduced capacity to package siRNAs of sufficient size, and vector's immunogenicity. The objective of this research is to synthesize and characterize stimuli responsive linear polymer bearing: (1) hydrolytically degradable ester bonds and intracellular reducible disulfide bonds to facilitate drug and siRNA release, (2) tertiary amine groups to facilitate endosomal escape via the proton sponge mechanism. Our long-term goal is to utilize the polymer for the fabrication and testing of corona-core drug- and siRNA-loaded nanoparticles. The polymer was synthesized by classical polycondensation reaction of a diacid chloride and a mixture of diols. The polymer was characterized by nuclear magnetic resonance (NMR), Fourier transform infrared spectroscopy (FTIR) and GPC. Results reveal the synthesis of the pure polymer. Number average molecular weight ( $M_n$ ) of up to 35,000 was obtained by GPC. The polyester obtained is expected to be hydrolytically degradable and therefore fit for drug and siRNA delivery purposes.

KEY WORDS: sirna delivery, nano particle delivery, stimuli-responsive polymer, polymer synthesis, nano particle delivery

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**A case of acute coronary syndrome associated with phencyclidine use**

Presenter's Name: Hakeem Ayinde

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Maria-Elise Sanchez, Hermant Boolani, Prafulla Mehrotra

The use of phencyclidine (PCP) is an endemic problem in Washington DC, leading to cases of acute toxicity, injury, disease and death. We report a case of a 41 year old female with no significant cardiovascular risk factors who presented with an episode of typical chest pain within 24 hours of PCP ingestion. Her electrocardiogram showed no ischemic changes but cardiac biomarkers were elevated. Coronary angiogram revealed severe vasospasm in the proximal left anterior descending artery. Previous in vitro studies have suggested that phencyclidine induces spasm in mammalian coronary artery. To our knowledge, this is the first case of an association between PCP use and coronary spasm in humans. Clinicians and the public should be aware of a previously unreported risk of PCP use.

KEY WORDS: phencyclidine, coronary spasm, acute coronary syndrome

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**Signal transduction profiling for novel dithiocarbamate analogs of emetine as potential chemotherapeutic agents**

Presenter's Name: Zebalda Bamji

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Zebalda D. Bamji, Kareem N. Washington, Oladapo Bakare, Yasmine M. Kanaan, Robert L. Copeland Jr.

Prostate cancer is one of the leading causes of death in American males. Emetine, a naturally derived alkaloid was shown to inhibit protein biosynthesis on ribosomes in eukaryotes and its role in apoptosis mediated cell death. Its anti-tumorigenic activity was studied for potential cancer treatments; however concerns regarding its activity as a protoplasmic poison emerged. Novel emetine dithiocarbamate (EMTDTC) analogs were synthesized as potential chemotherapeutic agents against prostate cancer, characteristic for potent anti-tumorigenic

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activity with minimal toxicity to normal prostate tissues and define the gene regulatory pathways targeted by it. These analogs were studied using cell viability assays to define IC50 values for compound effectiveness; flow cytometry for analyzing apoptotic potential; and real-time PCR to identify changes in gene expression profiles of various signal transduction pathways. Our data suggests that two leading compounds offer significant therapeutic anti-tumorigenic activity on immortalized prostate cancer cell lines DU145, PC3, LnCAP with minimal effect on normal derived PNT1A cells and their pathways. Both compounds affect multiple pathways, minimizing the possibility for compound resistance. This suggests the independent ability of each compound as a stand alone chemotherapeutic agent, or in combinatorial therapy for the treatment of prostate cancer.

**KEY WORDS:** Prostate Cancer, Chemotherapeutic agents, gene regulation, pharmacogenomics

#### **Pulmonary Function Abnormalities and Human Immune Deficiency Virus Infection In The Era of Antiretroviral Therapy**

Presenter's Name: Abinet Bezarede

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Mestawet Teka M.D., Rosana Setse M.D., PH.D., Alem Mehari, M.D.

**Background:** Human Immune deficiency virus (HIV) related pulmonary complications had shown a paradigm shift in the era of antiretroviral therapy leading to chronic non infectious lung diseases. However, studies comparing abnormalities in pulmonary function between HIV infected and uninfected patients are limited. **Objectives:** To determine the prevalence of pulmonary function abnormalities in HIV infected versus HIV uninfected patients. **Methods:** Case controlled study of pulmonary function in 140 HIV infected patients and 141 HIV uninfected controls matched for age, gender, race and pack-year tobacco smoking. **Results:** Compared to the HIV-uninfected controls, HIV- infected FVC was  $69 \pm 18.6$  vs.  $75 \pm 17.2\%$  predicted (mean  $\pm$ SD,  $p=0.017$ ), % predicted FEV1  $63 \pm 22.6$  Vs.  $71 \pm 20.6$  ( $p=0.002$ ) and FEV1/FVC%  $73 \pm 14.4$  vs.  $76 \pm 11.1$  ( $p=0.005$ ). Obstructive pulmonary physiology was observed in 30% in HIV infected versus 16.3% HIV uninfected controls ( $p=0.007$ ).

Mean DLCO in HIV- infected was significantly lower compared to HIV uninfected controls ( $55 \pm 24.1$  vs.  $61 \pm 20.1\%$  predicted,  $p=0.019$ ). Moderate to severely reduced DLCO  $\leq 60\%$  predicted was observed in 91 (66.4%) of HIV infected compared with 67 (51.1%) HIV uninfected controls ( $P=0.010$ ). Similarly severely reduced DLCO  $<40\%$  predicted was observed in 28.8% HIV- infected patients compared with 13.8% HIV uninfected controls ( $P=0.015$ ). **Conclusion:** Obstructive pulmonary defect with severe diffusion impairment were prevalent in individuals infected with HIV. These differences are not solely accounted by age, sex, race, body mass index, and smoking pack years. Thus, HIV infected patient's needs early screening. Mechanism accounting for the reduced diffusion impairment and obstructive ventilatory defect needs further investigation.

**KEY WORDS:** chronic obstructive pulmonary disease, Human immunodeficiency virus.

#### **"Getting in the Door" A Case Study of Employment Challenges**

Presenter's Name: Laurie Blackman Thompson

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

The devaluation of older workers and the negative stigmas associated with aging have left many older persons unable to re-enter the job market. According to Encel and Studencki (2004), when older workers lose their jobs, their chances of finding another job are extraordinarily low, and for people who lose their jobs in their 50s, they may never find full-time employment again. The purpose of the pilot project was: 1) to examine how older persons 55 and older perceive their access to employment opportunities and 2) to determine what factors older persons believe impact their access to employment opportunities. The theory of intersectionality formed the framework for the research project; however this qualitative study, through the interview process, also sought to increase understanding about the impact of unemployment on older adults. The findings from this research along with the review of literature suggest that more education and awareness is needed for potential employers so that they can be aware of age discriminatory practices. It is anticipated that if potential employers participate in trainings that promote a strength-based perspective to interviewing, this will assist

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older individuals in their search for employment. Professional development seminars could be organized around this topic. In summary, there is a need to reexamine the hiring practices of employers due to the number of baby boomers who will potentially try to re-enter the workforce. By helping to shape potential employers' attitudes and perceptions of older workers we will hopefully create a more equitable selection process.

**KEY WORDS:** older adult, unemployment, ageism, hiring practices

**Nicotinamide Adenine Dinucleotide Phosphate Oxidase subunit-4 (Nox-4) and Peroxisome Proliferator Activated Receptor (PPAR) - alpha expression in Human Primary Renal Proximal Tubule Epithelial Cells is increased by Angiotensin II**

Presenter's Name: Jasmine Blackmon

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Dan Zhang, Tamaro Hudson, Dexter L. Lee

**Background:** Renal proximal tubule epithelial cells (RPTEC) facilitate the majority of solute and water reabsorption along the nephron. Angiotensin II (Ang II) promotes sodium reabsorption in the proximal tubule and also causes hypertension by increasing Nox-4 expression. PPAR- $\alpha$  receptors are located in the RPTEC and have anti-hypertensive properties, however the role of PPAR- $\alpha$  on RPTEC function is not well understood. The goal of this study is to determine if Angiotensin II will increase Nox-4 and PPAR- $\alpha$  expression in RPTEC. **Methods:** Human primary renal proximal tubule epithelial cell were treated for 20 hrs with Ang II ( $10^{-9}$  M); separate groups were treated with Ang II + fenofibrate ( $10^{-7}$  M), fenofibrate alone. Proteins were isolated, electrophoresed and blotted on a western-blot gel. **Results:** The stimulation of RPTEC with Ang II ( $10^{-9}$  M) for 20 hrs caused an increase ( $12 \pm 8\%$ ) in PPAR- $\alpha$  expression. Angiotensin II ( $10^{-9}$  M) exposure caused an increase ( $9 \pm 6\%$ ) in Nox-4 expression in RPTEC. Fenofibrate alone did not increase PPAR- $\alpha$  or Nox-4 expression. Ang II + fenofibrate did not cause an increase in PPAR- $\alpha$  or Nox-4 expression. Our results suggest that PPAR- $\alpha$  is an important modulator of Nox-4

expression in RPTEC during Ang II treatment. **Conclusion:** PPAR- $\alpha$  activation may serve as a therapeutic target for preventing increased sodium and fluid reabsorption by RPTEC during chronic hypertension. PPAR- $\alpha$  activation may also attenuate the expression of Nox-4 in RPTEC during hypertension.

**KEY WORDS:** kidney, renal proximal tubule cells, hypertension, Nox-4, peroxisome proliferator activated receptor alpha

**Characterization of the role of *etr-1* in the Meiotic Cell Cycle**

Presenter's Name: Ruby Boateng

Classification: Graduate Student

*Presentation Type: Poster Presentation*

ETR-1, an ELAV-type RNA binding protein (RBP), is a known muscle protein in *Caenorhabditis elegans* whose depletion results in reduced brood size in specific backgrounds, paralyzed arrested elongation two fold and lethality. Homologs of ETR-1 in humans 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 a previously overlooked role in the germline, particularly in determining the fertility of this nematode. We will report recent data demonstrating that depletion of ETR-1 alone results in reduced fertility and co-depletion of ETR-1 and WEE-1.3 results in significant suppression of the WEE-1.3-depleted infertility. Additionally, we are in the process of generating reagents that will allow us to investigate the role of ETR-1 in the germline in greater detail. This includes the generation of translational fusion lines tagged with green fluorescent protein (GFP) that will be used to determine both the temporal and spatial expression pattern of ETR-1, including subcellular localization. By identifying the mechanism and function of ETR-1 in the germline this research will enable us to better understand the varying roles of RBPs in meiotic cell cycle regulation. Furthermore, a more thorough understanding of how ETR-1 functions in *C. elegans* will benefit the muscular dystrophy field.

**KEY WORDS:** Meiotic cell cycle, *etr-1*, *c.elegans*, *wee1.3* and RNAi

## A B S T R A C T S

**Metagenomic analysis of colon cancer tumors from African American patients**

Presenter's Name: Hassan Brim

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

Coauthors: Edward Lee, Scot Dowd, Adeyinka Laiyemo, Hassan Ashktorab

**Background:** Linkage of specific bacterial markers to colorectal pathogenesis has been hampered by limited knowledge of the colonic microbiota and changing bacterial classification schemes. More than 80% of the colonic microbiota is not cultivatable and can only be assessed through metagenomic analysis. **Aim:** To perform a metagenomic analysis of 10 colon cancer tumors and their matched normal tissues. **Methods:** Metagenome sequencing was conducted on the illumina 2x150bp sequencing platform. Briefly DNA was prepared and libraries created using nextera library preparation kits. Sequencing was performed on each sample. For all samples an average of 20 million reads were obtained. Paired Sequencing reads were joined and entered into MG-RAST for metagenome analysis. The data was compared to M5NR using a maximum e-value of  $1e-5$ , a minimum identity of 60%, and a minimum alignment length of 15 measured in amino acids for protein databases. **Results:** Metagenomes were compared using best hit classification in two groups (normal and tumor). Based upon this best hit classification at the kingdom level in MG-RAST it was found, using one-way ANOVA, that tumor samples had a significantly higher classification related to Microviridae (bacteriophage) specifically related to Enterobacteria phage with a  $P=0.0028$ . The other notable significant difference was the archaea. It was found at the class level that methanobacteria had higher classification hits in the normal samples ( $p = 0.03$ ). Based upon functional gene abundance classification it was found that phage ( $P=0.007$ ) as well as iron acquisition and metabolism genes ( $p= 0.05$ ) were significantly different between the groups. Further analysis showed that as expected from the taxonomic classification data that tumor samples had higher levels of phage related functional classifications primarily related to phage capsid proteins. Other notable findings consisted of bacterial protein acetylation and deacetylation

genes that were found to be significantly higher in normal tissue compared to tumor. **Conclusion:** Functional and taxonomic metagenome evaluation was conducted on Tumor and normal related samples. Classification related to taxonomy showed that phages were significantly higher in tumor related tissues.

KEY WORDS: Microbiota, Colon Cancer, African Americans, Metagenomics

**Exploring the Relationship between Achievement Goal Theory and Disruptive Classroom Behavior**

Presenter's Name: Danyelle Brown-Willis

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Kimberley E. Freeman

Achievement goal theory is a useful framework for studying achievement related outcomes such as task engagement, persistence, and grades among students. Achievement goals are also connected to many classroom variables, including disruptive behaviors, which are rarely examined. The present study investigated the roles that personal achievement goals and achievement goal structures play in predicting disruptive classroom behavior. A sample of 143 African American 9th graders from two urban charter schools responded to surveys measuring their personal achievement goals, perceived classroom goal structure, and incidence of disruptive behavior in their mathematics classes. School records provided demographic data for three control variables: prior ability, gender, and socioeconomic status. Hierarchical multiple regression analyses indicated that (1) performance-approach goal structures were negatively related to disruptive classroom behavior; (2) performance-avoidance goal structures were positively related to disruptive classroom behavior; (3) perceived classroom goal structures predicted disruptive classroom behavior over students' personal achievement goals; and (4) gender moderated these relationships such that both personal performance-approach and personal performance-avoidance goals had stronger effects on disruptive classroom behavior for female students. The findings of this study suggest that educators should carefully consider instructional practices

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that lead students to fear making errors and to avoid appearing incompetent in the learning process, which may lead them to act out in the classroom.

**KEY WORDS:** Learning, Behavior, African American students, Achievement goal theory

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**Optimization of Sorbitols and Softeners in Fruit Gum**

Presenter's Name: Alyssa Buchanan  
Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

CPI and Roquette are suppliers of two structurally different sorbitols. CPI sorbitol typically produces a softer gum, while Roquette sorbitol produces a harder gum. Other differences between each supplier are surface area, bulk density and crystal size/shape. Softeners such as Glycerol and Lycasin also play an important role in the texture and finished product stability. A comparative study of the two sorbitols has been conducted using Trident Tropical Twist, a fruit gum. The objective of this experiment is to determine and measure how different dry sorbitol and softener levels impact gum processing, finished product stability, and texture on fruit gum. Which will then be compared to results of previous work done on Stride Spearmint, a mint gum. The experimental design consists of a 30 Batch Design of Experiment, Power Meter, Texture Analysis, and Stability testing. Overall, switching sorbitol suppliers has a productivity saving of \$1 Million globally and it also provides business continuity, which allows Mondelez International to continue production in the event of a supply/demand shortage.

**KEY WORDS:** sorbitols, surface area, bulk density, crystal size/shape

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**Quantitative Analysis of Hippocampal Neurons in Aged Vervet Non-Human Primates: a Potential Model of Early Alzheimer's disease**

Presenter's Name: Kyle Burton  
Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

Coauthors: Mark Burke, PhD, Cynthia Lemere, PhD

Alzheimer's disease, the most common cause of dementia, is presented as the progressive loss of memory and cognitive function. The hippocampus is critically involved in short-term memory and has been shown to be susceptible to degeneration in Alzheimer's disease. Immature neurons are found in the hippocampus to be indicative of functional development. We hypothesize that immature neurons in the hippocampus play an integral role in cognitive function in aging. Aged vervet monkeys (*Chlorocebus aethiops sabeus*; St. Kitts), which have previously been shown to accrue extracellular amyloid-beta plaques and vascular amyloid in the brain with aging were recruited for this study. At the age of 15 years, subjects were evaluated every six months until death for their spatial working memory by using Object Retrieval Task [ORT] cognitive testing through a CANTAB touch screen testing apparatus. Based on performance, monkeys were classified into one of three groups: 1) normal, 2) slow-steady declining, and 3) rapid-decline cognitive function. Systematic sections through the hippocampus were immunostained for doublecortin, a putative marker for immature neurons. Preliminary data suggests that there is a reduction in immature neurons in the dentate gyrus of the hippocampus in both rapid and slow cognitive declining subjects as compared to controls. These data indicate that immature neurons may play a role in explicit memory deficits in aging and dementia.

**KEY WORDS:** Alzheimer's disease, hippocampus, Object Retrieval Task, doublecortin, neurons

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## A B S T R A C T S

**Measuring the Alignment Response of Graphite in a Magnetic Field**

Presenter's Name: Kelley Butler

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Mingxing Li, Bin Hu

**Background:** Magneto-scattering studies tell us how nanoparticles interact with each other within a magnetic field. These studies analyze ferrofluids comprised of magnetically responsive nanoparticles suspended in a matrix. Graphene is a one-atom-thick layer of carbon atoms arranged in a honey comb lattice. It is possible to induce magnetism in graphene with defects like chemical doping. **Methods:** Fluorinated graphite was the subject in our magneto-light scattering study. We set graphene suspensions between two electromagnet poles. A detection laser is then shone through the test vial and the scattered light is collected and quantified, in its ground and excited states, by a photodetector. A He-Cd Laser serves as a source of photo excitation. We are able to manipulate the light scattering data using Origin Pro software. The response and decay time of the results are used to compare the effect of three tested parameters on graphene: magnetic field strength, excitation intensity and solvent viscosity. Data was collected at field strengths and excitation intensities of  $B=150, 300, 450$  and  $600$  mT and  $0, 20$  and  $40$  mW respectively. The solvents used in this experiment include isopropyl alcohol (2-propanol), Dimethylformamide (DMF), and methanol. **Results/Conclusions:** Decay time tends to increase with magnetic field strength. The decay and response time decreases as we increase excitation intensity. We also see that an increase in solvent viscosity causes a decrease in decay time. These patterns prove that fluorinated graphene does exhibit some magnetic properties, which can be temporarily altered with excitation. Fluorinated graphene is a possible tool for magneto-optical devices.

KEY WORDS: magnetism, graphene, light scattering, magneto-scattering, chemical doping

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**The Effects of IKK Inhibitors on Cytokine Expression in T-Lymphocytes of a Huntington's Disease Patient**

Presenter's Name: Kia Byrd

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Ali Khoshnan, Paul Patterson

**Background:** Huntington's Disease (HD) is a neurodegenerative disorder caused by the expansion of the polyglutamine domain in exon-1 of the huntingtin protein (Htt). Mutant Htt fragments activate the IKK complex, a key regulator of NF- $\kappa$ B. The IKK/NF- $\kappa$ B pathway regulates the expression of many genes, including cytokines, responsible for inflammation. Immune cells from HD patients secrete elevated levels of pro-inflammatory cytokines years before the onset of motor symptoms. These findings indicate that dysregulation of the IKK/NF- $\kappa$ B pathway may contribute to HD pathology. This study investigates whether IKK inhibition is a viable therapeutic target for HD. **Methods:** The efficacies of IKK $\beta$  small-molecule inhibitors were evaluated for their ability to reduce the expression of pro-inflammatory cytokines in a T-lymphocyte cell line. T-lymphocytes with a polyglutamine expansion of Q82 were derived from the sera of HD patients and grown in RPMI 1640 medium containing 10% fetal bovine serum, glutamine, and 1% penicillin and streptomycin antibiotics. **Results:** LPS-induced T-lymphocytes treated with IKK $\beta$  inhibitors at IC50 concentrations exhibited approximately a 70-fold decrease in IL- $\beta$  RNA expression. When induced T-lymphocytes were treated with IKK $\beta$  inhibitors at lower concentrations, HD immune cells exhibited nearly a 5-fold decrease in IL- $\beta$  RNA expression. **Conclusions:** The majority of inhibitors reduce the expression of LPS-induced IL- $\beta$  expression at low concentrations. These results pave the way for selecting the best IKK $\beta$  inhibitor for evaluation in animal models of HD.

KEY WORDS: Huntington's HD immunology neurodegenerative cytokine

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A B S T R A C T S

**The effects of island size on the biodiversity of lizards in Trinidad and Tobago**

Presenter's Name: Stevland Charles

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: George Middendorf

Biodiversity may be most simply understood as an interaction of the variety of different species (species richness) and the density of each individual species (species abundance) at a given geographical location. The geography of a given locality has an effect on its biodiversity, and the theory of island biogeography holds that for isolated geographical areas, species richness is directly related to area size, and inversely related to distance from the source of colonization. Via the use of literature records and 428 hours of visual search encounter surveys, we examined the species richness and relative species abundance of lizards at five major field sites (2 in a large main island, 1 in a smaller main island, and 2 in tiny satellite islands) in Trinidad and Tobago. Although the species richness survey results suggest a slight trend towards increased species richness with island size, the period of time of geological separation from the continental colonization source might have substantially moderated the effect of island size. In addition, calculations of relative abundances of lizards at each site revealed that some lizards were generally more abundant at satellite island sites, as well as more abundant at the smaller main island site than at the larger main island sites. Varying species richness of other major vertebrate groups (including snakes, birds and mammals) at each location is discussed as a possible explanation for the observed general trend of increasing relative abundance of lizards with decreasing area size.

KEY WORDS: lizard, biodiversity, island, Trinidad, Tobago

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**Nutrition Management of End Stage Renal Disease: Clinical Nutrition Case Study**

Presenter's Name: Alicia Clement

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Dr. Chimene Castor

By 2030 it is predicted that 2.24 million Americans will be diagnosed with end stage renal disease. This disease not only poses a public health concern with confounding factors such as diabetes mellitus, hypertension and glomerulonephritis but also a greater risk amongst the minority community. Complications range from lower extremity amputations to dialysis treatment predominantly among Blacks and Hispanic relative to Whites. In 2010, 650,000 people were diagnosed with end stage renal disease while annually almost 200,000 Blacks are diagnosed with end stage renal disease. The objective of this study was to assess the impact of the nutrition care process with end stage renal disease patients in the minority community. This was a random case study chosen at Howard University Hospital of an African American women. The patient was diagnosed with end stage renal disease, obstructive sleep apnea, obese who is at risk for hypertension and diabetes mellitus. The patient was educated about the renal diet. Clinical studies show significant improvement with end stage renal disease management as a result of patients being educated about the renal diet. The renal diet is a therapeutic diet that helps to reduce the risk of malnutrition and toxin levels that can further exacerbate the kidney function by providing adequate energy, protein, restricting fluid, reducing high intake of potassium, sodium and phosphorus foods. The medical nutrition therapy approach for the patient has been found to accomplish a positive health outcome to stabilize the nutritional status of the patient and improve her quality of life.

KEY WORDS: Renal disease Nutrition Minority Management

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## A B S T R A C T S

**Detecting Drug Resistance Mutation in Senegalese Children under ART: Using In-House Molecular Biology Techniques**

Presenter's Name: Diamond Crumby

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

While the provision of highly active antiretroviral treatment (HAART) is important in reducing HIV/AIDS mortality among children, this therapy can also cause resistance, thus reducing the effectiveness of HAART. Consequently, receiving and adhering to HAART treatment is vital in preventing the mutation of HIV-1. Due to the scarcity of higher-level treatments in Sub-Saharan Africa, this research study served to detect drug resistance mutation in the Pol gene of HIV, specifically in the protease and reverse transcriptase enzymes, among four Senegalese children undergoing HAART therapy. The Pol gene was decoded using a sequencer. This showed markers for A, C, T, and G using polyacrylamide gel. Minor discrepancies were corrected with the software Seq Man 2. The corrected files were then compared to Stanford University's HIV Resistance Database HIV-1 subtype B to measure mutations. Four samples were measured for resistance: A3 084, A3 514, and A3 589 were on 1st line treatment, which includes NNRTI (non- nucleoside reverse transcriptase inhibitor) and NRTI (nucleoside reverse transcriptase inhibitor); A3 185 was on 2nd line treatment, which includes NNRTI and NRTI as well as PI (protease inhibitors). Results indicated that A3 084 showed resistance to NNRTI, which suggests a transition to NRTI. A3 514 showed resistance to both NRTI and NNRTI, which suggests a transition to the 2nd line treatment to include PI. A3 185 showed resistance to NRTI, NNRTI and PI, which indicates the need to seek higher-level treatment that may not be available in sub-Saharan Africa. A3 589 showed no resistance and can continue with the current treatment. It can be assumed that A3 084, A3 514, and A3 185 did not adhere to their therapy since they require a more progressive treatment. In general, if patients follow their therapy correctly, the viral load will remain low. Regardless, if higher line treatment is not available, as for A3 185, this patient and many others in the same situation will develop AIDS. This material is based upon work supported by the National Science Foundation under Grant No. 1052861. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation.

KEY WORDS: HIV, drug, resistance, children, HAART

**Characterization of Mycobacteriophages Abena and Revitiligo**

Presenter's Name: Rachel Darko

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Dometria Gilbert

Bacteriophages are obligate parasites that infect bacteria, and are found in a number of environments, including soil. The purpose of this project is to isolate, purify, and characterize mycobacteriophages from the campus of Howard University. The phages Abena and Revitiligo were collected from soil near the sign at the Bethune Annex Residential Hall at Howard University (38.92041°N, 77.01784°W). In order to increase the number of phages in the sample, media, the bacterial host - *Mycobacterium smegmatis* MC2 155, and other components were added. The phages were isolate and then purified by streaking. The phage Abena yields a bulls-eye plaque morphology (0.8mm-1mm diameter), while Revitiligo yields small, circular, turbid plaques (1mm diameter). Medium titer lysates were prepared, and empirical tests were completed to determine the volumes and concentrations needed to create stock solutions of higher concentration. The pure Abena phage was amplified into a high titer lysate stock solution. DNA was extracted subjected to DNA quantification, restriction digest, and gel electrophoresis. Future work will repeat identical processes for Revitiligo. During the process of plating phages calcium chloride is added to the top agar to aid in the attachment between *M. smegmatis* and the virus. Additional studies will determine the effects of other salts such as, aluminum chloride, magnesium chloride, and sodium chloride on plaque morphology.

KEY WORDS: Bacteriophages, *Mycobacterium***Exploring the relationship between air quality and urban vegetation across demographics in Washington DC**

Presenter's Name: Olatilewa Denloye

Classification: Graduate Student

*Presentation Type: Oral Presentation*

I investigated the relationship of landscape and vegetation on seasonal and spatial distribution of particulate matter (small airborne particles) in Washington, DC because they are often

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associated with human health issues, especially asthma and other respiratory problems. Because plant leaf surface hairs and stomata catch and trap particulates, I hypothesized that levels of particulate matter would be indirectly related to the abundance of vegetation and cover. To test this, I measured particulate matter, tree canopy cover, and vegetation density in each of seven census tracts in Washington, DC across a west to east transect between Rock Creek Park and North Capital Street NE. I found an inverse relationship between tree canopy cover and vegetation density; the greater the cover and density, the lesser the particulate matter. I also explored the relationship of vegetation density and cover to neighborhood socio-economic and race/ethnicity differences to see if differential particulate matter exposures varied in a way that potential health issues might be greater for some neighborhoods than others and whether these differences might then constitute an environmental justice issue. Investigations of the relationship of particulate matter exposure to socio-economic and demographic factors revealed that tree canopy cover and vegetation density decreased with family income, with property value, and with the percentage of non-white residents. Particulate matter levels were, thus, higher in poor, Black neighborhoods.

**KEY WORDS:** air quality urban vegetation environmental justice particulate matter trees

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### **Examining the Biomarkers of *Methylmicrobium Alcaliphium* 20Z**

Presenter's Name: Alanna Diggs

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Paula Welander

*Methylmicrobium alcaliphilum* 20Z (MAH) is a haloalkaliphilic methanotroph that lives in soda lakes and can be isolated in Russia and Siberia. Here it can tolerate high salt concentrations, unlike most microbes that live in a pH neutral environment. Certain lipids and sterols, like 3-methylhopanoid, help MAH retain its form and survive in this adverse environment. With this research, our primary goal is to understand the full functionality of *M. alcaliphium* 20Z. To achieve this, we examine the growth and lipid concentration of this methanotroph at different salt concentrations. We

also observe the viability of the cell after deleting the gene (hpnR) required for producing hopanoids in the late stationary phase. In order to create specimens with this deleted gene, a plasmid containing the desired mutation was made and eventually mated into the wild type. For the second objective of my research, we grew MAH in different concentrations of NMS (Nitrate Mineral Salts) for three days to determine its lipid concentration. By using physiological studies and lipid analyses, we will understand why these lipids are important to this microbe. Since more time is needed to obtain this data, the expected results are: the microbe cannot survive without the hpnR gene and hopanoids are required at the late stationary phase. Also, it is expected to contain the highest concentration of lipids at a pH of 9 and a salt concentration at 15 g/L of nitrate media. The questions that are raised and tested are essential to understanding the full functionality.

**KEY WORDS:** microbe, biomarkers, hpnR, gene deletion,

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### **Media Representations of Athletes Through Language and Images**

Presenter's Name: Christian Dotson-Pierson

Classification: Graduate Student

*Presentation Type: Oral Presentation*

The purpose of this research is to examine how the media has evolved in its coverage of athletes, particularly concerning minorities and women. The main focus of this paper seeks to reveal if any changes have been made and if so, in what areas. It also examines which areas of the media still have room for improvement in their coverage of sport. Of particular interest is how sports commentators use language to describe game action and physical attributes of college athletes, specifically between African American men and women and their Caucasian counterparts. Understanding how language and color commentary has become crucial to explaining game dynamics is explored by examining one of college sports biggest events, the basketball tournament known as March Madness. Furthermore, the research also looks at how female athletes are compared to both male athletes and each other, largely based on race. An examination of how male and females are depicted by the use of images within various media—print, electronic and broadcast—are also explored, with a specific focus on *Sports Illustrated*, a national sports magazine

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published weekly and the sports newscast SportsCenter, which airs on the Entertainment and Sports Programming Network multiple times a day, seven days a week.

**KEY WORDS:** commentary-sports, Title IX, gender roles, media representation, language

**Useful Anti-screening Tools of Human Ether-a-Go-Go Related Gene (hERG) inhibitors for Cardiovascular Toxicity Prediction**

Presenter's Name: Dawit Egualé

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Michael Oyewole, Osagiede Uzzi, Terry-Elinor Reid, Xiang Simon Wang

A major concern for regulatory agencies and pharmaceutical industry in recent years is the propensity of a drug candidate to elicit human cardiotoxicity, hepatotoxicity, nephrotoxicity etc. The Center for Medicine Research reported that toxicity is the leading cause for failure of candidate compounds in drug development. Modern medicinal chemistry is moving towards rationally designing drugs that are not only effective but also contain drug-like properties devoid of severe adverse drug reactions (ADRs). One important target associated with clinical ADRs is the human Ether-a-go-go-Related-Gene (hERG). It encodes for a protein known as the alpha subunit of K ion channel and plays a central role in the regulation of the rhythm of the heart. Hence, inhibition of hERG results in ventricular arrhythmia. Methods based on ensemble learning were incorporated with the aid of advanced machine learning algorithms such as Random Forest (RF), Genetic Algorithm-k Nearest Neighbor (GA-kNN) and Support Vector Machines (SVM), to generate predictive and robust QSAR models as anti-screening tools for human heart toxicity. The hERG models with a CCR or R2 of over 0.70 were deemed predictive and robust. In addition, measures of performance including specificity, sensitivity and predictive accuracy supported our model evaluation efforts. We have developed useful tools capable of early identification of potential liabilities resulting from human hERG inhibition-induced heart toxicities.

**KEY WORDS:** Cheminfomatic, QSAR, modeling, hERG, in silico

**Synthesis and X-Ray Diffraction Studies of Imidooxy Derivatives to Treat Traumatic Brain Injury**

Presenter's Name: Fortune Ezemobi

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

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

Traumatic brain injury (TBI) is a neurological disorder that is defined as damage to the brain resulting from external mechanical force, including accelerating, decelerating and rotating forces. TBI is the major cause of death in young individuals (14-24 years) from industrialized countries, with head injuries accounting for 25-33% of all trauma related deaths. Football players in America have an increased risk of TBI due to consistent interaction and some side effects associated include memory loss, depression and seizures. Following the initial insult, injury is exacerbated by secondary factors such as oxidative stress, inflammation and excitotoxicity. The manifestation of these insults after TBI arises from vascular effects, distinct cellular responses, apoptosis and chemotaxis. Our ability to identify therapeutic targets and devise strategies for the treatment of TBI relies on our understanding of the early molecular processes that are initiated following brain injury as well as the delayed molecular events, which together propagate extensive neuronal loss. At present, there are no effective treatments available for TBI and there is thus a critical need in developing novel and effective strategies to alter the disease course. From our studies, we identified three imidooxy derivatives as potential drug candidates for TBI. These compounds have been studied extensively for their anticonvulsant effects with promising results. The findings from this study will assist us in providing the structural orientation and understanding the binding mechanisms.

**KEY WORDS:** X-Ray Crystallography, Traumatic Brain Injury, Epilepsy, Imidooxy derivatives,

## A B S T R A C T S

**Supernumerary Centrosomes Contribute to Increase in Cell Motility for Cancer Metastasis**

Presenter's Name: Ariel Gaines

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Remigio Picone, David Pellman

Centrosome amplification is a common occurrence in many types of breast cancer, and is often correlated with early-stage (pre-invasive) tumor malignancy (1, 2) Although centrosomes are primarily involved in organizing the poles of the mitotic spindle, as required for the equal segregation of the genetic material into two daughter cells, they also have important functions during interphase. In particular centrosomes affect a cell's shape, polarity, and motility (3, 4). Previous research in the Pellman laboratory has found that centrosome amplification induces invasion in 3D culture organotypic system(5). In particular it has been found that centrosome amplification increases microtubule nucleation, which induces an increase in Rho-GTPase Rac activation. Rac activation leads to the formation of invasive actin filament structures (5). Thus, our research into the cancer-promoting effects of supernumerary centrosomes focused around the phenotypic effects of centrosome amplification, as well as on the mechanism by which these effects would be enacted. Our experiment utilized a doxycyclin inducible system to induce centrosome amplification, followed by the quantification of the exhibited movement. Cells with centrosome amplification exhibited increased motility along with a change in morphology that exhibited an increase in significant dynamic protrusions. Further experiments utilizing the media from serum starved control cells and cells with supernumerary centrosomes proved that in addition to an increase in dynamic protrusive structures, cells demonstrated an ability to secrete a certain factor(s) that actively modified their extra-cellular environment to promote increased cell movement. Subsequently, centrosome amplification in cancer cells can be an instrument for both inciting an increase in individual cell motility, as well as a way to modify the cancer-microenvironment into another tool through which cancer cells could increase their own malignant proliferative and invasive capacity.

**KEY WORDS:** Cancer Centrosome Microenvironment  
Cell Motility

**Curcumin Exerts an Inhibitory Effect on Growth and Development of Dictyostelium discoideum Amoeba**

Presenter's Name: Mamatha Garige

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Eric Walters

Curcumin, a plant polyphenol derived from the dietary spice turmeric, has been the subject of many scientific, pre-clinical, and clinical investigations. It is well documented that curcumin influences pro-/anti-oxidant, anti-cancer, and immunomodulatory mechanisms within mammalian cells. Dictyostelium discoideum is a free-living, social amoeba that initiates cyclic AMP-mediated signaling upon starvation, and forms multicellular aggregates that differentiate to produce fruiting bodies (spore caps) for its survival. Dictyostelium is often employed as a model to study signaling and development of eukaryotic cells, to better understand and elucidate cellular development and biochemical pathways in mammalian cells. This study examined the influence of curcumin on proliferation, chemotaxis, and development in Dictyostelium. Curcumin inhibited proliferation of Dictyostelium amoeba in axenic culture in a dose dependent manner, ranging from 5 $\mu$ M to 20 $\mu$ M during a 72hr period. Prior exposure of Dictyostelium amoebae to curcumin for 16hrs also inhibited the a) timing; b) morphology, c) quantity of multicellular aggregates (i.e. finger, slug), and c) fruiting bodies when compared to untreated amoebae. These results reveal that curcumin negatively impacts cell cycle control and development of Dictyostelium. Furthermore, our observations suggest that curcumin may exert these effect(s) by altering the activity of a putative phase II metabolizing enzyme, glutathione S-transferase. Because many genes in D. discoideum are orthologous with mammalian genes, further characterization of the effect(s) of curcumin on cellular biochemical/redox factors in Dictyostelium may contribute to improving naturopathic treatment regimens for inflammation, metastasis, and cancer.

**KEY WORDS:** Anti-oxidant, cell cycle, proliferation, signaling, chemotaxis

## A B S T R A C T S

**Salivary Biomarkers in African American Type-II Diabetic Patients**

Presenter's Name: Amber Gilbert

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Belinda Hauser, Grace Robinson, Xinbin Gu

**Background:** Approximately 11.4% of African Americans are diagnosed with diabetes and predisposed to periodontal disease (periodontitis) which leads to oral infections and systemic disease which is a major complication of diabetes. The aim of this study is to investigate candidate salivary biomarkers from the patients with type-II diabetes and predisposed to periodontal disease to improve clinical diagnosis and monitoring. **Method:** The patients were recruited from Howard University Hospital (HUH) Diabetes clinic, as well as Howard University College of Dentistry (HUCD), and Advanced Education General Dentistry (AEGD). Patients were screened and x-rayed. Levels of A1C were recorded and body mass indexes (BMI) were calculated. Patient saliva specimens were collected and preserved for analysis to identify existence of salivary markers in type II diabetic patients. **Results:** Samples were analyzed by western blot and mass spectrometry. Clinical saliva samples were collected from 64 African American patients ranging from age 26-71 which include 37 diabetic patients and 25 controls non-diabetic patients. Patients with elevated A1C ( $\geq 9.0$ ) have low BMI. We observed two sets of protein profiles from type II diabetics' patients and non-diabetic patients by MS/HPLC analysis. Mass spectrometry analysis detected over 2500 proteins and 10k peptides from each salivary sample. We found various proteins which differed within the two groups. Currently, we have analyzed glycosylprotein: mucin between these two groups. The levels of glycosylprotein profiling between the control and control diabetic groups were notably different, especially mucin 7, the protein level was up regulated and mucin 5 was down regulated in patient group compared to normal controls. **Conclusion:** Successful completion of the project will provide information to better understand the correlation of oral condition in patients with diabetics.

KEY WORDS: Type 2 Diabetes, Periodontal disease, African Americans, Saliva

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**Antimicrobial Peptide-Metalloporphyrin Constructs for Bacterial Cell Detection**

Presenter's Name: Apre Gleaves

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

This effort sought to demonstrate the potential of porphyrin-modified antimicrobial peptides (AMPs) as indicators for detection of bacterial cells and to determine which, if any, metals could be incorporated into the porphyrin components to enhance their performance. AMPs typically interact with a broad range of pathogens and have been used for detection of bacteria in sandwich-type assays. Here, the goal was to develop indicators that could be applied to reagentless detection. The AMP provides specificity for bacterial targets while the porphyrin component provides a transduction mechanism for sensing. Because the interaction of the AMP with the target is differential but nonspecific, a fingerprint type of detection method is preferred, necessitating the selection of multiple indicator compounds. The characteristic changes in absorbance and fluorescence of the metalloporphyrin-AMP constructs upon exposure to bacterial cells were evaluated. The incorporation of a metal into the central coordination site of the porphyrin structure strongly impacts the spectrophotometric characteristics of the porphyrin as well as its interaction with other environmental components. The study described here sought to utilize that impact in order to provide improved beacons with reduced nonspecific response and greater target sensitivity. Absorbance and fluorescence characteristics for vanadium, zinc, and cobalt modification of four constructs are provided.

KEY WORDS: fluorescence, reagentless detection, porphyrin-modified antimicrobial peptides

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A B S T R A C T S

**Cost-Effectiveness Analysis of two Antiretroviral Therapies for Children with HIV in Resource-Constrained Areas with Peripartum Nevirapine Exposure from the Perspective of Payers**

Presenter's Name: Onyeka Godwin  
 Classification: Graduate Student  
*Presentation Type: Poster Presentation*

**Background:** A regimen including nevirapine (NVP) is often the predominant antiretroviral therapy (ART) available for HIV-infected children in Africa, because it is inexpensive, stable at high temperature, and convenience of the availability in a fixed dose combination. Despite the benefits of NVP, challenges exist from the effect of NVP resistance in mothers as well as in children who become infected with HIV regardless of prophylaxis. As a result of these concerns, ritonavir-boosted lopinavir (LPV/r) based regimen, although more expensive, are preferred over the less costly NVP based regimen. **Objective:** To evaluate the cost-effectiveness of a NVP-based ART versus LPV/r-based ART, as a first-line treatment option after induction therapy. **Methods:** The model was based on a lifetime horizon. Health rewards and costs were discounted at 3% and 5% annually. The clinical and costs data were collected from published studies of ART for children in Africa. Markov Models were designed for this study with three HIV transition states, CD4 %=> 15, CD4 %< 15, and death. Sensitivity analyses were conducted to examine the impact of varying base case assumptions on the costs and discount rate. **Results:** NVP-based regimen after virologic suppression dominated the LPV/r-based regimen with the incremental cost and the incremental QALY of \$7,288.53/31.76QALY. The result also revealed an estimated 0.79 years gained in Life expectancy from LPV/r -based regimen over NVP-based regimen. **Conclusion:** In HIV infected children in South Africa, the NVP-based regimen would lead to cost savings, but at the same time to loss of effectiveness.

KEY WORDS: HIV/AIDS, Nevirapine, Ritonavir-boosted Lopinavir, Cost-effectiveness Analysis

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**Secure Electronic Medical Records (EMR): Reducing Health Disparities**

Presenter's Name: Rajni Goel  
 Classification: Senior Faculty  
*Presentation Type: Oral Presentation*

Coauthors: Loren Nunley

Over the past four decades, the notion of inequities in healthcare has slowly surfaced. The term health disparity has become in vogue bringing to the fore the challenges the healthcare system faces today. Though research has helped us to better understand the various causes of health disparities, far less research explains appropriate ways to reduce health disparities. We consider how effective usage of existing technologies can improve the current medical model. This research evaluates best practices for the utilization of Electronic Medical Records (EMR) that could aid in these efforts to eliminate health disparities, yet maintain security and privacy as patients currently expect and HIPPA policy mandates. Data is easily copied and transferred, traceable as to who has accessed and seen what, and stored indefinitely; this creates EMRs cost effectiveness as well as the security vulnerabilities. Because EMRs make it so easy to obtain, mine, and disseminate health record data, they possibly introduce a security, chain of custody and right to privacy dilemma. The primary security objectives of confidentiality, integrity and availability (CIA) must be ensured in health record usage. The framework proposed addresses the fact that health data needs to be useful, current, coherent and complete as possible while simultaneously be considered private and readily available at the various points of service. This paper will outline a novel utilization of EMR, securely, to aid in the elimination of health disparities.

KEY WORDS: EMR, Health Disparities, security

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## A B S T R A C T S

**Chromium +3 as a Therapy for Diabetes Type 2**

Presenter's Name: Barbara Harland

Classification: Senior Faculty

*Presentation Type: Poster Presentation*

Coauthors: Donald Oberleas

Chromium in the +3 oxidative state is an essential and important form. Metabolically Chromium forms very stable complexes with water ( $5 \times 10^{-7} \text{ M}$ - $1\text{s}^{-1}$ ), urea, ammonia, halides, sulfate and organic acids. Chromium's major function is in proper glucose utilization by establishing stable complexes with glutamic acid residues in insulin, in a chaperone located between the insulin and insulin receptor. The insulin receptor will open a glucose channel in the cell membrane and thus allow the glucose to enter the cell to be metabolized by glycolysis. Only small amounts of chromium are required, less than 1 % of dietary chromium is absorbed and retained. The chaperone has been isolated from liver and kidney of several mammalian species and bovine colostrum. The chaperone is composed of glycine, cysteine, aspartate and glutamate in a molar ratio of 2:2:2:4 and has a molecular weight of ~1500. The combination of insulin, chaperone and insulin receptor are the functional aspects of the receptor. Chaperone and insulin require stability for activation of tyrosine kinase for the process of providing the means to transport glucose into the metabolic cells for metabolism to energy and the provision of carbon segments for other metabolic entities. Though the number of human test subjects is small, it has been demonstrated that Diabetes Type 2 can be effectively treated as a chromium deficiency.

KEY WORDS: diabetes type2 chromium insulin elderly

**Can binge eating cause the development of hypertension?**

Presenter's Name: Shanae Henry

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Binge eating is a serious health issue in our society today. Previous studies have suggested that binge eating can encourage the development of obesity, diabetes, heart disease, and hypertension. The purpose of this experiment was to explore the relationship between binge eating and hypertension. Specifically, differentiation in protein expression

of Nicotinamide Adenine Dinucleotide Phosphate Oxidase subunit-4 (Nox-4) and orexin were determined in a binge eating prone and resistant rat model. Feeding test were conducted to determine binge eating prone and resistant phenotypes in Sprague Dawley rats. Kidney proteins were extracted and analyzed using Western Blot Hybridization to determine any changes in protein expression. The protein from the kidney was analyzed because of the key role it plays in the development of hypertension. The results confirmed that there is no significant difference in protein expression in binge eating rat models. There were several limitations that may have affected the results such as the sample size and differentiation in Western Blot hybridization techniques. However, additional studies will be conducted in the future to determine other possible mechanisms that influence susceptibility to hypertension.

KEY WORDS: Binge eating, hypertension, compulsive eating disorders, Nox-4, Orexin

**Cleansing Of Biogas Through Various Routes While Effectively and Safely Removing H<sub>2</sub>S and CO<sub>2</sub>**

Presenter's Name: Allison Hester

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: James Mbugua

The anaerobic digestion of biodegradable materials produces biogas, which contains the lethal gas, hydrogen sulfide. This by-product not only emits a rancid smell that can pollute an entire community's supply of water, but more importantly, poses both an environmental and life-threatening issue due to its high toxicity. This is specifically significant for international slum communities that have inadequate systems of waste disposal. This research study served to find the most cost-effective and environmentally-safe method of removing hydrogen sulfide from biogas. The use of seven chemical agents, which included hydrogen peroxide, potassium permanganate, ferric chloride, ferrous sulfate, sodium hydroxide, potassium hydroxide, and Fe(III)/EDTA, as well as recycled rubbers and tires were compared individually to determine which procedure reduced the most amount of hydrogen sulfide. The chemical calculations conducted on each process indicated that an average of over 94.32% of the hydrogen sulfide was removed, which indicates



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the effectiveness of both the chemical and physical oxidizing agents. Four chemical agents – hydrogen peroxide, ferric chloride, potassium hydroxide and sodium hydroxide – were successful in generating a reduced amount of smell. The high cost of Fe(III)/EDTA renders it an inappropriate agent to be used in a wastewater treatment plant. The recycled tires and rubbers were determined to be the most cost-effective method and can be applied in a large-scale treatment plant; thus they are highly recommended for future use in hydrogen sulfide removal. It is also suggested that future studies investigate the use of a gas analyzer to reinforce the effectiveness of these chemical agents in removing hydrogen sulfide.

KEY WORDS: Safely Removing H<sub>2</sub>S, CO<sub>2</sub> From Biogas

**The association between health literacy and medication adherence in the HIV population**

Presenter's Name: Brittany Hill

Classification: Professional Student

Presentation Type: Poster Presentation

Coauthors: Nima Ossareh, Pharm.D.; Kellee James, Pharm.D.; Monika Daftary, Pharm.D., Mary Maneno, Ph.D.

**Background:** Health literacy is of great concern in the United States and this could potentially relate to the high prevalence of HIV infection currently seen in the District.

**Methods:** A cross sectional-sectional study to assess the relationship between health literacy, medication adherence and other socio-demographic factors was conducted among HIV patients attending an urban infectious disease clinic between April 2012 and February 2013. After receiving appropriate training, pharmacy students administered the Rapid Estimate of Adult Literacy In Medicine (REALM) to patients at the clinic. The goal of REALM is to assess an adult patient's ability to read 66 common medical words and lay terms. After assessment each patient is provided a score that categorizes him or her as having either adequate, marginal/limited health literacy. Adherence information was assessed via self-report and provider documentation. **Results:** Of the 102 patients included in the study 52.0% were female, majority were on public insurance (83.3%), 7.8% had a history of non-adherence and 58.8% had marginal/limited health literacy.

Bivariate analysis showed that there were a higher proportion of patients with marginal/limited health literacy; among those with a history of non-adherence compared to those with a history of adherence; however this finding did not reach statistical significance (87.5% vs. 56.4%; p=0.086). There was a significant association between type of insurance and health literacy (p=0.003). More specifically, 68.7% vs. 55.6% vs. 23.5% of Medicaid, Medicare and privately insured patients respectively had marginal/limited literacy. **Conclusions:** Trends in our study suggested that marginal/limited health literacy increased non-adherence among HIV patients but no statistically significant finding was concluded. Our results also show that HIV patients with public insurance have low levels of health literacy.

KEY WORDS: Health Literacy, Human Immunodeficiency Virus, Medication Adherence, Insurance

**Reduction of Immature Neurons in the Amygdala of Pediatric SIV-Infection**

Presenter's Name: Amanda Holmes

Classification: Undergraduate Student

Presentation Type: Poster Presentation

Coauthors: H. Carryl, K VanRompay, K Abel, MW Burke

**Background:** Pediatric HIV infection remains a global health crisis with an estimated 1,500 children under the age of 15 years becoming infected with HIV-1 each day in the developing world. Children are much more susceptible to HIV-1 neurological impairments than adults. A major obstacle in pediatric HIV research is sample access. The proposed studies take advantage of ongoing pediatric SIV pathogenesis and vaccine studies to test the hypothesis that pediatric SIV infection reduces immature neurons in the amygdala. **Methods:** Newborn rhesus macaques (*Macaca mulatta*) that received oral inoculation with a repeated-exposure of SIVmac251 (n=4) or vehicle (control n=4) were recruited for this study. After a 6-18 week survival time, the animals were sacrificed and the brains prepared for quantitative histopathological analysis. **Results:** We report here a significant reduction in immature neurons in the amygdala in perinatal SIV infected monkeys.

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**Conclusions:** We have previously reported significant loss of hippocampal pyramidal and immature neurons that may contribute to the rapid neurocognitive decline associated with pediatric HIV infection. Data presented here suggest that pediatric SIV infection may also impair amygdala functioning as indicated by the loss of immature neurons.

Support: Leadership Alliance Fellow to HA; District of Columbia Developmental Center for AIDS Research (P30AI087714) to MB; and 1R01DE019064 (NIH/NIDCR) and 2P30 AI050410 to KA.

KEY WORDS: Immature Neurons Pediatric SIV-Infection

### Mechanism of Cyclooxygenase-2 Inhibition by Salvanolic Acid B

Presenter's Name: Shenye Hu

Classification: Graduate Student

Presentation Type: Oral Presentation

Coauthors: Belinda Hauser, Yayin Fang, Xinbin Gu

Cyclooxygenase-2 (COX-2) has been implicated to be a novel target for prevention and therapy of cancer, and increasing evidence has demonstrated the role of COX-2 in facilitating breast cancer pathogenesis. Non-steroidal anti-inflammatory drugs (NSAIDs, e.g. Celecoxib) offer some promise in cancer prevention and treatment; however, dose-dependent cardiac toxicity tends to limit long term use. Salvanolic acid B (Sal-B) is a hydrophilic depside isolated from *Salvia miltiorrhiza* Bge and has been widely used to treat and prevent cardiovascular diseases in Asian countries with limited side effects. Sal-B was found in recent years to effectively inhibit various types of cancer cell growth in vitro and in vivo via inhibition of the COX-2 pathway. In this study, we utilized classical enzymology to determine the mechanism of the inhibition of COX-2 by Sal-B. Methods: A cox fluorescent activity assay measuring the peroxidase component of COX-2 was used to compare its enzymatic activity between reactions. A series of this fluorescent assay were conducted with orthogonal design of various concentrations of Sal-B (5 $\mu$ M, 10 $\mu$ M, 20 $\mu$ M, 40 $\mu$ M, 80 $\mu$ M, 150 $\mu$ M) and Celecoxib (1.25 $\mu$ M, 2.5 $\mu$ M, 5 $\mu$ M, 10 $\mu$ M, 20 $\mu$ M, 37.5 $\mu$ M) with the fixed substrate concentration (95 $\mu$ M) and a series of increased substrate concentrations

(4.75 $\mu$ M, 9.5 $\mu$ M, 19 $\mu$ M, 38 $\mu$ M, 76 $\mu$ M, 142.5 $\mu$ M) with fixed concentrations of inhibitors (Sal-B 100 $\mu$ M, Celecoxib 25 $\mu$ M). Results: As anticipated, enzymatic activity of COX-2 decreased as the concentration of Sal-B increased, indicating that Sal-B is an effective inhibitor of COX-2. Lineweaver-Burk plot and Hanes-Woolf plot were utilized to determine the apparent values of the Michaelis-Menten kinetic constants of COX-2 with the inhibition of Sal-B or Celecoxib. Compared to the classical competitive inhibition of COX-2 by Celecoxib with no change in the Vmax value (11.81 $\mu$ M/min) and increase in the Km value (31.99 $\mu$ M), Sal-B displayed a mixed type of inhibition, with decreased Vmax (3.92 $\mu$ M/min) and increased Km (28.52 $\mu$ M). Hence, this study demonstrated that Sal-B is a strong inhibitor of COX-2, and has great potential in improving prevention and treatments of cancer.

KEY WORDS: salvanolic acid B, cyclooxygenase-2, chemoprevention, Lineweaver-Burk plot, Hanes-Woolf plot

### Nicotinamide Adenine Dinucleotide Phosphate Oxidase subunit-4 (Nox-4) expression in the kidney of Peroxisome Proliferator Activated Receptor - alpha knockout mice during Angiotensin II-induced Hypertension

Presenter's Name: Kelli Hunnicut

Classification: Undergraduate Student

Presentation Type: Poster Presentation

Coauthors: Rong Duan, Joanne S. Allard, Dexter L. Lee

**Background:** Peroxisome proliferator-activated receptor- $\alpha$  (PPAR- $\alpha$ ) agonist attenuates hypertension by suppressing oxidative stress and increasing superoxide dismutase activity. We tested the hypothesis that the absence of PPAR- $\alpha$  would increase NADPH oxidase (NOX)4 in mice kidneys during Ang II hypertension. **Methods:** Male (10 - 12 weeks old) PPAR- $\alpha$  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. Separate groups of KO + Ang II and WT + Ang II mice were given the NOX inhibitor, apocynin (1 g/L) or PPAR- $\alpha$  agonist, fenofibrate (145 mg/kg/day). **Results:** Mean arterial pressure (MAP) was similar between KO (119  $\pm$  2 mmHg) and WT (122  $\pm$  2 mmHg) during the control period. On day 12 of Ang II, MAP was significantly higher in KO than WT, 161  $\pm$  5 and

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145 ± 4 mmHg, respectively. Fenofibrate significantly reduced MAP in WT + Ang II mice (134 ± 5 mmHg) and apocynin reduced MAP in KO + Ang II and WT + Ang II mice. Kidney NOX4 expression was significantly decreased in both Ang II-treated KO (77 ± 5%) and WT (50 ± 5%) mice when compared to their respective controls. Fenofibrate treatment did not decrease NOX4 expression in the kidney. Apocynin alone did not decrease NOX4 expression in the kidney. **Conclusion:** Our results suggest that decreased kidney NOX4 expression in PPAR- $\alpha$  KO mice and their wild-type controls does not contribute to increases in MAP during Ang II hypertension.

KEY WORDS: kidney, hypertension, mice, Angiotensin II, Nox4

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### Synthesis and Characterization of Phenylthiourea Analogs of Emetine

Presenter's Name: Nabil Idris

Classification: Graduate Student

Presentation Type: Poster Presentation

Coauthors: Dr. Raymond Butcher and Dr. Oladapo Bakare

The alkaloid emetine and its derivative dehydroemetine have been used as antibiotic in the treatment of severe amoebiasis, provoked by the protozoan, *Entamoeba histolytica*. However, due to severe side-effects such as cardiac damage and muscle weakness emetine is today replaced by the chemotherapeutic, metronidazol. The cytotoxicity of emetine is due to the inhibition of protein biosynthesis in eukaryotic ribosomes and the interaction with DNA. There are certain publications suggesting the induction of apoptosis by emetine in U937 and A549-S cell lines, and rat hepatocytes. Thus, emetine could be a suitable cytotoxic agent in cancer therapy, e.g. to overcome multidrug resistance or to take advantage of synergistic effects in order to minimize side-effects due to the high dosage of other cytotoxic agents. In an attempt to explore the usefulness of emetine as an anticancer agent and eliminate the undesirable toxic side effects, our research group recently derivatized the N-2' position of emetine to prepare the thiourea, urea, sulfonamide, dithiocarbamate, carbamate and pH responsive hydrolyzable amide analogs. These compounds show significant anticancer activities when screened against some prostate cancer cell lines (PC3 and LNCap). In addition, the compounds

did not show sign of toxicity in mice when compared with emetine at the same dosage. Encouraged by these results, we have designed the synthesis of some phenylthiourea analogs for further studies in our prostate cancer drug-development program. The phenylthiourea analogs were prepared with an average yield of 55.9% by stirring a solution of emetine dihydrochloride, appropriate phenylisothiocyanate analog and triethylamine in dichloromethane for 24 hr at room temperature. After chromatographic purification by column chromatography on silica gel, the products were characterized by infrared spectroscopy, nuclear magnetic resonance spectroscopy and by electrospray ionization mass spectrometry.

KEY WORDS: Alkaloid, Emetine, Anticancer, Thiourea, Spectroscopy Characterization

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### Mathematical Analysis Modeling of Malaria Transmission in Nigeria

Presenter's Name: Lotanna Ikeotuonye

Classification: Undergraduate Student

Presentation Type: Poster Presentation

Coauthors: Katharine Gurski

In 2010 an estimated 219 million cases of malaria occurred worldwide and 660,000 people died, most (91%) in the African Region. Malaria, a major public health concern in Nigeria, is transmitted throughout the country. The disease accounts for 60 percent of outpatient visits and 30 percent of hospitalizations among children under five years of age. With a population of 174.5 million people, one-quarter of all malaria cases in Africa occur in Nigeria, and there are more deaths due to malaria in Nigeria than in any other country. In an effort to understand the interactions between mosquitos, humans, and malaria, this has led us to investigate the transmission rate of malaria in Nigeria. We will use disease modeling, simulations, and simplify wherever possible to understand the dynamics of this transmission. Differential equations that correspond to the human and mosquito population were solved to find the Disease Free Equilibrium. In order to check the stability we check the condition on the parameters to verify that the endemic equilibrium values are physically real, that is, between 0 and 1. After checking the linear stability by linearizing

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around the disease free equilibrium, that is let the equilibrium value of the system:  $(MS, MI, S, I, R, T) = (1, 0, 1, 0, 0, 0)$ , we found that the system is asymptotically stable. We then calculated the reproductive number and used it as a parameter. In conclusion, the results obtained from the numerical study show that the endemic equilibrium is always linearly stable because all of the eigenvalues of the Next Generation Matrix are negative.

KEY WORDS: Malaria, Disease Modeling, Nigeria, Endemic, Transmission

### Isolation of a Unique Mycobacteriophage KiKi

Presenter's Name: Akira Isaac

Classification: Undergraduate Student

Presentation Type: Poster Presentation

The purpose of this research project is to discover, manipulate, and sequence a new bacteriophage. The data collected can then be used by scientists and researchers in the fields of genetics, epidemiology and therapeutics, since phage therapy is a promising alternative treatment of infections caused by antibiotic resistant bacteria. Bacteriophages are viruses that attack bacteria. Mycobacteriophages attack mycobacteria specifically. There are two types of bacteriophages: lytic and temperate. Lytic bacteriophages 'attach to, infiltrate, lyse and kill bacterial cells'. Temperate bacteriophages incorporate their genome into the bacterial DNA. However, depending on particular factors, they can undergo induction and take part in lytic growth. In this particular project, the effect of mycobacteriophages on *Mycobacterium smegmatis* is studied. The mycobacteriophage, D29, is used as the positive control in most of the experiments because it readily infects *Mycobacterium smegmatis*. A soil sample collected outside of the Howard University Hospital contained different bacteriophages because the size, morphology and turbidity of the plaques varied. However, a pure phage population was eventually obtained. The concentration of the High Titer Lysate was  $5.67 \times 10^{10}$  pfu/ml. With such a high titer, the HTL was diluted before proceeding to DNA characterization. Characterization of the phages involves the use of electron microscopy and phage DNA extraction. The phage DNA will be analyzed by restriction enzyme digestion and gel electrophoresis. One of the samples of phage DNA has been

submitted for DNA sequencing. The class will analyze this genome sequence determining the function and evolutionary relationships of its genes.

KEY WORDS: Bacteriophage, Mycobacteriophage, DNA Isolation, DNA Sequencing, Bacteria- *Mycobacterium Smegmatis*

### The Q248H Mutation Prevents Ferroportin Ubiquitination

Presenter's Name: Andrey Ivanov

Classification: Post Doc/ Resident/ Fellow

Presentation Type: Poster Presentation

Coauthors: Tatiana Ammosova, Sergei Nekhai

**Purpose:** Ferroportin Q248H mutation is prevalent in African populations and leads to increased serum ferritin. Our recent study showed that ferroportin Q248H protein is resistant to physiologic hepcidin concentrations. Also sickle cell disease patients with ferroportin Q248H heterozygote had lower serum ferritin concentration suggesting that the enhanced iron release by macrophages. Ferroportin glutamine 248 is located within the intracellular loop (residues 228-307), which is likely to be located in the cytoplasm. Recently ferroportin internalization was shown to be driven by ubiquitination of lysines lying within residues 229-269 including K229, K240, and K247. The proximity of the K240 and especially to K247 to the Q248 residue suggests that a positively charged histidine in position 248 might change the overall negative charge of the 240<sup>eeetelkqInlhk</sup>253 sequence toward a more positive charge, which might affect ubiquitination and subsequent degradation of ferroportin. Here we analyzed and compared ubiquitination of WT and Q248H mutant ferroportin. **Results:** WT ferroportin and Q248H mutant were expressed as EGFP-fusions in 293T cells and also combined with the expression of ubiquitin. Ferroportin was immunoprecipitated with anti-EGFP antibodies and analyzed by high resolution mass spectrometry using LTQ-Orbitrap. Phosphorylation and ubiquitination was determined using Proteome Discover and quantified using SIEVE 2.1 software. **Conclusion:** WT ferroportin but not the Q248H mutant ferroportin was found to be ubiquitinated on lysines 247 and 253 and also phosphorylated on Thr 144. Also WT ferroportin was found to associate with ubiquitine-conjugating enzyme E2 and ubiquitine protein ligase NEDD4.

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Thus hepcidin resistance of ferroportin Q248H could be due to its inability to undergo ubiquitination. **Support:** NIH Research Grants 8G12MD007597 and P50HL118006-01.

**KEY WORDS:** ferroproten, iron, ubiquitination, African population, hepcidin

**Vitiligo in Hepatitis C patient on Interferon treatment**

Presenter's Name: Juhi Jain

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Venkata Tamanna

About 150 million people are chronically infected with hepatitis C virus, more than 350 000 people die every year from hepatitis C-related liver diseases. It is well studied for its role in initiating autoimmune response and resulting in several endocrinopathies and cutaneous manifestations. Due to advances in therapeutic medicine, currently Hepatitis C can be treated with Ribavirin and Interferon with the goal of slowing or halting the progression of fibrosis and preventing the development of cirrhosis. Interferons are recognized as potent cytokines that are associated with complex antiviral, immunomodulating, and antiproliferative actions. Our case is a 54 year old African American female with DM2, Hepatitis C who presented to the clinic for treatment of hepatitis C. Initial workup included ultrasound liver showing increased echogenicity likely steatosis with no focal mass lesions. Hepatitis Panel: HCV RNA PCR was 4633280, log 6.66, genotype 1A. Hepatitis C treatment was started with triple therapy Interferon, Ribavarin and Incivex. By 5th week patient had undetectable HCV RNA PCR. At 14 weeks, patient came with skin hypopigmentation suggestive of vitiligo, confirmed by dermatologist. Vitiligo spread from site of INF administration to face and all over her body, leading to discontinuation of treatment. The exact mechanism of vitiligo and interferon is unclear. In this era of PEG INF as the first line treatment for Hepatitis C, clinicians should be aware of this pigmentary side effect which could subsequently be disfiguring. Patients should be made aware of this debilitating side effect before initiation of treatment and closely monitored.

**KEY WORDS:** Interferon and vitiligo

**Dark Response of Marine Cyanobacteria**

Presenter's Name: Nia Johnson

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Brian Palenik

Cyanobacteria in aquatic environments can find themselves in extended periods of darkness but little is known about how they respond to these conditions. An experiment was designed to understand the effect complete darkness can have on different cyanobacterial species. Diverse cyanobacteria were grown on F/2 and F/4 medium in both test tubes and petri dishes. Three tubes and three dishes of each species were placed into complete darkness for a controlled amount of time (0, 3 days, 7 days, 14 days, 21 days). After returning the cells to the light the fluorescence was measured daily in the test tubes. By measuring the fluorescence we are able to get an understanding of the potential survival rate of each species. A similar assay was carried out using plate cultures. The results are expected to determine whether extended time spent in complete darkness will kill or only inhibit the later growth rate of these cyanobacteria.

**KEY WORDS:** Marine, Cyanobacteria, Ocean Mixing, Dark Response

**Sustainability through Soap: Small-Scale Solutions for Large-Scale Problems**

Presenter's Name: Kendra Jones

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Mofor Awambeng

Most global, rural populations are regularly confronted with the need for cleanliness and the inability to afford soap. To guarantee long-term community cleanliness, without imposing insupportable financial strain, it is necessary to enable local communities to use readily available ingredients for the local production of soap. The objective of this project was to develop a small-scale soap production machine adapted to the needs of low-income rural communities and to increase their self-sustainability. This machine is able to hold, measure, dispense,

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heat, mix, pour, and form the raw materials into 7x7x7cm cake blocks. The containers can hold between 8 and 15 liters of raw materials that subsequently produce approximately 23 to 44 blocks of soap. This machine is capable of operating with or without an electrical power source. As constant electricity is still a major issue for many rural communities, ensuring the machine is fully functional in the absence of electricity is necessary. Therefore, the machine is designed to be fully functional using only hand cranks and pulley systems. This significantly impacts rural communities because it potentially eliminates need for community electricity and allows for a source of sustainable income. With its simple yet efficient design, the machine could also be used for similar tasks requiring mixing, molding, and/or heating of materials (e.g., making mud bricks for use in local construction). The machine has many implications that would greatly improve the quality of life for impoverished communities around the world, and provide opportunities for increased independence and entrepreneurship. [This material is based upon work supported by the National Science Foundation under Grant No. 1052861. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation].

KEY WORDS: hygiene, rural, saponification, soap machine,

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### Effects of *Serratia marcescens* on *Pieris rapae* larvae

Presenter's Name: Ines Kafando

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Ingrid Harris, Leslie McKinnon

Microbial communities are often essential to their animal hosts, such as humans, because they can play crucial roles in maintaining host health. Alterations to the microbiota can impact colonization by pathogens and have the potential to influence host immune response to pathogens. To begin studying the impact of the microbiota on these factors, we first determined the baseline effect of *Serratia marcescens* on our model organism, the lepidopteran *Pieris rapae*. *Serratia marcescens* is bacterium that is often pathogenic to insects and is a member of the Enterobacteriaceae, which are gram-

negative rods. Two strains of *Serratia marcescens* (one known to be pathogenic in other lepidopterans - JoLab, and one whose virulence was unknown - HULab) were used to conduct our experiment. *P. rapae* larvae were fed orally with diet including either strain of *S. marcescens* delivered in 1X PBS for three consecutive days, and were monitored for survival everyday throughout the experiment. The larvae that were part of the control group were either fed untreated sterile artificial diet or sterile artificial diet with 1X PBS. Our preliminary results confirmed that the introduction of *S. marcescens* decreased the survival of larvae and indicated that the HULab strain may be even more pathogenic to insects than the JoLab strain. In the future, we plan to confirm our findings, and to conduct experiments that will determine the impact of these bacteria on the immune system as well as the role of the microbiota in this interaction.

KEY WORDS: *Serratia marcescens*, *Pieris rapae*, infection, pathogenic bacteria, larvae survival

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### Central Nervous System De-myelination in Pediatric SIV Infection

Presenter's Name: Herman Kamboj

Classification: Professional Student

*Presentation Type: Oral Presentation*

Coauthors: K Curtis, H Carryl, H Agyemang, K VanRompay, K Abel, MW Burke

**Background:** Pediatric HIV infection remains a global health crisis with an estimated 1,500 children under the age of 15 years becoming infected with HIV-1 each day in the developing world. Children are much more susceptible to HIV-1 neurological impairments than adults. Imaging studies have shown reduced radial diffusivity, suggesting demyelination may be a prominent feature in pediatric HIV infection that is associated with diminished executive function. A major obstacle in pediatric HIV research is sample access. The proposed studies take advantage of ongoing pediatric SIV pathogenesis and vaccine studies to test the hypothesis that pediatric SIV infection diminishes myelinated fibers in the frontal and motor cortices as well as the hippocampus. **Methods:** Newborn rhesus macaques (*Macaca mulatta*) that received oral inoculation with a repeated-exposure of

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SIVmac251 (n=4) or vehicle (control n=4) were recruited for this study. After a 6-18 week survival time, the animals were sacrificed and the brains prepared for quantitative histopathological analysis. Matched sections from the frontal cortex, motor cortex and hippocampus were stained with gold chloride, a putative marker for myelin. **Results:** We report here a significant reduction in myelination and myelinated fibers in the frontal cortex, motor cortex, and hippocampus. **Conclusions:** We have previously reported significant loss of hippocampal neurons and neurogenic capacity that may contribute to the rapid neurocognitive decline associated with pediatric HIV infection. Data presented here that neuronal loss maybe exacerbated by loss of central nervous system myelination. These data provide a neuroanatomical substrate for reduced radial diffusivity as well as reported multiple sclerosis-like signs in HIV-1 infected children. **Support:** Leadership Alliance Fellow to HA; District of Columbia Developmental Center for AIDS Research (P30AI087714) to MB; and 1R01DE019064 (NIH/NIDCR) and 2P30 AI050410 to KA.

KEY WORDS: Pediatric, SIV, HIV, demyelination, spasticity

#### Discovery of HIV Drug Efflux Transporters on Primary Human CD4+ T Cells

Presenter's Name: Pradeep Karla

Classification: Junior Faculty/ Lecturer/ Instructor

Presentation Type: Oral Presentation

Coauthors: Michael Bukrinsky, Daniel Oyugi, Ako-Adouno Anne-Marie

The purpose of the study is to screen the primary human CD4+ T-Cells for the presence of prominent ATP Binding Cassette (ABC) class of drug efflux transporters: Multi Drug Resistance Associated Proteins (MRPs), P-glycoprotein (P-gp) and Breast Cancer Resistance Protein (BCRP). Molecular screening studies for the presence of efflux transporters was performed by Reverse Transcription Polymerase Chain Reaction (RT-PCR) gene expression and sequencing analysis. Western Blot analysis was performed to detect the transporters at protein level. Functional evaluation of the role of efflux transporters in HIV drug resistance was performed by drug (Tenofovir) uptake

studies in the presence of specific MRP inhibitor (MK571), P-gp inhibitor (Pgp-4008) and BCRP inhibitor (Fumitrimorgin-C). Intracellular tenofovir drug concentrations in the primary CD4+ T-Cells were analyzed by liquid scintillation counter. Single specific PCR gene products corresponding to GAPDH, MRPs1-7, MRP9, BCRP and P-gp were observed in primary human CD4+ T-Cells. Relative % drug uptake of tenofovir in primary human CD4+ T-Cells in the presence of 50  $\mu$ M MK571 was (173.9 $\pm$ 5.8%), 100  $\mu$ M MK571 was (205.7 $\pm$ 10.6%), 50  $\mu$ M Pgp4008 was (215.4 $\pm$ 9.2%) and 50  $\mu$ M Fumitrimorgin-C was (192.1 $\pm$ 18.38%) compared to control (100 $\pm$ 6.65%). The results, for the first time demonstrated the molecular and functional expression of multiple ABC drug efflux transporters in primary human CD4+ T-Cells. Further, functional uptake studies revealed that the prominent drug efflux pumps (MRPs, Pgp and BCRP) are functionally active in the primary human CD4+ T-Cells leading to decreased intracellular tenofovir drug concentrations and reduced therapeutic efficacy / HIV prophylaxis.

KEY WORDS: Multi Drug Resistance, Efflux Transporter, Tenofovir, CD4+ T-Cell, HIV-Prophylaxis

#### Uncommon radiological findings of CNS diseases in HIV patients

Presenter's Name: Sakshi Kaul

Classification: Professional Student

Presentation Type: Poster Presentation

Coauthors: Ajani Mason, Mohan Kurukumbi, Kamyar Sartip, Annapurni Jayam-Trouth

**Background & Purpose:** Opportunistic CNS lesions in HIV patients are a cause of morbidity and mortality. They may be identified by neuroimaging but also have the capacity to present atypically and can be diagnostically challenging. **Methods:** In this series, we present four uncommon radiological presentations of CNS disease in HIV patients. **Results:** Case 1 had CSF-confirmed cryptococcosis with atypical location, shape and non-enhancing features. Case 2 had HIV-associated PRES with the characteristic normal DWI, but without the common preceding etiology of hypertension. Case 3 had a previously untreated biopsy-confirmed posterior

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fossa CNS Lymphoma and new-onset treatment-responsive Toxoplasmosis in the same patient. Case 4 had CSF-confirmed PML and the development of IRIS following HAART initiation. **Conclusions:** Cryptococcosis may present without enhancement in a patient with significantly low CD4 levels. PRES may occur in HIV patients without hypertension. CNS Lymphoma can present concomitantly with Toxoplasmosis and the two may be difficult to distinguish. IRIS development in a severely immunocompromised HIV patient can stem from a previously overlooked PML. These findings call for increased radiological suspicion for early diagnosis of CNS disease in HIV patients.

**KEY WORDS:** toxoplasmosis, CNS lymphoma, PRES, IRIS, cryptococcus neoformans

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**Essential oils of *Myrtus communis* L. produce a non-sedating anxiolytic effect in mice model of anxiety**

Presenter's Name: Eyob Kebede

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Ephrem Engidawork, Kaleab Asres

The myrtle shrub (*Myrtus communis* L., Myrtaceae) is rich in essential oils that are used in Ethiopian traditional medicine for the treatment of a variety of ailments, including anxiety. Anxiety disorders affect many people in society and are often accompanied by physiological sensations such as tachycardia, chest pain, and shortness of breath. The present study was undertaken to evaluate the anxiolytic effect of the essential oil of *M. communis* using different models of anxiety. **Materials and Method:** Swiss Albino mice of either sex were randomly divided into five groups. Group 1 (control) was administered Tween 80 (5%, v/v) in distilled water. Group II (positive control) was given diazepam (0.5 mg/kg, orally), suspended in the vehicle. Group III-VI (test groups) were given the essential oil at doses of 50, 100, 200 and 400 mg/kg, respectively. Animals were then subjected to anxiety models, including elevated plus maze (EPM), stair case and open field, and parameters including percentage of time spent in each arm and arm entries, number of steps climbed and number of rears and crossings were measured. **Results:** In EPM studies, the extract

at both 100 mg/kg ( $p < 0.01$ ) and 200 mg/kg ( $p < 0.05$ ) produced a significant increase in percentage of open arm time compared to controls. In the staircase setting, significant reduction of rearing was observed in mice treated with the essential oil at 100 mg/kg ( $p < 0.01$ ) and 200 mg/kg ( $p < 0.05$ ) compared to controls. However, at doses of 50 mg/kg and 400 mg/kg no detectable changes were noted on the measured parameters in both EPM and stair case models. The total number of entries into open field was comparable in all groups. **Conclusions:** The essential oil of *M. communis* showed greater anxiolytic activity at 100 mg/kg compared to the standard drug. The possible mechanism by which the oil showed the activity could be through GABA-related mechanism. Thus, the present work holds up the traditional use of the plant for anxiety.

**KEY WORDS:** Anxiety, Elevated plus maze, Stair case, Open field, *Myrtus communis*.

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**Analysis of the Microbial Component of Senegalese Dust**

Presenter's Name: Lorna Koumou

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Ingrid Harris, Leslie McKinnon, Gregory Jenkins, and Courtney Robinson

**Background:** Every dry season (December to June), the Sahel region of Africa, which stretches from Senegal and the Gambia in the west to Ethiopia in the east, experiences an outbreak of meningococcal meningitis and is known as the Sub-Saharan "Meningitis Belt." For several years, researchers have suspected a link between the meningitis epidemics and environmental conditions; however, no current study in the literature has investigated a potential link between the microbial communities present in the dust and the reported high incidence of infectious diseases such as meningitis. This study used a culture-independent approach to obtain preliminary data on the microbial composition of Senegalese dust. **Methods and Results:** Briefly, DNA was extracted from dust; 16S rRNA genes from the microbiota were amplified, cloned, and then sequenced. Sequence data analysis was performed using the program mothur, the Ribosomal Database Project, and other ecological tools. 89 sequences aligned successfully;



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5 phyla were identified with Actinobacteria and Proteobacteria being the most highly represented. **Conclusions:** All of the detected groups of organisms in this preliminary study have been detected or are relatives of organisms that have been previously detected in African dust or soil. Causative agents of meningitis were not detected. However, because the coverage of the library was not optimal (Good's coverage 73%), we cannot determine whether these organisms are present in the dust. Future experiments will employ pyrosequencing to sample more deeply thereby increasing coverage, and utilize PCR methods to specifically target meningococci.

KEY WORDS: Senegalese-Dust, Microbiota, Dust-storm, Meningitis, Bacteria

#### Functional Solid Lipid Nanoparticles using a Fluorescent Molecule for Targeted Delivery to HIV-1 Infected Cells

Presenter's Name: Krishna Kumar

Classification: Senior Faculty

Presentation Type: Poster Presentation

Coauthors: Cheong-Weon Cho, Krishna Kumar, J. Sine, W. Chen, D. S. Dimitrov, Anu Puri

**Background:** Solid lipid nanoparticles (SLNs) are considered important platforms as drug delivery systems for various administration routes. For targeting therapy using SLNs, we have developed a novel drug delivery SLN system bearing an HIV-1 specific ligand (mD1m36Fab) to target HIV-1 infected cells. **Methods:** SLNs using a lipidic fluorescent molecule (rhodamine phosphatidyl ethanol amine) were fabricated by a hot sonication method and a maleimide-lipid (1,2-distearoyl-sn-glycero-3-phosphoethanolamine-N- [maleimide(polyethylene glycol)-2000] (DSPE-PEG2000-maleimide) was used as a bifunctional linker for conjugation with mD1m36Fab. Briefly, mD1m36Fab (0.3 mg/ml) was reduced with tris-(2-carboxyethyl)phosphine (TCEP) (200  $\mu$ M), and DSPE-PEG2000-maleimide (1 mg/ml in HBS buffer) was added to the reduced protein following the reduction step. The reaction mixture was incubated overnight at room temperature. Subsequently, SLNs were added to the mD1m36Fab-lipid mixture and incubation was further continued for 4 h at 37°C. SDS- PAGE analysis was carried out to characterize conjugated SLN with protein mD1m36Fab.

**Results:** The HIV-1 ligand protein mD1m36Fab was reduced at 100  $\mu$ M TCEP with efficiency  $\geq 90\%$ . The reduced protein showed coupling with DSPE-PEG2000-maleimide as determined by SDS-PAGE analysis. The conjugation was specific via maleimide-cysteine reaction and the conjugated protein remained associated with the lipid (SDS-PAGE analysis). This process was scalable upto 20 mg SLN lipid. **Conclusion:** SLNs conjugated with the HIV-1 ligand mD1m36Fab were successfully prepared. This new nanocarrier will be tested for specific targeting to HIV-1 expressing cells.

KEY WORDS: HIV-1, Solid lipid nanoparticles, targeted delivery, conjugated nanoparticale,

#### Molecular Mechanism of HIV-1 Restriction in Sickle Cell Disease: Induction of HIF-1 $\alpha$ and P21 by Ferroportin Mediated Iron Export

Presenter's Name: Namita Kumari

Classification: Post Doc/ Resident/ Fellow

Presentation Type: Poster Presentation

Coauthors: Tatiana Ammosova, Sharmine Diaz, Patricia Oneal, Subhash Dhawan and Sergei Nekhai

**Purpose:** Increased p21 expression restricts HIV-1 infection in part through the inhibition of HIV-1 transcription. Hypoxia and low iron induce hypoxia-induced factor 1 (HIF-1) which upregulates p21 and inhibits HIV-1 transcription through deregulation of the activity of CDK9/cyclin T1. HIV-1. Sickle cell disease (SCD) is a hemolytic anemia which results in local ischemia and release of heme and was shown to have lower odds of HIV-1 infection. Induction of heme oxygenase-1 (HO-1) inhibits HIV-1, although the mechanism was not clarified. Here we analyzed HIV-1 transcription and replication in peripheral blood mononuclear cells (PBMCs) obtained from SCD patients. **Results:** Gene expression analysis showed increased expression of HO-1, p21, Erg-1, IKB, HIF-1 and ferroportin, an iron export protein, and decrease of hepcidin, a ferroportin inhibitor, in SCD PBMCs. HIV-1 replication was reduced in SCD PBMCs comparing to normal controls, and also in cultured monocytes treated with hemin. Treatment with hepcidin, a peptide that deregulates ferroportin expression, restored HIV-1 replication in SCD PBMC and in hemin-treated

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THP-1 cells. Stable ferroportin knock down in THP1 cells led to the inability hemin to inhibit HIV-1 replication, further suggesting the role of ferroportin. Stable HIF-1 knockdown in promonocytic THP1 cells increased HIV replication suggesting that HIF1 is an HIV-1 restriction factor. Hemin treatment induced expression of HO-1, ferroportin, HIF1 and p21 thus mimicking the effect of SCD. Conclusions. Upregulation of p21 by hypoxia and iron regulatory pathways in sickle cell disease due to hemolytic conditions restricts HIV-1. **Support:** NIH Research Grants 1SC1GM082325, 8G12MD007597 and P50HL118006-01.

KEY WORDS: Sickle cell, HIV-1, Ferroportin, p21

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### Dental caries and dental infections increase the likelihood of hospital admission in patients with pneumonia

Presenter's Name: Brian Laurence

Classification: Senior Faculty

Presentation Type: Oral Presentation

Coauthors: Nee-Kofi Mould Millman, Armin Abron

**OBJECTIVE:** To determine if the presence of dental caries or dental infection was associated with an increased likelihood of hospital admission following an emergency department (ED) visit for patients diagnosed with pneumonia. We hypothesized that the presence of dental infections or dental caries may worsen the clinical symptoms in patients diagnosed with pneumonia and have used hospital admission as a marker of worsening clinical severity. **METHODS:** We analyzed data from the 2008 Nationwide Emergency Department Sample (NEDS) and used Poisson regression with robust estimates of variance to obtain prevalence ratios (PRs) with the appropriate adjustments for complex survey sampling. **RESULTS:** In the final multivariable model among pneumonia patients diagnosed with dental caries compared to those without dental caries, there was a 29% increase in the likelihood of hospital admission following an ED visit (PR=1.29, CI 1.23-1.34). Among pneumonia patients diagnosed with dental infection there was a 19% increase in the likelihood of admission compared to those not having a dental infection (PR=1.19, CI 1.11-1.27). These findings remained consistent in a subset among patients with less clinically severe forms

of pneumonia. **CONCLUSIONS:** Dental caries and dental infections may worsen the clinical symptoms in patients with pneumonia resulting in hospital admission. Dental caries may be a marker for poor oral hygiene and increased dental plaque rather than serve directly as a source of respiratory pathogens. The findings suggest that an increased focus on preventive oral health may reduce the need for admission following an ED visit for patients with pneumonia.

KEY WORDS: dental. infection, pneumonia, caries, hospital admission

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### The Effects of SIV on the Blood Brain Barrier

Presenter's Name: Jerome Lawrence

Classification: Undergraduate Student

Presentation Type: Oral Presentation

Coauthors: J Lawrence<sup>1</sup>, H Kamboj<sup>1</sup>, K VanRompay<sup>2</sup>, K Abel<sup>3</sup>, MW Burke<sup>1</sup>, 1. Howard University, Washington, D.C., 2. University of California at Davis, Davis CA, 3. University of North Carolina, Chapel Hill NC

Pediatric HIV infection remains a global health crisis with an estimated 1,500 children under the age of 15 years becoming infected with HIV-1 each day in the developing world. Children are much more susceptible to HIV-1 neurological impairments than adults. The blood-brain barrier (BBB) is an important partition between the central nervous system and the blood which supplies the central nervous system with nutrients. Pericytes, situated within capillary basement lamina and post-capillary venules, play a large part in neurovascular function maintenance that is important in BBB structure and function. The ability of HIV-1 infected monocytes progressing into the brain relies on the ability to transverse the BBB, to replicate and initiate the cascade of neuroinflammation. The perinatal brain lacks a fully formed BBB and it is hypothesized that SIV infection prevents the formation of the BBB by reducing the population of pericytes, a significant constituent of the BBB. Newborn rhesus macaques (*Macaca mulatta*) that received oral inoculation with a repeated-exposure of SIVmac251 (n=4) or vehicle (control n=4) were used for this study. After a 6-18 week survival time, the animals were sacrificed and the brains prepared for quantitative histopathological analysis.

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To identify pericytes we used a pericyte antibody (NG-2; gift from the Scripps Institute) and a blood vessel (Tomato-Lectin; Vector) through immunohistochemistry. This study will provide a potential mechanism for the deleterious effects of perinatal HIV infection.

KEY WORDS: blood brain barrier SIV HIV

**Mood Disorders in opiate dependent substance abusers with correctional system involvement**

Presenter's Name: William Lawson

Classification: Senior Faculty

Presentation Type: Oral Presentation

Coauthors: May Mbaba, Suneeta Kumari, Faye Taxman

As part of NIDA's Seek, Test, and Treat initiative, we screened 259 patients meeting criteria for opioid dependence participants and assessed mood disorders in a sample of 259 opioid users. Eighty-nine percent of the sample is currently under based criminal justice supervision. Participants' medical and psychiatric history were recorded in screening physician induction forms developed for this study that in addition to demographic information included the Clinical Opiate Withdrawal Scale (COWS) and various assessment instruments. Assessment instruments included the Mood Disorder Questionnaire (MDQ), Addiction Severity Index-Lite (ASI-Lite), and the Patient Health Questionnaire-9 (PHQ-9). **Results:** Ninety percent (90%) of the sample screened positive for at least mild depression and 13% screened positive for moderate to severe depression, and 23% showed a positive screen on the MDQ. Less than half of the moderately to severely depressed screened individuals were on antidepressants and only a third of the bipolar screened patients were on mood stabilizers. Moreover, half self-reported a history of bipolar disorder. Participants who had more family problems, medical issues, recent legal troubles, and were MDQ+ had higher odds of having moderately/severe depression. Those who had more medical issues, recent legal troubles, higher PHQ-9 scores, and were older had a higher likelihood of scoring positive on the MDQ. **Conclusions:** These findings are consistent with previous reports of high rates of affective disorders in both the criminally involved and opioid abusing populations. Furthermore, the lack of availability and

accessibility of appropriate medication suggests that these populations are underserved. Such individuals are especially likely to be involved in risky health behaviors that can lead to the contraction and spread of HIV/AIDS.

KEY WORDS: Mood disorders, HIV/AIDS, corrections, substance abuse

**Biomimetic Polymer for Tooth Car**

Presenter's Name: Yanda Lei

Classification: Post Doc/ Resident/ Fellow

Presentation Type: Oral Presentation

Coauthors: Tongxin Wang, James Mitchell

**BACKGROUND:** Dental erosion, termed as mineral loss due to acids not bacteria evolved, is significantly underestimated. External acids such as citric acid and others included in our diet or soft drinks are becoming more destructive and prevalent not only due to the high capability in dissolving minerals of acid-containing food themselves but also due to the more 'acidic' dietary structure. Therefore, it is of great importance to develop new protective agents that can coat enamel to inhibit acid erosion. **METHODS:** Inspired by the tooth protecting effectiveness of casein phosphate peptide (CPP) and other salivary proteins such as mucins, this project has synthesized a series of novel polymers which has similar functional domains. Calcium releasing, enamel binding and enamel erosion were tested to evaluate the protective effectiveness of the new polymer. **RESULTS:** (1) A series of synthetic polymers with hydrophilic and hydrophobic segments have been designed and prepared; (2) The polymers can strongly bind with enamel surfaces; (3) The polymer treated on enamel can (a) lower dental erosion by 27-30% in comparison with the control and (b) protect the tooth structure as indicated by scanning electron microscope. **CONCLUSIONS:** A series of polymers with a biomimetic structure which has the effect of inhibiting dental erosion has been developed. This unique polymeric material can be utilized as an ingredient of dentifrice, tooth paste, or mouth wash to prevent tooth erosion by soft drinks and acidic food.

KEY WORDS: polymer, dental erosion, soft drink, surface treatment

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**The Isolation of Tripl3t**

Presenter's Name: Demi Lewis

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Bacteriophages are a type of virus that replicate by injecting their DNA into host bacteria. This project was done in the General Biology Honors Laboratory section entitled Phage Hunters Advancing Genomics and Evolutionary Science (PHAGES) and focused on extracting bacteriophages from soil to discover, understand, and advance the phage genome record. A sample of enriched phages was extracted from soil outside of Blackburn Center. A single phage population was isolated by repeated streaking of phages on a lawn of top agar containing host *Mycobacterium smegmatis* cells. The Isolated phage, named Tripl3t, produced bulls-eye plaques that had small, medium, and large sized morphologies. A high titer lysate of phage was obtained from which the phage's DNA was purified. This DNA will be characterized by restriction enzymes digestion and the phage's morphology will be visualized by electron microscopy. The DNA of one of the phages Isolated in this laboratory has been sequenced and the class will analyze its sequence to determine to what known phages it is related. The Discovery of Tripl3t Is important because phages are capable of killing antibiotic resistant bacteria which cause many infectious diseases that threaten the world's population.

**KEY WORDS:** bacteriophage, *Mycobacterium smegmatis*, isolation, soil, DNA

**Ureteral Injury after Laparoscopic Versus Open Colectomy**

Presenter's Name: Laura Libuit

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Syed Nabeel Zafar MBBS MPH, Chiledum A. Ahaghotu MD MBA, Laura Libuit BS, Gezzer Ortega MD MPH, Pamela W. Coleman MD, Edward E Cornwell III MD FACS, Daniel D. Tran MD FACS, and Terrence M. Fullum MD FACS

**Background and Objectives:** Ureteral injury is an infrequent but potentially lethal complication of colectomy. Using a national database we aimed to determine the incidence of ureteral injury after laparoscopic and open colectomy, and to determine the morbidity and mortality associated with

ureteral injury. **Methods:** We analyzed the National Surgical Quality Improvement Program years 2005-2010. All patients undergoing a laparoscopic or open colectomy were selected. Ureteral injury was identified by concurrent procedure codes for ureteral repair or drainage. Multivariate logistic regression analyses and coarsened exact matching was used to determine the independent difference in incidence of ureteral injury between the two groups, and to determine the morbidity and mortality associated with ureteral injury. **Results:** Out of a total 94, 526 colectomies, 33,092 (35%) were completed laparoscopically. Ureteral injury occurred in a total of 585 patients (0.6%); the crude incidence in the open group was higher than that in the laparoscopic group (0.66% versus 0.53%,  $p=0.016$ ). Coarsened exact matching produced 14,630 matching pairs. Regression analysis demonstrated the likelihood of ureteral injury after laparoscopic colectomy to be 30% less than after open colectomy (odds ratio= 0.70, 95% CI= 0.51, 0.96). Patients with ureteral injury were independently more likely to suffer septic complications and have longer lengths of hospital stay than those without ureteral injury. **Conclusion:** Laparoscopic colectomy is associated with a lower incidence of ureteral injury when compared to open procedures. Ureteral injury leads to significant postoperative morbidity even if identified and repaired during the colectomy.

**KEY WORDS:** Ureteral Injury; Colectomy; Colon resection; Iatrogenic injury; laparoscopic surgery; Coarsened Exact Matching; Surgery; Ureter

**Assessment of chemical exchange kinetics through CPMG multiple spin-echo NMR measurements**

Presenter's Name: Ping-Chang Lin

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

A number of NMR spectroscopic methods possess the capability of assessing the dynamics of the ligand-receptor complex such as the kinetic rate constants. However, certain drawbacks including the titration procedure of gradually changing the concentration ratio between ligand and receptor limit the applications of these NMR methods, particularly in excluding the study of in vivo pharmacokinetics. To eliminate the disadvantage of being inaccessible to the in vivo investigation, we propose an alternative approach through use of fluorine-19 NMR spectroscopy equipped with a multiple

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spin-echo (MSE) pulse sequence. Retaining a simple spectral profile, the model of mixing bovine serum albumin (BSA) into a 6-fluoro-DL-tryptophan solution was selected to detect the kinetics of chemical exchange. In addition, dialysis membrane was used to separate the protein-ligand mixture from the ligand-only solution, which mimics the intracellular and extracellular fluids in the body. The MSE NMR experiment was designed to measure a row of fluorine-19 signals at incrementally changed echo times to form a free induction decay, and the echo time interval in the MSE pulse sequence was adjusted to collect a series of free induction decays for examining the spin-spin T2 relaxation dispersion. A non-negative least squares algorithm was used for multiexponential T2 analysis to extract different T2 relaxation times that represent free and BSA-bounded 6-fluoro-DL-tryptophan, respectively. Furthermore, quantification of free and BSA-bounded tryptophan can be achieved through individually integrating the corresponding peaks located around T2 relaxation times of 1 sec and 100-200 msec. This approach demonstrates the potential in the in vivo pharmacokinetics study.

KEY WORDS: multiexponential; pharmacokinetics; chemical exchange; T2 relaxation; NMR

### Construction of Transferrin Receptor targeted Multi-modality Agents for Cancer Imaging

Presenter's Name: Stephen Lin

Classification: Post Doc/ Resident/ Fellow

Presentation Type: Poster Presentation

Coauthors: Liang Shan, Ping-Chang Lin, Zhenjiang Zhang, Xinbin Gu, Paul C. Wang

**Background:** Transferrin receptor (TfR) is overexpressed in a wide variety of human tumors including head and neck squamous cell carcinoma (HNSCC) and breast cancer, serving as an optimal target for cancer imaging. **Methods:** To achieve TfR-targeted imaging of tumors, we generated an optical imaging agent and further constructed a dual nanoprobe.

**Results:** Western blotting and immunocytochemistry showed TfR was overexpressed in all four HNSCC cell lines, compared with that in normal keratinocytes (OKFL). In the JHU-013 HNSCC tumor xenografts, specific accumulation of the optical imaging agent was clearly detected with optical

imaging as early as 10 min and peaked at ~120 min after injection. A high fluorescent ratio of the tumor to muscle was obtained, which ranged from 1.42 to 4.15, depending on the tumor sizes. MRI and optical imaging studies showed that the dual nanoprobe could significantly enhance the image contrast of the MDA-MB-231 breast cancer xenografts. The tumor contrast enhancement in MRI exhibited a heterogeneous pattern, consistent to the pathologic heterogeneity of tumors. Pretreatment with Tf blocked the uptake of the probe reporters, indicating the specificity of the nanoprobe. **Conclusions:** The optical imaging and the dual nanoprobe exhibited superior properties to the contrast agent of Magnevist and will be useful for detecting tumors, identifying the tumor pathologic features, and monitoring the tumor response to therapy.

KEY WORDS: MRI, cancer, nanomedicine, liposome, optical

### Effects of inorganic fillers on the thermal and mechanical properties of poly (lactic acid)

Presenter's Name: Xingxun Liu

Classification: Post Doc/ Resident/ Fellow

Presentation Type: Oral Presentation

Coauthors: Xingxun Liu, Tongxin Wang, Laurence C. Chow, Mingshu Yang, James W. Mitchell

Addition of inorganic filler into polylactic acid (PLA) may affect its crystallization behavior and thus affect its mechanical properties. The effect of talc and hydroxyapatite (HA) on the thermal and mechanical properties of two type of PLA (one amorphous and one semi-crystalline) have been investigated. The composites were prepared by melt blending followed by injection molding. The molecular weight, morphology, mechanical properties and thermal properties have been characterized by gel permeation chromatography (GPC), scanning electron microscope (SEM), instron tensile tester, thermogravimetric analyses (TGA), differential scanning calorimetry (DSC) and dynamic mechanical analysis (DMA). It was found that the melting blending could lead to homogeneous distribution of the inorganic filler within the PLA matrix, but which also decrease the molecular weight of PLA. Talc could increase the crystallinity, but HA decreased the crystallinity of PLA, thus talc could increase the tensile strength of PLA, but

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HA not. While their effect on tensile strength is different, both talc and HA could increase the toughness of PLA.

**KEY WORDS:** polymer composite, polylactide, thermal, mechanical properties, hydroxyapatite

### Small RNA regulation of an Anti-Sigma Factor in *E. coli*

Presenter's Name: Laricca London

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Karl Thompson, PhD

Bacteria may experience transient changes in their internal or external environments, affecting their ability to maintain homeostasis. One example is Envelope Stress. Envelope stress is the mis-folding or accumulation of outer membrane proteins (OMPs); resulting in aberrant growth and cellular replication. The adjusted global gene expression resulting from Envelope Stress is known as the as Envelope Stress Response (ESR). Initiation of the ESR in *E. coli* is through the alternative sigma factor,  $\sigma$ E (RpoE). RpoE initiates the transcription of several periplasmic proteases and small regulatory RNAs (sRNAs) that down-regulate OMP expression alleviating envelope stress. RpoE is regulated at the level of activity through its anti-sigma factor, RseA. RseA is regulated via protein stability through two periplasmic proteases, DegS and RseP. The *rseA* gene is in an operon with its target, *rpoE*, upstream of it. Recently, a  $\sigma$ E dependent promoter of the *rseA* gene was mapped within the *rpoE* gene, yielding a 228 nucleotide 5' untranslated region (UTR). In *E. coli*, the presence of a long 5' UTR is one clue into possible post-transcriptional regulation by sRNAs. However, there are no reports of post-transcriptional regulation of the RseAP3 transcript by sRNAs. We identified two possible sRNA regulators of RseA, the iron regulated sRNA RyhB and the anaerobiosis-regulated sRNA FnrS, through a targeted genetic screen. Here we show through genetic analysis that RyhB may act through direct base-pairing with the RseA mRNA to regulate RseA. This research could also support a possible link between iron-regulation and envelope stress in *E. coli*.

**KEY WORDS:** *e.coli*, sigma factors, gene expression, anti-sigma factor

### The Characterization of $\beta$ -Actin Transcription Activator-Like Effector Nucleases as a Genome Editing Tool

Presenter's Name: Nelson Malone

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Dr. Matthew Porteus, Dr. Jennifer Johnston

Gene therapy uses nucleic acids to treat disease by supplying a correct copy of the impaired gene. A double-strand break (DSB) in a genome can facilitate genome editing by increasing the frequency of homology-directed recombination as compared to the sole addition of naked DNA. Transcription activator-like effector nucleases (TALENs) have been recently developed as novel and promising site-specific cleavage complexes that can be utilized to induce DSBs. The goal of this study was to characterize previously designed TALENs that target the promoter region of the  $\beta$ -actin locus in order to ubiquitously express a foreign gene without disrupting endogenous expression, thus creating a novel safe harbor. To this end, three sets of TALENs were analyzed in the human K562 cell line. A T7 Endonuclease I assay was used to characterize the effectiveness of the nucleases by detecting for insertions and deletions as a result of DNA repair by nonhomologous end-joining. The TALENs induced an average of about 6.7% modified alleles. A donor vector was then created in which the gene for the green fluorescent protein (GFP) was flanked by  $\beta$ -actin homology regions driving expression of  $\beta$ -actin via a T2A peptide linkage. This will serve as proof of principle that we can insert any gene of interest downstream of the  $\beta$ -actin promoter by TALEN-induced double-stranded breaks. Genome editing using these  $\beta$ -actin TALENs has great implications as a promising strategy for gene targeting at the  $\beta$ -actin locus.

**KEY WORDS:** TALEN, gene therapy, genome editing, hematology, stem cell

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**Vitamin D and Glucocorticoids Interact To Reduce Ubiquitin C in Asthmatic Airway Epithelium**

Presenter's Name: Douglas Mansell

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Sabah Iqbal, Dinesh Pilla, Robert Freishtat

**Rationale:** Research suggests that vitamin D insufficiency contributes to asthma via decreased sensitivity to glucocorticoids, demonstrating need for exogenous glucocorticoids to decrease asthma severity. We hypothesize synergism between 25(OH)D and glucocorticoid signaling pathways as a potential mechanism. **Methods:** Nasal epithelial cells were collected from urban asthmatics between 6 - 20 years of age, clinically diagnosed with asthma for >1 year, under asthma medication, and currently expressing asthma symptoms. Cells were cultured *ex vivo* to dexamethasone (DEX) and/or 1,25(OH)2D. MRNA expression was compared among conditions and selected genes were validated. **Results:** 91 participants were enrolled. Mean serum concentrations of Vitamin D were 25(OH)D=19.6(0.9) ng/mL. Sixteen participants were selected for gene expression studies. Whole genome analyses of 7 participants shown 34 transcripts meeting present call filters for DEX\*1,25(OH)2D interaction ( $P < 0.01$ ). Pathway analyses showed 20 genes which regulate transcription, forming a regulatory network centralized to UBC (Ubiquitin C). UBC was down-regulated by DEX only in the presence of 1,25(OH)2D in a dose-dependent manner. Network members known to enhance pulmonary ubiquitination (i.e. ANAPC1, PAIP1, and S100A13) were validated in the 16 participants. All three were repressed by DEX only with increasing doses of 1,25(OH)2D. **Conclusions:** Ubiquitination has been shown to decrease alveolar epithelial barrier function and increase inflammatory pathways in the lung. Findings suggest vitamin D and DEX together reduce ubiquitination, which may improve barrier function and inflammation. Although vitamin D in airway inflammation remains unclear, altered sensitivity to glucocorticoids may be a mechanism by which vitamin D supplementation could improve asthma

KEY WORDS: Vitamin D Asthma Glucocorticoids Ubiquitin.

**The Isolation of Mycobacteriophage Tania2**

Presenter's Name: Tehja Martin

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

The purpose of the research being completed is to isolate and purify bacteriophages, which are viruses that infect bacterial cells. The bacteria known as *Mycobacterium smegmatis* was used. Due to the fact that various species of mycobacteria cause a variety of human diseases, it is crucial to try to identify and characterize the bacteriophages that infect mycobacteria, and isolate and sequence the DNA; which was the overall goal of the experiment. The bacteriophage "Tania2" was captured from a soil sample from Founders library. Purification of the phage population was completed through spot testing and streaking. A high titer lysate was obtained by collecting the lysate from five plates with 95% of their surface containing plaques. The high titer lysate of "Tania2" had a titer of  $8.6 \times 10^7$  pfu/ml. "Tania2" was assumed to be a temperate phage due to its turbid plaques, which had a diameter of approximately 3 mm. In future experiments, DNA will be extracted from this phage and analyzed by restriction digestion and gel electrophoresis.

KEY WORDS: Bacteriophages interactions and usage

**Genetic Variation within the Vitamin D Binding Protein and its association with Prostate Cancer Risk in African American Men**

Presenter's Name: Kimberly Mason

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Muneer Abbas, Georgia Dunston, Desta Beyenne, Yasmin Kanaan, Qingqi Yue, Tamaro Hudson

Traumatic brain injury (TBI) is a neurological disorder that is defined as damage to the brain resulting from external mechanical force, including accelerating, decelerating and rotating forces. TBI is the major cause of death in young individuals (14-24 years) from industrialized countries, with head injuries accounting for 25-33% of all trauma related deaths. Football players in America have an increased risk of TBI due to consistent interaction. Some of the side effects associated with TBI include memory loss, depression and

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seizures. Following the initial insult, injury is exacerbated by secondary factors such as oxidative stress, inflammation and excitotoxicity. The manifestation of these insults after TBI arises from vascular effects, distinct cellular responses, apoptosis and chemotaxis. Our ability to identify therapeutic targets and devise strategies for the treatment of TBI relies on our understanding of the early molecular processes that are initiated following brain injury as well as the delayed molecular events, which together propagate extensive neuronal loss. At present, no effective treatments available for TBI and there is thus a critical need in developing novel and effective strategies to alter the disease course. From our studies, we identified three imidooxy derivatives as potential drug candidates for TBI. These compounds have been studied extensively for their anticonvulsant effects with promising results. The findings from this study will assist us in providing the structural orientation and understanding the binding mechanisms.

KEY WORDS: Vitamin D Binding Protein, Prostate Cancer, Genetic Variation, SNPs

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**Assessing The Value of Routine Upper Gastrointestinal Contrast Studies Following Bariatric Surgery: A Systematic Review and Meta-Analysis**

Presenter's Name: Tafari Mbadiwe  
 Classification: Professional Student  
*Presentation Type: Poster Presentation*

Coauthors: Edward Prevatt, Bonnie Davis, Edward Cornwell III, Terrence Fullum

**Importance:** Understanding both the efficacy of upper gastrointestinal contrast studies (UGI) and the factors that impact their accuracy is necessary to optimize post-bariatric surgery imaging protocols. However, a consensus as to the value of UGI performed after bariatric surgery remains elusive. **Objective:** To determine the sensitivity and specificity of UGI conducted routinely within two days after bariatric surgery for detecting anastomotic leaks. **Evidence review:** We conducted an electronic search of MEDLINE for all English language articles published between 2003 and 2013 concerning diagnostic imaging after bariatric surgery. Nineteen studies evaluating a total of 10,130 patients met the inclusion

criteria. The methodological quality of each included study was evaluated using the QUADAS-2 technique. **Findings:** UGI has an overall sensitivity of 0.52 and specificity of 1.00. The standard deviation of the reported sensitivities was 0.36 and the 95% confidence interval extended beyond the range of possible sensitivity values. Sensitivity and specificity were negatively correlated. **Conclusion and relevance:** The sensitivity of UGI for detecting the presence of anastomotic leaks within two days of bariatric surgery is moderate overall but fluctuates substantially. The negative correlation between sensitivity and specificity could indicate that the threshold used to distinguish between positive and negative test results varies between institutions. Accordingly, clinicians may consider shifting the threshold for declaring a UGI positive; treating marginal radiological evidence of leakage as presumptively positive may be a simple way to lower specificity, increase sensitivity and maximize UGI's clinical value.

KEY WORDS: bariatric surgery; computed tomography; upper GI series; systematic review; meta-analysis

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**Do birds sing at a higher pitch, or is it just a matter of measurement?**

Presenter's Name: Ambria McDonald  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

Coauthors: Gail Patricelli, Alejandro Rios-Chelen, Anna Perry, Alan Krakauer

The main purpose of communication is the ability of an audible sound to be heard by a receiver. In relation to birds, their main mode of communication is singing or a series of different types of calls. Unfortunately anthropogenic noise, which is human imposed, is causing an interference with this communication. Because anthropogenic noise is low frequency and most bird vocalizations have low frequency notes in its song, those notes become masked, preventing the bird's vocalization from being heard. For this study, we sought to understand if the way we measured the minimum frequency of different bird vocalizations would change across different levels of noise. Over eight weeks, using the eyeball and threshold methods, we compared measurements of pre-recorded vocalizations in artificial noise



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at low, medium, and high levels set at three different volume levels. In order to conduct the playback experiment, we chose the vocalizations of the *Agelaius phoeniceus* the red-winged blackbird, and a series of 10 checks, 10 cheers, 5 songs from California blackbirds and 5 songs from New York blackbirds for each treatment level. The minimum frequencies from the treatments were found using a software from the Cornell Lab of Ornithology called Raven and the statistical data received from Raven were analyzed in SigmaPlot. We found that the eyeball method gives higher minimum frequencies across all vocalization types, creating bias, while the threshold method stays consistent.

KEY WORDS: anthropogenic, noise, eyeball, threshold, pitch

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**Sceloporus Jarrovi in Cave Creek Canyon: A Population Study**

Presenter's Name: Earyn McGee

Classification: Undergraduate Student

Presentation Type: Poster Presentation

Coauthors: George Middendorf

As part of a long-term study of population, life history traits, and distribution patterns of Yarrow's spiny lizard, *Sceloporus jarrovi*, in their summer territory locations, I collected data on the locations and movements of 52 adult males, 61 adult females and 69 juveniles between 3- 23 July 2013 in Cave Creek Canyon in the Chiricahua Mountains near Portal, AZ. Results reveal that in most cases, individuals overlap spatially but not temporally. Individuals living in the same area and using the same perch sites were rarely active at the same time. Comparison of summer locations suggests little movement from winter hibernacula. Because the diurnal timing of individual activity seems to predictably vary by location, I will assess spatial patterns and temporal changes in sunlight by location in follow-up studies in 2014 with specific focus on microhabitat features associated with sites of summer activity, including direction of the canyon, slope angle, and presence of vegetation cover.

KEY WORDS: *Sceloporus Jarrovi*, ecology, wildlife, temporal, spatial

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**Applications of Paper MEMS**

Presenter's Name: Cydney McGuire

Classification: Undergraduate Student

Presentation Type: Oral Presentation

The objective of this project was to create an inexpensive Micro Electrical Mechanical System (MEMS) and use this system to create devices that are useful and have commercial application. We utilized paper as our substrate and the piezoelectric properties of carbon ink to create MEMS that were sensitive to applied force. The software Corel draw and an epilog laser was used to construct the paper. No spacecantilevers. We painted the piezoresistive carbon ink at the fulcrum of the cantilever and the silver conducting paint for the inter-connect and conduction pads. We designed and implemented a number of experiments to establish the relationship between applied force and capacitance / resistive changes. A linear relationship was established. The second part required us to apply this relationship to create a useful device. Our first application was to create a microphone made from paper and the piezoresistive material. This was based on the fact that the relationship between force and resistance would facilitate the modulation of current in much the same way as the moving coil in a magnetic field in a conventional microphone. We successfully accomplished our goals after several designs were tested and optimized. Our second application was to design and implement an accelerometer, to measure concussive force. The accelerometer consisted of multiple cantilevers in a circular formation with a seismic mass in the center. Using an application specific integrated circuit, capacitance measurements were taken and then converted to voltage. From the voltage concussive force was calculated. We successfully implemented and optimized this device.

KEY WORDS: paper, piezoresistive, MEMS, accelerometer, speaker

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A B S T R A C T S

**Fear of Sleep accounts for a relationship between neighborhood stress and sleep quality**

Presenter's Name: Latesha McLaughlin

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Latesha McLaughlin, Ameenat Akeeb, Duaa Altaee, Tyish Hall Brown, Ihori Kobayashi, Thomas Mellman

**Background:** Studies show that living in stressful urban environments have a negative influence on health outcomes. Inadequate sleep increases the risk of cardio-metabolic disease and mortality. The objective of this presentation is to identify factors contributing to good versus poor adaptations to sleep in stressful environments. **Methods:** Participants were 122 healthy urban-residing young African-American adults (ages 18-35) who were either good (n=58) or poor (n=64) sleepers. Participants completed self-report measures including the Howard Sleep Questionnaire, Insomnia Severity Index (ISI), City Stress Inventory (CSI), and Fear of Sleep Index (FOSI). Good and poor sleepers were determined based on ISI scores, habitual total sleep time, and sleep efficiency. Indicators of distressed neighborhoods (e.g. violent and property crime rates, family income) for each participant were obtained from the Maryland police or the Neighborhood Info DC websites. **Results:** Total CSI and FOSI scores were significantly higher in poor sleepers compared to good sleepers ( $t=-3.4, p=.001$ ;  $t=-7.5, p < .01$ , respectively). Logistic regression analysis predicting good versus poor sleepers from CSI and FOSI scores showed that FOSI, but not CSI, significantly predicted sleep quality (odds ratio = 1.11,  $p < .001$ ). 1-point increase in the FOSI scores increased risk of being a poor sleeper by 11%. **Conclusion:** Fear of Sleep accounts for the relationship between neighborhood stress and sleep quality. Therefore, fear of sleep can be an intervention target to improve sleep quality in an urban residing population.

KEY WORDS: Fear of Sleep, Sleep Quality, Neighborhood Stress

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**Cell Anemia and Huntington's disease mutations**

Presenter's Name: Lloyd Mitchell

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

Coauthors: Zebalda Bamji, Kareem Washington

The development of curative therapies for patients with lethal genetic diseases such as sickle cell anemia (SCA) and Huntington's disease (HD) remains an elusive goal. The objective of our research is to develop therapeutics that repair genes at the step of premRNA splicing. Sickle cell patients suffer from painful sickle crises, organ damage and strokes, which shorten life expectancy to the mid-40's. Gene therapy for SCA targets bone marrow stem cells that are easy to access, manipulate in the laboratory and give back to the patient. We are developing RNA repair vectors that can convert mutant sickle betaglobin to normal globin expression. These vectors will be tested in human CD 34+ bone marrow stem cells to evaluate their potential to correct hemoglobin expression. Over twenty human genetic diseases are caused by expansion of DNA nucleotide repeats (such as CAG or CTG) within essential genes. These repeats generate proteins with large stretches of just one amino acid, such as runs of glutamine. Expression of mutant protein kills specific types of brain cells, causing HD or many of the spinocerebellar ataxias (a type of movement disorder). HD is a dominant, gain-of function genetic disease. Treating it requires reducing the activity or level of mutant protein (huntingtin), while leaving the normal protein unaffected. The function of huntingtin is unclear, but its absence is known to be lethal in mice. We are also developing methods to repair huntingtin mRNA.

KEY WORDS: gene therapy, gene repair, RNA repair, sickle cell anemia, Huntingtons disease

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## A B S T R A C T S

**The Significance of Mycobacteriophage Studies in Examining Microbiological Life**

Presenter's Name: Allegra Mosley

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Berencia Fore

The SEA-PHAGES laboratory course was begun with the goal of collecting, isolating, purifying, and characterizing a novel phage from the environment with the goal of exploring the diversity of the mycobacteriophage population. The phage "Pharaon" was isolated from soil near the Bethune Annex residence of the Howard University Campus that was enriched with *Mycobacterium smegmatis* mc2 155. A sequence of filter sterilizations, streak protocols, and serial dilutions were utilized to conduct research on interactions between *Mycobacterium smegmatis* and Pharaon. The established titer of the pure phage population was  $3.6 \times 10^8$  pfu/mL. The clear morphology of the produced plaques indicated that Pharaon is a lytic phage. An evaluation of Pharaon's genomic DNA will occur via the isolation, purification, and restriction analysis of the DNA. Additional research will be performed to determine the effect of various divalent salt ion concentrations on the proliferation of bacteriophage, as indicated by the rate of infection, number of plaque-forming units, and plaque morphology. The primary implications of this experimentation include the comparison of mycobacteriophages, but further applications comprise biomedical studies on the evolution of microbiological organisms. The unearthing of a potentially novel phage will also support research on the medicinal use of bacteriophage to destroy antibiotic-resistant bacteria.

**KEY WORDS:** mycobacteriophage, *Mycobacterium smegmatis*, Pharaon, titer, SEA-PHAGES

**Isolation of Bacteriophage**

Presenter's Name: Saba Nawaz

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

In this project, a unique bacteriophage, Dalek, was isolated from a soil sample from the Howard campus. Bacteriophages or phages are viruses that specifically infect bacteria. In this

experiment, they infect a *Mycobacterium smegmatis* host cell. Bacteriophages are particularly important because many infectious diseases are now being caused by bacteria that have developed resistance to one or many antibiotics (meaning they cannot be killed by antibiotics). Researchers are having an ever more difficult time developing new antibiotics; the use of phage therapy to kill antibiotic resistant phages is becoming very important. The bacteriophage, Dalek, was grown through the enrichment method, streak tested several times to isolate a phage with specific morphology, and grown in sufficient amount to obtain a high titer lysate. The phage in the high titer lysate was used to purify its DNA and for electron microscopy to determine its detailed morphology. The DNA from phage Dalek was analyzed by restriction enzyme digestion and gel electrophoresis. The phage DNA isolated by one student in the class has been submitted for DNA sequencing and its genome will be analyzed and annotated during spring semester of Honors General Biology. This is important because genome comparisons will reveal important information on the functions and evolutionary relationships of the majority of genes in this phage. A further experiment to be carried out on this bacteriophage include studying how different salt ions affect phage infection of the host *Mycobacterium smegmatis* cells.

**KEY WORDS:** Bacteriophage, Howard, Genome, Isolation DNA

**Pilot Proteomic Profile of Tears from Juvenile Idiopathic Arthritis Patients with Uveitis**

Presenter's Name: Sergei Nekhai

Classification: Senior Faculty

*Presentation Type: Oral Presentation*

Coauthors: Tatiana Ammosova, Alla Hynes, Yuri Obukhov, Elena Gaidar, Anatoly Kononov, Vyacheslav Chasnyk

**Purpose:** Uveitis is often the only initial clinical manifestation of Juvenile Idiopathic Arthritis (JIA) for which there are no reliable markers. Thus early diagnostics and treatment may prevent severe complication including blindness. Objective of the study was to analyze proteins in tears of patients with JIA-associated uveitis using high-resolution mass-spectrometry and hierarchical clustering methodology. **Methods:** Tear

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samples drawn from JIA-patients with and without uveitis and healthy subjects. Trypsin digests of tears were analyzed by nano LC coupled in-line to LTQ Orbitrap XL tandem mass spectrometer. Proteins identified with Proteome Discoverer software were further quantified using SIEVE 2.1 (Thermo). STRING and DAVID were used for cluster analysis. **Results:** About 3000 proteins were detected in tears. About 200 proteins were found to be upregulated in patients with JIA-associated uveitis. Besides the rheumatoid factors RF-ET12, RF-IP14, RF-IP24, cytokines and T-cell receptor alpha-chain, we identified number of proteins related to iron metabolism, anti-microbial defense and inflammation. **Conclusion:** Our study demonstrates the benefits of high resolution mass-spectrometry for analysis and development of molecular signatures which can be used in diagnostics. Hierarchical clustering methodology allowed grouping according to expression profiles and the dendrogram construction procedure revealed clusters of proteins associated with iron metabolism as the most promising markers of JIA-associated uveitis. **SUPPORT:** NIH Research Grant 8G12MD007597.

**KEY WORDS:** Juvenile idiopathic arthritis; Uveitis; mass spectrometry; biomarkers

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### The Effects of Dendritic Cell Vaccines on T-Cell Trafficking and the Tumor Draining Lymph Node

Presenter's Name: Karis Norwood

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Daniel T. Fisher, Jason B. Muhitch, and Sharon Evans

Dendritic cells are the master regulators in the establishment of immunity and protection against foreign pathogens. In order to activate immune responses, dendritic cells travel to the control center of the immune system, the lymph node, to scan rapidly moving and recirculating naïve T cells that are searching for foreign pathogens. This report investigates a novel role of dendritic cell vaccines in the promotion of T cell trafficking. In the normal lymph node, dendritic cell vaccines increase the expression of peripheral lymph node addressin, a critical adhesion molecule for naïve T cell trafficking into the lymph node via highly specialized vasculature gateways,

high endothelial venules. Dendritic cells ability to enhance T cell trafficking across high endothelial venules makes them compelling targets in establishing anti-tumor immune responses. We next investigated whether dendritic cell vaccines alter the repressed state of the tumor-draining lymph node microvasculature, which is front line in the battle to generate anti-tumor T cells. The tumor-draining lymph node has emerged as a clinically relevant site because direct injection of dendritic cells into mouse melanoma tumors induced a strong up-regulation of peripheral lymph node addressin, despite it being an immunosuppressed site. Moreover, intravital microscopy studies showed restored levels of naïve T-cell trafficking following dendritic cell vaccination. These findings suggest that dendritic cell vaccination can be an adequate method in overcoming the suppressed tumor-draining lymph node microenvironment by promoting effective trafficking across high endothelial venules, thus increasing the probability that naïve T-cells will come in contact with tumor-protein-loaded dendritic cells.

**KEY WORDS:** Dendritic cell vaccine, tumor-draining lymph node, naïve T-cells, high endothelial venules, immune response

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### A Null Mutation in ACTN3: A Possible Marker for Achilles Tendinopathy

Presenter's Name: Chika Okafor

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Courtney Sprouse, Mai Abdel-Ghani, Trevor Slezak, Fady Hijji, Alexandra D'Agostini, Joseph M. Devaney, Ph.D., Laura L. Tosi, M.D.

**Introduction:** The term Achilles tendinopathy includes a broad range of orthopaedic conditions encompassing many forms of injury to the Achilles tendon. Although most common in athletes, this condition also affects the general population with an occurrence rate of 6 in 100 inactive people. Aside from the pain involved with the condition, untreated Achilles tendinopathy can limit a patient's range of motion, affect his daily living, and can progress to rupture of the tendon, which requires surgery to repair. Recent studies suggest that both states, ACTN3 deficiency and ACTN3 expression, may

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confer benefits to muscle function. The goal of this study was to determine whether variants in SNP rs1815739 also impacts susceptibility to Achilles tendinopathy. **Methods:** The study cohort included 53 healthy adults over age 18 years (average 49 years). The majority of participants (48) were of European descent. Findings were graded as mild if the tendon displayed only fusiform thickening, moderate if there were additional hypoechoic areas present, and severe if neovessels were also present on Doppler scanning. The Victorian Institute of Sports Assessment—Achilles (VISA-A) questionnaire was used to assess the outcome of Achilles tendinopathy treatment and administered at baseline, 1,2,3, and 6 months post treatment. **Results:** We failed to demonstrate that there is an association between variants in the ACTN3 gene and measures of favorable eccentric rehabilitation outcomes in patients with Achilles tendinopathy. **Discussion:** The goal of this study was to determine whether variants in SNP rs1815739 might serve as a predictor of better outcomes following Achilles tendinopathy.

KEY WORDS: Tendinopathy, Orthopaedics, ACTN3

### Determinants of Mortality Rate in Diabetic Myocardial Infarction Inpatients

Presenter's Name: Priscilla Okunji

Classification: Junior Faculty/ Lecturer/ Instructor

Presentation Type: Oral Presentation

Coauthors: Frank Gomez

Coronary Artery Disease is one of the leading causes of heart-related deaths in the United States and globally. Studies have shown that untreated diabetes can lead to a range of serious medical problems, including myocardial infarction (MI), stroke, kidney failure and deaths. Most of the deaths from MI are caused by ventricular fibrillation that occurs before the victim of the MI can reach an emergency room. There is an increase in the admission rates of MI inpatients' with T2D and the prevalence continues to increase despite public awareness campaigns. We evaluate the factors that affect mortality rates for inpatients diabetic myocardial infarction in 2006. Data from the Healthcare Cost and Utilization Project was used. Each database contains 5 and 8 million hospital stays from 1,000 hospitals sampled to approximately a 20-percent stratified sample of U.S community

hospitals. More females died than expected,  $X^2(1, N = 2771) = 23.12, p < .001$ . The results also showed that the Chi-Square test was statistically significant between patient insurance and mortality,  $X^2(1, N = 2319) = 45.447, p < .001$  as patient insurance and gender remained significant,  $X^2(1, N = 1480) = 1.598, p < .001$ . The implication of this study to practice is that healthcare could be more cost effective if healthcare providers are mandated to screen, and treat all patients that present with diabetes mellitus for heart and other related diseases. Discharged patients need to be followed as well to prevent frequent admissions. Prevention is better than cure.

KEY WORDS: Inpatients, Diabetes, Myocardial, Infarction, Mortality

### Peroxisome proliferator activated receptor - alpha Regulation of Sodium Transport Mechanisms in Human Primary Proximal Tubule Cells during Angiotensin II Treatment

Presenter's Name: Michael Ongele

Classification: Undergraduate Student

Presentation Type: Poster Presentation

Coauthors: Kwame Doh, Tamaro Hudson, Dexter L. Lee

**Background:** Angiotensin II (Ang II) a potent vasoconstrictor, promotes sodium reabsorption in the proximal tubule (PT). Proteins such as the sodium hydrogen exchanger (NHE3), sodium hydrogen exchanger regulatory factor-1 (NHERF-1), Na<sup>+</sup>/K<sup>+</sup> ATPase, Napi2 and Na<sup>+</sup>/glucose channels serve as Na<sup>+</sup> transporters. Peroxisome Proliferator Activated Receptor - $\alpha$  (PPAR- $\alpha$ ) activation reduces Ang II-stimulated Na<sup>+</sup>/K<sup>+</sup> ATPase activity. Na<sup>+</sup>/K<sup>+</sup> ATPase regulates the sodium gradient between the intracellular and the interstitial fluids. We hypothesize that PPAR- $\alpha$  activation by fenofibrate, a PPAR- $\alpha$  agonist, stimulates NHERF-1 to interact with NHE3, Napi2, Na<sup>+</sup>/K<sup>+</sup> ATPase and Na<sup>+</sup>/glucose channels to decrease Na<sup>+</sup> reabsorption in PT cells during Ang II stimulation. **Methods:** Human primary renal proximal tubule epithelial cells (RPTEC) were used during passage 4 and plated at a density of 2 x 10<sup>6</sup>/dish plates. RPTEC were treated for 20 hours as follows: control, 10<sup>-7</sup> fenofibrate, 10<sup>-9</sup> M Ang II and fenofibrate + Ang II. Western blot analysis was performed to determine the expression of Na<sup>+</sup> transporters. **Results:** Ang II + fenofibrate exposure for 20 h did not increase NHE3, NHERF-1 and Na<sup>+</sup>/

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K<sup>+</sup> ATPase expression in RPTEC. Ang II treatment alone caused an increase in NHERF-1 expression ( $15 \pm 5\%$ ) and no changes in NHE3 or Na<sup>+</sup>/K<sup>+</sup> ATPase expression. Fenofibrate alone did not increase the expression of the Na<sup>+</sup> transporters. **Conclusion:** Additional studies are needed to determine if PPAR- $\alpha$  activation alone decreases activity of the Na<sup>+</sup> transport mechanisms in RPTEC, we predict that PPAR- $\alpha$  activation regulates Na<sup>+</sup> reabsorption in RPTEC by increasing NHERF-1 regulation of Na<sup>+</sup> transport activity.

KEY WORDS: Proximal Renal Tubule Cells, Kidney, Human, Sodium Transport

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### Demographic Change in the U.S. Labor Force

Presenter's Name: Charlotte Otabor

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: John Lekuton, Charles Betsey

The U.S. labor force has undergone significant changes over the past several decades. Particularly striking has been the increased participation of women in the labor force. Women's participation increased from 33.9 % of the female population in 1950 to 59.3 % in 2005. Over the same period, men's participation decreased from 86.4% to 73.3%. In their article, "Changing Trends in the Labor Force: A Survey", DiCecio et al., examine the composition of the work force and the change in labor supply through time. They find increased labor supply of married women accounts for much of the observed increase in women's participation. Using data from the Current Population Survey, we replicate and extend the analysis of DiCecio, et al., to 2012. Our results are consistent with their findings regarding the changing trends in the labor force. We see that the changes in labor force participation have been driven by the rise of women's participation - especially married women; the aging of the baby-boom generation; and growing ethnic diversity within the general population. With regard to the latter, the increased presence of Hispanics in the labor force has had a significant impact. Hispanic men tend to have higher participation rates than either white men or black men, while Hispanic women tend to have the lowest participation rates

and black women tend to have the highest. The contrast between the labor force participation of white, Black, and Hispanic women is important. We discuss this and other findings that suggest future labor force trends.

KEY WORDS: labor supply, labor force participation, demographic change, gender, ethnicity

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### Development of dengue pseudoinfectious virus as HPV vaccine candidate

Presenter's Name: Xiaowu Pang

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

Coauthors: Dan Zhang, Yanfei Zhou, Xinbin Gu

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 induces 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. 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, vaccine, HPV, pseudoinfectious virus

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**Clinical Research in Vulnerable Populations with Chronic Conditions: The Patient's Perspective**

Presenter's Name: Assya Pascalev

Classification: Senior Faculty

*Presentation Type: Oral Presentation*

Coauthors: Alexander Libin, Manon Schladen, Nawar Shara, Joseph Verbalis

Chronic conditions carry strong emotions and often lead to charged relationships between patients and their health providers and, by extension, patients and clinical researchers. Ensuring genuine informed consent in research requires a thorough understanding of how participants perceive a study and their reasons for participation. Contradictory reasons for participation, e.g., an initial claim of altruism and a subsequent claim of personal benefit (therapeutic misconception), affect the quality of informed consent. Individuals apply principles through the filter of personal values and lived experience. Authentic autonomy, and hence authentic consent to research, occurs within the context of patients' unique life narratives and illness experiences. A purely cognitive model of autonomy neglects the social and relational basis of chronic illness. We employ a reciprocal patient-provider model of the stakeholders' perceptions of patient involvement in research. We aim to identify ethical considerations that emerge in research and its translation to clinical care. We argue that the implementation of ethical decisions into action is impacted by the knowledge and perceptions of medical research held by chronic illness stakeholders, their beliefs about the rightness or wrongness of a given application of research, and attitudes towards both medical research and chronic illness. This approach addresses gaps in our understanding of the bioethical implications of clinical research and in the development of evidence-based treatment for people with chronic illness. The outcomes provide a methodological and empirical foundation for the design of ethically sensitive curricula and research protocols to address the needs of vulnerable populations in clinical research.

**KEY WORDS:** research ethics, vulnerable populations, chronic conditions, clinical research

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**Evaluating the Intercellular Communication and Unique Differentiation and Proliferation of Colonic Polyps in HT-29, a Potential Model for All Colorectal Cancer Studies**

Presenter's Name: Dawn Payne

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Human carcinoma cell lines are valuable models to understand metastatic cancers invitro and invivo. Most carcinoma cell lines demonstrate a lack of "contact inhibition", in that they continue to divide and metastasize. Unlike most carcinomas, The HT29 colon carcinoma cell line is composed of partially differentiated cells that form clusters reminiscent of colonic polyps when cultured. This study was designed to observe the behavior, structural and functional characteristics of this unique "partially" differentiated cell line. Electron Microscopy observation was performed to study the cellular substructure, growth, and organization of cells in a cluster. Using specific marker proteins, Occludin, Desmin, Cadherin, and Actin, immunocytochemical procedures were conducted to identify intercellular membrane connections between cells in the cluster. The visualization of Actin using specific Phalloidin tracers indicated that the population of HT29 cells had the ability to move and leave the cluster. Further studies using MTT analysis, live/dead assay, and flow cytometry were conducted to detect apoptosis after these cells were treated with various concentrations of plant extracts. Understanding the morphological and intercellular properties of this cell line can lead to future studies invivo.

**KEY WORDS:** HT-29, Differentiation, Intercellular Junctions, Apoptosis

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**Documentation of Possibly New Phage**

Presenter's Name: Fayola Pompey

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

The use of antibiotics to treat bacterial infections has allowed an exponential increase in life expectancy since its creation, however, overtime bacteria have managed to build up resistance, prompting scientists to find improved methods of treatments. Hence, great interest is shown in in bacteriophages (phages),

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viruses specific to bacteria. This research aims to identify a new bacteriophage which can be further studied to identify what strain of bacteria it can be used to infect and ultimately destroy. A soil sample was collected and using *Mycobacterium smegmatis* as the bacteria for infection, the direct plating method was used to isolate any phages present. The phages were visible as clear circular plaques on the lawn of bacteria. Next, a spot test and streak protocol were conducted to confirm the presence of plaques and isolate a single phage population respectively. A pure phage stock was created and the titer was calculated. The clear plaques formed upon infection suggests that the phage is a lytic phage. Electron microscopy will be used to characterize the physical appearance of the phage and restrictive enzymes will be used to characterize its genome. This information can then be compared to that of documented bacteriophages to conclude whether this bacteriophage is related to known phages and what other bacteria it might be able to infect.

**KEY WORDS:** bacteriophage, Trini, lytic, *Mycobacterium smegmatis*

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### Frequency-dependent Mate Selection in the Guppy

Presenter's Name: Andre Porter

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Jack Frankel

**Background:** Heterogeneity within a population enhances its long-term survival. A fundamental method of maintaining such population heterogeneity is the retention of rare or uncommon phenotypes by selective mating strategies. Utilizing a frequency-dependent selection mating strategy, females would be expected to exhibit an affinity towards groupings of males comprised of multiple phenotypes, as compared to those showing no phenotypic diversity. Employing two color morphs of the guppy (*Poeciliidae*), this study was designed to investigate whether female guppies would preferentially seek out heterogeneous male groupings exhibiting the multiple color morphs. **Methods:** Adult female guppies were exposed simultaneously to two groups of males (n=10); one comprised of a single color morph (n=5) and the other of two color morphs (n=5). For the latter group, the ratio of males

exhibiting the two colorations was changed incrementally over multiple trials, beginning and ending with homogeneous groupings (5:0, 4:1, 3:2, 2:3, 1:4, 0:5). Experiments were conducted employing a long configuration, 76 liter aquarium, partitioned at both ends with clear Plexiglas to serve as the male compartments. Individual females were placed into a Plexiglas column located in the center of the experimental tank. Subsequent to a 5 minute acclimation period, each female was released. Courting behaviors and population affinities were recorded every 5 seconds over a 5 minute observation period. **Results:** Females did not show a preference for male groupings exhibiting either the 4:1 or 1:4 color ratios. However, females clearly showed an affinity for the male groupings of 3:2 and 2:3 ( $p < 0.05$ ).

**KEY WORDS:** guppy, *Poeciliidae*, frequency-dependent selection, mate choice, population heterogeneity

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### Cellular uptake and cytotoxicity studies of pH- responsive nanoparticles on PC3 and LNCaP prostate cancer cell lines

Presenter's Name: Reema Puri

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Simeon K. Adesina, Emmanuel O. Akala

Recent studies on the site selective delivery of therapeutics have utilized the environmental stimuli to trigger the release of drugs to a particular body compartment. A very elegant strategy in this context is to use pH – gradients that exist in diseased conditions such as cancer to determine a priori the release of the loaded drug in the biophase. In the present study, pH-responsive nanoparticles were synthesized by dispersion polymerization technique using an acetal crosslinker. The nanoparticles were characterized in terms of particle size, morphology, zeta potential, loading efficiency, encapsulation efficiency and drug release. The cytotoxicity studies of the nanoparticles were performed on PC3 and LNCaP prostate cancer cell lines using a cell viability assay. Cellular uptake studies were performed using fluorescently labeled nanoparticles with a confocal laser scanning microscope. Formation of smooth spherical nanoparticles was confirmed by scanning electron microscopy. The in vitro drug release



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studies on drug-loaded nanoparticles showed that the drug was released faster at pH 5 than pH 7.4, which confirmed the pH-responsiveness of the nanoparticles and that the drug will be released in the acidic lysosomal compartment in cancer cells. The cytotoxicity studies showed that nanoparticles were more effective than the free drug against cancer cells. Both dose exposure and incubation time affected the cytotoxicity of prostate cancer cells. Furthermore, LNCaP cells appear to be the more sensitive to docetaxel than PC3 cells. The cellular uptake studies clearly showed the presence of discrete nanoparticles within the cells in as little as 2 hours. The data show that nanoparticles can get internalized within the cell to deliver the cargo to target site.

**KEY WORDS:** pH-responsive, prostate cancer, acetal, nanoparticles, cytotoxicity

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### The Effect of Salt Ions on the Plaque Formation

Presenter's Name: Taylor Purks

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

The concentration and type of salt ions used will affect the plaque formation of an identified phage. Using various types of salt ions in the creation of 1X top agar will impact the morphology and concentration of plaque forming units. Calcium chloride will be the control; in past labs, it has been used and has been found to be an efficient salt ion to aid the attachment of phage particles to *Mycobacterium smegmatis* (*M. smegmatis*). By conducting various experiments in which salt ions are changed, the phage will have different efficiencies for attaching to and infecting *M. smegmatis*. Ultimately, this is what causes the various plaque formations. This research will be useful to other scientists globally because it will provide necessary research to determine the likelihood of the beneficial or punitive effects that various salt ions have to phage infection.

**KEY WORDS:** Plaque, salt ions, phage, biology

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### Tuberculosis and Warburgia Salutaris

Presenter's Name: Stephanie Purnell

Classification: Professional Student

*Presentation Type: Oral Presentation*

Coauthors: Stephanie Purnell, Tyi McCray

Of the many pressing health issues facing the world, Tuberculosis (TB) rises as one of the most formidable. This communicable disease affects about one third of the world's population and results in over 2 million deaths each year. Fortunately, there are drugs available to combat the infectious bacteria, yet these drugs do not eliminate the issue of TB as a whole because some strains of the bacteria grow to be drug resistant. TB infection is caused by bacteria called *Mycobacterium tuberculosis* (*Mtb*) which is spread through the air. **Material:** *Warburgia salutaris* (figure 1), a genus of the plants in the family Canellaceae, was the projects focus. The *Warburgia* bark produces aromatic oils to treat many health conditions; colds, influenza, sinus, skin irritation and malaria. *W. salutaris*, one species of *Warburgia*, has been overexploited through collection for medicinal purposes; stem bark being the most widely desired and traded plant part. This plant species is now endangered. **Methods and Equipment:** The dried bark and leaves were blended using an industrial blender. The plant material was sequentially extracted with methyl alcohol, dichloromethane, and hexane. Dichloromethane was used because it was a non-polar solvent, and methyl alcohol was used because it was polar. Vacuum filtration was used to separate the solvents with extracts from the remaining plant material. Then, the solvent were rotary evaporated using a polar solvent. Finally, column chromatography was used to separate the crude extract the mixture and isolate the desired compounds from the mixture. A Pasteur pipette was used in place of a larger column to optimize the solvent system. After plugging the bottom of the pipette with cotton, silica gel was placed in the pipette to start the stationary phase. Then a liquid was added to the top and passed down through the pipette in the mobile phase. **Results:** Because the different components in the mixture have different interactions with each phase, they are carried along with the mobile phase to varying degrees and separation was achieved. The individual components, or elutants, were collected as the solvent dripped from the bottom of the column. Several different elution gradients

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of hexane:acetonitrile were used and it was determined that 100% acetonitrile worked the best. The future goal of this research is to testing the extracts and different fractions against *Mycobacterium smegmatis*.

**KEY WORDS:** tuberculosis, warburgia saultaris, plant extracts

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**Topographical Differences in Orexin Neuronal Activation: Binge-eating Prone versus Binge-eating Resistant Rats**

Presenter's Name: Kimberlei Richardson, Ph.D.  
Classification: Junior Faculty/ Lecturer/ Instructor  
*Presentation Type: Poster Presentation*

Coauthors: Subramaniam Uthayathas, Yavin Shaham  
Orexin (or hypocretins) hypothalamic peptides are involved in the regulation of food intake. Orexins are expressed in the dorsomedial hypothalamus (DMH), perifornical area (PFA), and lateral hypothalamus (LH). The purpose of the present study was to determine whether there were topographical differences in Fos-activation of orexin neurons in binge-eating prone (BEP) and binge-eating resistant (BER) rats. Female Sprague-Dawley rats (freely cycling, 200-300g, n=6/group) were individually housed and underwent a modified Boggiano feeding test to identify binge-eating prone and resistant phenotypes. The feeding tests identified BER and BEP phenotypes based on the consumption of intermittently presented, highly palatable food (PF) pellets. BER rats were those that consistently (> 50% of the time) consumed within the bottom tertile of PF across a minimum of 6 testing days. BEP rats were those that consistently (> 50% of the time) consumed within the top tertile of PF across a minimum of 6 testing days. Consumption of PF and chow were assessed at 1, 4, and 24 hours of PF exposure. Upon analysis of the PF intake data, BEP and BER rats were identified and brain sections were processed for Orexin and Fos immunohistochemistry. Preliminary analyses using double label immunohistochemistry are underway to determine whether BEP rats display a greater percentage of Fos-activated orexin neurons in the LH versus PFA after food testing.

**KEY WORDS:** binge eating, orexin, lateral hypothalamus, immunohistochemistry, addiction

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**Pharmacotherapy and management of asthma among adults in the office based ambulatory care setting**

Presenter's Name: Thomas Riehl  
Classification: Professional Student  
*Presentation Type: Poster Presentation*

Coauthors: Amanda Lam, Mary Maneno, Euni Lee

**Purpose:** The purpose of this study was to evaluate the pharmacotherapy and management of asthma among adults in office based ambulatory care settings. **Methods:** A cross sectional study of ambulatory care visits in the National Ambulatory Care Survey from 2000 to 2010 was conducted. Patient visits from persons 18 years and older associated with an International Classification of Diseases Ninth Revision diagnosis code of asthma were included in the study. Descriptive statistics including means and frequency distributions were estimated for patient characteristics and types of asthma related therapy. Trends in asthma related drug classes over time were described using graphical analysis, and comparisons between types of asthma therapy by race and gender were evaluated using chi square analysis, as were trends before and after the 2007 Expert Panel Report 3 (EPR3). All analyses in this study were conducted using SPSS version 19 at an alpha of 0.05. **Results:** There were 2795 asthma related patient visits included in the study. Of them, majority were female (69.3 percent), white (80.0 percent), and had private insurance (51.3 percent). Additionally, the mean age estimated from the visits was 50.2 plus/minus 17.3 years, with most of the patients receiving care from general/family practitioners and internists. Overall, less than a third of the patient visits were associated with asthma related education within the doctor's office (31.0 percent), with fewer visits in the post guideline period having asthma education (36.8 percent vs. 23.7 percent; p less than 0.0001) The top two asthma related therapies prescribed were short acting beta agonists (SABA) (49.3 percent), and combined long acting beta agonists/inhaled glucocorticoids (LABA/GC) (27.0 percent). Similar prescribing trends by therapeutic class were observed by race and gender. However, differences were observed by guideline period. More specifically, a lower proportion of methylxanthines (3.1 percent vs. 1.5 percent; p equals 0.005), and a lower proportion of LABA alone were prescribed after 2007 compared to before 2007 (0.7 percent vs. 1.8 percent; p equals 0.01). More combination products with LABA and inhaled glucocorticoids were prescribed after 2007. **Conclusion:** The study shows differences in prescribing of LABA, methylxanthines, and combined LABA/GC by guideline

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period, with the low prescription of LABA reflecting adherence to current guidelines. Considering the drop in the provision of asthma education in the post-guideline period, greater promotion of asthma education may be needed.

**KEY WORDS:** Asthma NAMCS Ambulatory-Care Drugs Therapy

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**Alzheimer's Disease and Other Dementia In Persons of Sub-Saharan African Descent: Estimates of Mortality in Sub-Saharan Africa and the Caribbean from the Global Burden of Disease Study 2010**

Presenter's Name: Jean Sebastien Rowe

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Chika Okafor, BS; Thomas Cudjoe, MD-MPH; Thomas Obesisan, MD; RF Gillum, MD

**Background.** Dementia is rapidly evolving into a global pandemic affecting the elderly in middle income as well as rich countries as populations age. To gain greater insight into the evolution of the Alzheimer's Disease and other dementia (ADD) in persons of Sub-Saharan African ancestry, we examined data for elders in Sub-Saharan Africa and the Caribbean (SSAM). **Methods.** As documented elsewhere, the 2010 Global Burden of Disease Project (GBD) estimated mortality from IHD for 21 global regions using all available data sources. We assessed mortality data from GBD for regions of Sub-Saharan Africa (SSA) and the Caribbean in 2010 for persons aged 70 years and over. **Results.** In 2010, the estimated ADD death rate ranged from 21 per 100,000 in Central Africa to 74 per 100,000 in Southern Africa. In all African regions the estimated death rates were much lower than in the Caribbean (228 per 100,000). In SSA among persons 70 and over, ADD was only the 33rd leading cause of death in 2010 and 38th in 1990. In the Caribbean, ADD ranked 9<sup>th</sup> in 2010, up from 14th in 1990. In the Caribbean, 2010 ADD death rate showed no clear association with 2010 gross domestic product per capita. **Conclusions.** ADD is a leading cause of death in persons aged 70 and older in the Caribbean, but likely remains a relatively minor cause of death in SSA.

**KEY WORDS:** Alzheimer's, Dementia, Africa, Caribbean, Mortality

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**Electrical Stimulation and its effect on lingual, labial and buccal muscles strength**

Presenter's Name: Mohammed Safi

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Wilhelmina Wright-Harp, Jay Lucker

**Background:** Lingual and facial muscles of mastication and expression are important for communication and swallowing. SLPs are in need of modalities that assist in the treatment of some of these muscular weaknesses. NMES is a modality that is commonly used in physical therapy and occupational therapy fields that assists in treating several motor and sensory muscular disorders including muscular weakness. To date very limited studies have been found related to the effect of NMES on the facial muscles, in general, and muscles of speech production and swallowing, specifically. Although, according to Randerath (2006) "Muscle training using electrical neurostimulation (ENS) has been found to effectively strengthen skeletal muscles in pathological or posttraumatic situations. In healthy muscles, neuromuscular electrical stimulation can induce the activity of motor units which are difficult to activate voluntarily." **Aim:** This study is designed to explore the effect of surface electrical stimulation on lingual, labial and buccal muscles in healthy volunteers. **Methods:** This study is an experimental group study designed to evaluate the effect of lingual and labial electrical stimulation in healthy adult participants. Three extrinsic lingual muscles will be targeted (Hyoglossus, Genioglossus, Styloglossus) and the Orbicularis oris. The strength of labial and lingual muscles will be measured using the Iowa Oral Performance Instrument (IOPI).

**KEY WORDS:** Tongue, Neuromuscular electrical stimulation, facial

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**Direct Interaction of Flap Endonuclease 1 with RECQ1 Demonstrates a Conserved Association with Human RecQ Homologs**

Presenter's Name: Furqan Sami

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Oral Presentation*Coauthors: Swetha Parvathaneni<sup>1\*</sup>, Ronald Gary<sup>2</sup>, and Sudha Sharma<sup>1\*\*</sup>

Human RECQ1 helicase belongs to a highly conserved family of DNA-unwinding enzymes that play key roles in protecting the genome stability in all kingdoms of life. In addition to RECQ1, human RecQ homologs include BLM, WRN, RECQL4, and RECQ5 $\beta$ . The yet known RecQ-related diseases, Bloom Syndrome (BLM), Werner Syndrome (WRN), and Rothmund Thomson Syndrome (RECQL4) are all associated with elevated risk of cancer. Given the critical association of the family with cancer predisposition diseases, there is an urgent need to identify molecular and biological roles of RECQ1 and RECQ5 $\beta$  in genome maintenance mechanisms that are essential for cancer prevention and normal cellular functions. We have demonstrated that deficiency of RECQ1 results in elevated frequency of spontaneous sister chromatid exchanges, chromosomal instability, increased DNA damage and greater sensitivity to certain genotoxic stress implicating RECQ1 functions in DNA replication, recombination and repair. Consistent with this, we have identified a novel physical and functional interaction of RECQ1 with human flap endonuclease 1 (FEN1) which plays essential roles in DNA metabolism. We demonstrate that RECQ1 and FEN1 interact physically both in vitro and in vivo. Additionally, our domain mapping results show that the extreme C-terminal region of FEN1 (FEN1328-380) is essential for RECQ1-FEN1 binding with additional contribution from its PCNA-interacting domain. In our reciprocal mapping experiment, we show that C-terminal region of RECQ1 was preferentially bound to FEN1. Functional interaction studies show that RECQ1 modulates FEN1 cleavage of its preferred and physiologically relevant DNA substrates. This is the first report on RECQ1- FEN1 interaction and affirms that human RecQ proteins possess a conserved potential to modulate the efficiency of FEN1 reactions. Ongoing research will identify additional factors that might dictate the selectivity among the

five RecQ proteins for interaction with FEN1 under a given cellular context. Collectively, this information will advance current understanding of RecQ functions in genome stability maintenance.

KEY WORDS: FEN-1, RECQ1, Interaction, DNA Repair, Cancer,

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**SEMA3F purification and its role in in vitro lymphoangiogenesis**

Presenter's Name: Hamid Saranjam

Classification: Professional Student

*Presentation Type: Oral Presentation*

Coauthors: Colleen Doci, Silvio Gutkind

Angiogenesis, the formation of new blood vessels from preexisting vasculature, is essential for many physiological processes, and aberrant angiogenesis contributes to some of the most prevalent human diseases, including cancer. Angiogenesis is controlled by delicate balance between pro- and anti-angiogenic signals. While pro-angiogenic signaling has been extensively investigated, how developmentally regulated, naturally occurring anti-angiogenic molecules prevent the excessive growth of vascular and lymphatic vessels are still poorly understood. In this presentation, I summarize the current knowledge on how semaphorins and their receptors, plexins and neuropilins, control normal and pathological angiogenesis, with an emphasis on semaphorin-regulated anti-angiogenic signaling circuitries in vascular and lymphatic endothelial cells. This emerging body of information may afford the opportunity to develop novel anti-angiogenic therapeutic strategies.

KEY WORDS: Angiogenesis, Semaphorins, NRP2, Signaling, Cancer

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**Investigating The Role of Cerebral Hypoxia in The Development of Cerebral Malaria**

Presenter's Name: Nailah Seale

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Pedro Cabrales

Malaria is an infectious disease endemic in 109 countries. Most of its nearly one million annual deaths occur in children under 5 years who develop cerebral complications, known as cerebral malaria (CM). CM is characterized by brain inflammation, neurological impairment and coma. The cause of CM, however, has not been fully elucidated. In this study, the association of CM development with cerebral hypoxia was investigated. A model was used whereby C57BL/6 mice were infected with Plasmodium berghei ANKA (PbA) and developed CM, whereas BALB/c mice were resistant to CM. Both models were observed using intravital microscopy methods of a closed cranial window model. Phosphorescence quenching microscopy was used to find oxygen tension which quantified hypoxia. This technique is based on the relationship between Pd-porphyrin phosphorescent time decay and oxygen concentration. Preliminary analysis of the results indicates that there are statistically significant differences in hypoxia between CM resistant and CM susceptible mice. Results suggest that the CM resistant mice can lower oxygen levels in the brain to maintain oxygen extraction but CM susceptible cannot. Further analysis and understanding of the differences in oxygen tension between the CM susceptible and CM resistant mice models can lead to new treatments to prevent CM manifestation and confirm cerebral oxygenation as an early detection method for CM.

**KEY WORDS:** Cerebral Malaria, Hypoxia, Phosphorescence Quenching Microscopy

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**The Roles of DLL4 and CASC5 in Tumorigenesis/ Li-Fraumeni Syndrome**

Presenter's Name: Zaki Sherif

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

Coauthors: Zaki Sherif and Zhixing Yao

Tumorigenesis is a consequence of mutational and epigenetic changes that alter normal cell growth and survival pathways. Li-Fraumeni syndrome (LFS) is a clinically and genetically heterogeneous inherited cancer syndrome that can provide powerful insights into our understanding of somatic mutations in sporadic cancers and cell signaling pathways. LFS is currently linked to heterozygous mutation in the tumor suppressor gene p53 (TP53), which encodes a transcription factor that responds to diverse cellular stresses through the regulation of target genes that induce apoptosis, cell cycle arrest, DNA repair, and senescence. TP53, a central regulator for multiple tumor suppressor pathways, is altered in half of all human cancers. Notch signaling pathway controls cell fate specification during embryonic and postnatal development. Our recent studies support a key role for Delta-like ligand 4 (DLL4, Notch ligand, locus 15q15.1) in the regulation of T cell lineage thymopoiesis, and DLL4 has an impact on cancer immune-surveillance. We previously discovered the presence of a balanced reciprocal translocation between chromosomes 11q23 and 15q15 in a LFS patient's cells. Our recent preliminary data reveal the abrogation of DLL4 expression in LFS patients' fibroblasts and marked down-regulation in breast cancer cells and neuroblastoma cells. Moreover, LFS is associated with an abnormal regulation of several gene expressions in chromosome 15q15. CASC5 (locus 15q15.2, required for chromosome segregation) dramatically increased in LFS patients' cells, breast cancer cells and neuroblastoma cells. Furthermore, our ChIP assay data show that TP53's association with CTCF (regulator of chromosomal architecture) involves regulation of DLL4 and CASC5 gene expressions.

**KEY WORDS:** TP53; Notch signaling; DLL4; CTCF; CASC5

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**Isolation of Phage Milania**

Presenter's Name: Shruthi Shyamala  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

The increase in the number of antibiotic resistant bacteria poses a serious problem of new untreatable infectious diseases that threaten the world's population. Since very few new antibiotics are being discovered, one very effective way to control antibiotic resistant bacteria is to find bacteriophages which can specifically infect and kill these bacteria. In our project, the main objective was to isolate a phage. Phage isolation occurred over a series of different steps. Isolation began as we attempted to isolate a novel phage from the environment using the enrichment of environmental samples. After obtaining a phage, a series of experiments were conducted to purify the phage. The various experiments and tests to purify phage included spot tests, plaque-streaking, phage-titer assays, and final plaque purification. By conducting these tests, the end result would be a confirmed purified phage with no mix-ups. This goal of purifying strains of phage is important because it contributes to the Phages Database, which researchers are using to eliminate certain antibiotic resistant bacteria. Scientists are able to do this using the information on these phage to manipulate the bacteria into thinking the phage is doing the same thing as the antibiotic whereas in fact, it is attaching and depleting the antibiotic resistant bacteria. The phage substitute the previous roles of the antibiotic in helping defeating the bacteria. If this project is conducted again with phage samples from different environments it would be extremely beneficial to researchers attempting to use phage to eliminate the various antibiotic resistant bacteria.

KEY WORDS: Phage, Isolation, Bacteriophage, DNA, Bacteria

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**Receptor for Activated C Kinase 1 in *Saccharomyces cerevisiae* regulates salt stress resistance pathway**

Presenter's Name: DeAna Smalls  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

Coauthors: DeAna Smalls, Hemayet Ullah

Receptor for Activated C Kinase 1 (RACK1) is a scaffolding protein found throughout all species. Scaffolding proteins are involved in many protein-protein interactions and are important components to many mechanisms and cellular responses within the cell. Recent research suggests that, within plants, RACK1 mediates diverse abiotic stress responses in plant cells. Genetic knockout of the gene in the model plant *Arabidopsis* resulted in diverse environmental stress like drought and heat stress resistance. Through small compound library screening using the crystal structure of RACK1A protein, several ligands are isolated that can potentially inactivate the protein function. Efficacy of the ligands are evaluated in yeast under diverse stress conditions. One of the ligands-SD29, has been found to provide yeast cells protection from high concentration of salts. Based on the results, the same ligand is found to provide plants protection from the salt stresses. The molecular mechanism of such resistance is evaluated through western assay and a key tyrosine residue phosphorylation is implicated in the resistance responses. The patented ligands will be useful in offering salt/drought stress resistance to crop plants.

KEY WORDS: Genetics, Molecular Biology, Biology, Yeast, Stress Response

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**Nanoparticles with Protein Phosphatase 1-targeting small compounds for Activation of HIV-1 Infection**

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

Coauthors: Oleg Bolshakov, Robert Taylor, Emmanuel Akala, Sergei Nekhai

**Purpose:** Complete eradication of HIV-1 infection is obstructed by the present of latent integrated HIV-1 provirus in which transcription is inefficient. Activation of HIV-1 transcription requires viral Tat protein and host cell factors, including protein

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phosphatase-1 (PP1). We previously developed small compounds targeting PP1 that affected HIV-1 transcription. However, these compounds may have a limited bioavailability in vivo and may not be able to reach their targets and exert their effects. Thus, we packaged PP1-targeted compounds in nanoparticles and analyzed their release and effect on HIV-1. **Methods:** Nanoparticles were synthesized by emulsion polymerization using a thermal method involving azobisisobutyronitrile (AIBN) as the initiator. The release of the compounds from the nanoparticles was examined by HPLC. Nanoparticles toxicity and effectiveness on HIV-1 was analyzed by calcein and luciferase assays respectively. **Results:** PP1-targeting compounds were efficiently packaged in the nanoparticles and in vitro release was studied in a buffer solution. With the release data, we tested toxicity of the nanoparticles and their effectiveness against the pseudotyped virus. The nanoparticles containing the PP1-targeted F3 compound were shown to be toxic in CEM T cells. HIV-1 inhibition by the F3-loaded nanoparticles coincided with the reduced cell viability. **Conclusion:** The nanoparticles produced were toxic in the cell line used. Further testing in other cells lines and synthesis of nanoparticles by different methods needs to be explored.

KEY WORDS: HIV-1, Latency, HIV-1 Transcription, Host cell factors, PP1

### Isolation and Characterization of Novel Mycobacteriophages Amiratis & Jdent14

Presenter's Name: Troy Spruill

Classification: Undergraduate Student

Presentation Type: Poster Presentation

Coauthors: Jonquil Dent

A bacteriophage is a virus that infects and replicates inside bacteria. The goal of this project is to isolate and characterize novel bacteriophages. Specifically, we are interested in phages that infect *Mycobacterium smegmatis* mc2155, a non-pathogenic bacterial species averaging 3-5mm in length that is related to *Mycobacterium tuberculosis*. A soil sample yielding phages Jdent14 and Amiratis was collected from the campus of Howard University outside of Carnegie Hall and Founders Library respectively. Both phages were purified via streak methods. Once successive rounds of streaking were completed, a titer assay was used to further purify the phages

and calculate the concentration of plaque forming units. Jdent14 produced clear plaques that were approximately 1.0 mm in diameter. Amiratis, however, produced two plaque morphologies that were clear: one approximately 2.0 mm and another approximately 1.0 mm in diameter. In the future, we will generate a High Titer Lysate. Once this has been completed, we will extract DNA, and further observe the phage using electron microscopy. For Amiratis, DNA comparisons will be made in order to assure that it is a single phage. Future directions may include investigating how different salt ions and concentrations affect plaque number and formation.

KEY WORDS: *Mycobacterium smegmatis* mc2155, plaque morphologies, titer assay, High Titer Lysate, electron microscopy

### Hip Fractures in the Elderly: Does Race Matter

Presenter's Name: Brent Stephens

Classification: Post Doc/ Resident/ Fellow

Presentation Type: Poster Presentation

Coauthors: Robert Wilson

**Background:** Hip fractures are a major cause of morbidity and mortality in the elderly population, with substantial economic costs. As there is currently limited data examining trends in hip fracture prevalence in minority populations, the aim of this cross-sectional study was to investigate factors affecting inpatient mortality among Caucasian (C), African American (AA), Hispanic (H), and Asian (As) elderly populations following intertrochanteric fractures. **Methods and Materials:** Patients were identified from the National Inpatient Sample (NIS) with data collection spanning from 1998-2007. In an effort to limit variance in mortality due to fracture type, we specifically selected intertrochanteric fractures (ICD-9 820.0) in patients greater than 60 years of age (N=234,299). Bivariate and multivariate analyses were performed to assess the effect of race, gender, time to principle procedure, length of stay, and age on inpatient mortality. **Results:** Between 1998-2007, the average annual number of intertrochanteric fractures was 23,000, with 75% occurring in women. Although the prevalence of fractures were greater after the age of 75 (n=196,622, 83.9%), African Americans suffered fractures at an earlier age (60-74) than any other group (25.1%-AA, 21.8%-

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H, 18.4%-As, 15.2%-C). The average inpatient mortality rate for all races was 2.6% (n=6,080) with no significant difference between races. Female gender had a 52% decline in inpatient mortality (95%CI: 0.49-0.57). Increasing age (5.4%, 95%CI: 1.05-1.06), time to principle procedure (2.1%, 95%CI: 1.0-1.04), and length of stay (5.7%, 95%CI: 1.05-1.06) increased inpatient mortality rate. **Conclusion:** African Americans are at a higher risk of intertrochanteric fractures under the age of 75. However, age, length of stay, and time to principle procedure increased inpatient mortality irrespective of race.

KEY WORDS: Hip fractures in the elderly

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### Genetic variation in serotonin type 7 receptor (5-HT7) gene and its association with C-reactive protein (CRP) levels in African-Americans

Presenter's Name: Grace Swanson

Classification: Graduate Student

Presentation Type: Poster Presentation

Coauthors: Stephanie Miller, Forough Saadatmand, PhD, Victor Apprey, PhD, Clarence Lee, PhD, Georgia M. Dunston, PhD, Muneer M. Abbas, PhD

Genetic variation in serotonin type 7 receptor (5-HT7) gene and its association with C-reactive protein (CRP) levels in African-Americans Serotonin type 7 (5-HT7) is a receptor for the neurotransmitter serotonin, which plays an important role in regulating physiological functions such as mood, learning, and behavior. Psychosocial stressors can cause the release of serotonin that may lead to immune system modulation since its receptor, 5-HT7, is expressed on immune cells. We hypothesize that genetic polymorphisms in the 5-HT7 gene are associated with differential levels of C-reactive protein (CRP), a blood biomarker of inflammation. This study's population included 436 African American male and female subjects ranging between 18-25 years. The subjects were from two urban communities in Washington, D.C that report high rates of drug use and violence. Three single nucleotide polymorphisms (SNPs), rs2420367, rs12412496, and rs2185706 were genotyped in the 5-HT7 by restriction fragment length polymorphism or the TaqMan assay. Statistical analysis was performed using SNPassoc in R and Haplostats in R to test for SNPs and haplotypes associations respectively, and CRP levels. The results showed that rs2185706 have a significant association

with CRP levels (P=0.003) with the over-dominant model being most significant. Furthermore, the AAG SNPs' haplotype was found to be associated with different levels of CRP in the study population (P=0.043). Finally, when different haplotypes were tested within gender the AAG haplotype was found to be significant in females while the AGA haplotype was significant in males. The present study showed a possible association between genetic variations in the 5-HT7 serotonin receptor gene and CRP levels, which may modulate the inflammatory response in individuals exposed to chronic stress.

KEY WORDS: serotonin, C-reactive protein, genetic variation

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### Risk Factors for Pulmonary Embolism at Autopsy among HIV Infected Patients

Presenter's Name: Mestawet Teka

Classification: Post Doc/ Resident/ Fellow

Presentation Type: Poster Presentation

Coauthors: R Setse, A Thomas, N Shetty, W Davis, A Thomas Jr, A Mehari

**Purpose:** Advanced HIV disease is a risk factor for development of thromboses, possibly due to an increased inflammatory state or the presence of concurrent opportunistic infections. Others have suggested that HIV-related factors, rather than traditional risk factors may be more important in the pathogenesis of clot formation among HIV infected persons. Few studies have reported autopsy findings among HIV infected patients. Our goals were to describe autopsy findings among HIV infected patients died in metropolitan hospital in Washington D.C and examine correlates of venous thromboembolism (VTE) in this population. **Methods:** We reviewed the medical records and autopsy reports of 123 HIV infected patients deceased to between 1985-2000. Demographic data, risk factors for HIV transmission and relevant clinical diagnoses on admission were abstracted from patient's medical records. Cause of death and pulmonary findings at autopsy were abstracted from autopsy reports. Baseline characteristics and autopsy findings were described using simple tables and frequencies. The association between thrombo-embolic events & opportunistic infections was examined using logistic regression analyses. **Results:**



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Of 123 deceased HIV infected patients who had autopsies performed between 1985 and 2000, 72.4% (n=89) were male and 98% (n=121) were African-Americans. The median age of participants was 38 years (range: 20 -71 years). Twenty-five percent (n=121) of patients had evidence of pulmonary thrombo-embolism and/or infarct at autopsy. Other histological findings at autopsy included pulmonary edema (88.6%), diffuse alveolar damage (51.2%), pneumonia (82.1%), and pleural effusion (61%). Sixty-eight (55.3%) of patients had at least 1 opportunistic infection. Patients with a documented diagnosis of *Pneumocystis jiroveci* pneumonia (PCP) and malignancy pre-mortem were more likely to have VTE at post-mortem [Adjusted Odds Ratio (AOR): 3.38, 95% CI (1.08-10.55) and AOR 3.70, 95%CI (1.26-10.83) respectively]. **Conclusions:** Pulmonary embolism was a common finding among HIV infected patients at autopsy. Opportunistic infections particularly PCP infection was independently associated with pulmonary embolism at autopsy. **Clinical Implications:** Further studies are needed to elucidate the pathobiology and trend of VTE in the post HAART era.

KEY WORDS: HIVPE

### Computational Modeling of Calreticulin for Calreticulin Acetylating Ability Studies

Presenter's Name: Courtney Thomas

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Akintunde Akinyemi

Calreticulin (CRT) is a protein found mainly in the endoplasmic reticulum (ER) that maintains calcium levels and controls protein folding<sup>1</sup>. Recent literature has shown CRT to travel to the cell surface, and intracellular and extracellular compartments of the cell. In these compartments, CRT has been found to participate in multiple physiological processes such as cell adhesion, gene expression, immune response, fibrosis, and cancer. The path by which CRT leaves the ER and how exactly it participates in cytosolic processes is unknown. Calreticulin has been shown to autoacetylate with the binding of preferred ligands, 7,8-diacetoxy-4-methylcoumarin (DAMC), acetyl CoA, and 7,8-dipropoxy-4-methylcoumarin (DPMC)<sup>2</sup>. It is believed that CRT transfers the acetyl group to another

protein, which may help calreticulin cross the membrane to exit the ER. We have modeled the structure of mouse calreticulin and simulated docking of desired ligands, DAMC, acetyl CoA, and DPMC, as well as mutated ligands, pentynoyl CoA, and 7,8-dipentynoyl-4-methylcoumarin (DPeMC). The P-domain proved to be the best site for ligand binding in the model, due to low energy requirements and increased ligand interactions with pocket. NMR studies will be performed to validate the model created. Techniques such as GST assay and click chemistry will be used to determine the placement of calreticulin's acetyl group, and whether this plays a role in calreticulin's ability to exit the ER.

KEY WORDS: Biochemistry, Protein study, Computational Modeling

### Global Chromatin Landscape Analysis to Identify Novel Pathways during Bone Differentiation

Presenter's Name: Bethrice Thompson

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Lyuba Varticovski, Songjoon Baek, Gordon L Hager

Mesenchymal stem cells (MSC) differentiation into osteoblast is a natural repair mechanism that resembles the process of bone formation in the embryo. Although bone undergoes life-long remodeling, there is a substantial lack of information on the molecular basis of osteoblast formation from MSC and key regulators of this process. The purpose of this study is to investigate global changes in chromatin landscape during MSC differentiation into the osteoblast lineage. In order to accomplish this goal, two model MSC systems were used: a human fetal osteoblast cell line, hFOB-119, and an inducible pluripotent stem cells (iPS) derived MSC. In addition, we used iPS derived MSC from a patient with Osteogenesis Imperfecta (OI), a disease that severely affects bone formation and MSC differentiation. To investigate global chromatin landscape changes during osteoblast differentiation, DNase I hypersensitivity combined with deep sequencing (DHS-seq) or an alternative treatment with Benzonase was performed on cells induced to differentiate in the presence of Dexamethasone. To select an optimal sample for sequencing, a quality control

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method was developed by engineering primers from closed or open chromatin regions among over 40 cell lines using data available on ENCODE. Examination of hypersensitive elements allowed the characterization of regulatory circuits important for osteoblast differentiation which included chromatin modification and induction of COL1A1, RUNX2 and other osteoblast-specific genes as well as many novel regulatory regions. Chromatin changes in normal iPS-derived MSC were compared to OI-derived MSC during osteoblast differentiation. This analysis indicated key regulators silenced in OI cells. Future work include extending the analysis of DHS-seq during osteoblast differentiation, perform bioinformatics to investigate transitions in the chromatin landscape during osteoblast differentiation, determine and validate key regulators involved in this process.

**KEY WORDS:** bone differentiation, osteoblast, DNase I hypersensitivity, global chromatin modification

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#### **NsrR regulation of Small RNA RybB and RpoE in E. coli**

Presenter's Name: Karl Thompson

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

Coauthors: Joseph Aubee

Bacteria have efficient mechanisms to adjust to rapid changes in their environment or physiological conditions. We utilize the bacterial genetic model organism *Escherichia coli* K12 to study bacterial stress responses. One major stress response studied by our group is the envelope stress response. Envelope stress is caused by increased expression, or mis-folding, of outer membrane proteins (OMPs). The envelope stress response is the rapid inductions of scores of genes to alleviate increased levels of OMPs. The major effectors of the envelope stress response are small regulatory RNAs (sRNA) and periplasmic proteases that decrease OMP levels. An 80 nucleotide (nt) sRNA, RybB, is involved in the envelope stress response and is regulated by the envelope stress transcriptional regulator RpoE. A genetic screen to identify additional regulators of RybB picked up the NsrR gene. NsrR is a nitric oxide sensing transcriptional regulator and mediates that nitric oxide stress response in *E. coli*. We have strong evidence that 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. This research demonstrates cross-talk between the nitric oxide and envelope stress responses in *E. coli*. Defining physiological crosstalk 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, Nitric Oxide, Microbiology, Gene Regulation

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#### **Assesment of nutritional status and associated factors among children with HIV/AIDS in Ethiopia**

Presenter's Name: Ermias Tilahun

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Dr. Amare Worku

**Objectives:** To assess nutritional status and associated factor of children living with HIV/AIDS in public health care facilities in Adama, Ethiopia. **Methods:** an institutionally based, cross sectional study was conducted on HIV positive children undergoing HIV/AIDS treatment in the pediatrics clinic of adama hospitals and health centers. A standard Questionnaire and anthropometric measurements of 415 HIV positive children in the adama public health care facilities was used. Moreover, Bi variate and multivariate logistic regression analyses, based on UNICEF's analytical framework, was conducted to identify determinants of nutritional status **Results:** The overall prevalence of acute malnutrition was 12.8 %. Moderate malnutrition was at 4.6% and severe acute malnutrition was at 8.2%. A key determinant of acute malnutrition in the HIV positive children was the presence of additional children in the household. Other key determinant included vitamin A supplementation and ART initiation. **Conclusion:** The overall prevalence of acute malnutrition was low in comparison to research done in northwest Ethiopia. In addition, ART initiation, vitamin A supplementation and Number of under five children in the household were key determinant of acute malnutrition in the area.

**KEY WORDS:** Nutritional, HIV/AIDS,

A B S T R A C T S

**Inflammasome Sensors in Murine Resistance to Toxoplasma gondii**

Presenter's Name: Gezahegn Tolla

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

Coauthors: Gezahegn Gorfu, Kimberly M. Cirelli, Mariane B. Melo, Katrin Mayer-Barber, Devorah Crown, Beverly H. Koller, Seth Masters, Alan Sher, Stephen H. Leppla, Mahtab Moayeri, Jeroen P. J. Saeij, Michael E. Grigg

Induction of immunity that limits *Toxoplasma gondii* infection in mice is critically dependent on the activation of the innate immune response. In this study, we investigated the role of cytoplasmic nucleotide-binding domain and leucine-rich repeat containing a pyrin domain (NLRP) inflammasome sensors during acute toxoplasmosis in mice. We show that in vitro *Toxoplasma* infection of murine bone marrow-derived macrophages activates the NLRP3 inflammasome, resulting in the rapid production and cleavage of interleukin-1 (IL-1), with no measurable cleavage of IL-18 and no pyroptosis. Paradoxically, *Toxoplasma*-infected mice produced large quantities of IL-18 but had no measurable IL-1 in their serum. Infection of mice deficient in NLRP3, caspase-1/11, IL-1R, or the inflammasome adaptor protein ASC led to decreased levels of circulating IL-18, increased parasite replication, and death. Interestingly, mice deficient in NLRP1 also displayed increased parasite loads and acute mortality. Using mice deficient in IL-18 and IL-18R, we show that this cytokine plays an important role in limiting parasite replication to promote murine survival. Our findings reveal *T. gondii* as a novel activator of the NLRP1 and NLRP3 inflammasomes in vivo and establish a role for these sensors in host resistance to toxoplasmosis. The identification of the *Toxoplasma* factor that mediates NLR inflammasome activation may contribute new insight into the development of therapeutic options to combat this important human pathogen.

**KEY WORDS:** *Toxoplasma gondii*, Innate immunity, Inflammasomes, Host-parasite interaction

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**An Unusual Case of Non-Cirrhotic Portal Hypertension**

Presenter's Name: Cortni Tyson

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

**Background:** Idiopathic Non-Cirrhotic Portal Hypertension is poorly understood disease and many patients are initially incorrectly labeled as having liver cirrhosis. This entity has been reported mainly in India and Japan with few cases reported in Western countries. This case demonstrates a case of this unusual disease process in an American female. **Methods:** The study design is a retrospective chart review. **Case:** A 63 year old Caucasian female was seen in Hepatology follow up clinic for ascites, improved from previous visit. She has a history of recent paracentesis and esophageal varices noted on upper endoscopy. Her past medical history was significant for Lupus, coronary artery disease, and upper GI bleed after banding of esophageal varices. Serologic evaluations were negative for chronic liver disease, including viral, auto-immune, or genetic etiologies. Her liver biopsy was consistent with nodular regenerative hyperplasia, but negative for cirrhosis. Other than continued fatigue, her vital signs, physical exam, and review of systems were unremarkable. She had no further episodes of upper GI bleeding. **Conclusions:** The most common cause of non-cirrhotic portal hypertension is Schistosomiasis, mainly seen in India. An idiopathic diagnosis excludes chronic liver diseases, including parasitic infections and toxic exposures. The clinical manifestations may be very similar to those patients with cirrhosis, such as ascites and esophageal variceal bleeding. However, the prognosis of these patients is considerably better than those with underlying liver disease. Disease progression to cirrhosis and Hepatocellular carcinoma is minimal to none. When variceal bleeding and ascites are controlled, life expectancy is near normal.

**KEY WORDS:** Non-Cirrhotic, Portal, Hypertension, Liver, Cirrhosis

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A B S T R A C T S

**Anatomic Physeal Distance About The Knee In Skeletally Immature Patients**

Presenter's Name: Aniebiet-Abasi Udofia  
 Classification: Post Doc/ Resident/ Fellow  
*Presentation Type: Oral Presentation*

Coauthors: Randall Roy, MD, Craig Bennett, MD,  
 Nabile Safdar, MD, Kelechi Okoroha, MD,  
 Augustine Obirizeze, MBBS

**Introduction:** Mid-substance tears of the anterior cruciate ligament (ACL) in children or adolescents can no longer be considered a rare injury. Reliable measurements aiding in placement of femoral and tibial tunnels during ACL reconstruction are needed to spare the physes of skeletally immature patients. **Methods:** Magnetic resonance images of one hundred and ninety nine patients (ages six to seventeen years) were evaluated. Mean femoral condylar height was defined as the distance between the physis-subchondral bone interface on the distal lateral epiphysis. Mean tibial height was measured as the physis-subchondral bone interface at the posterior edge of the ACL. A transphyseal tibial diagonal measurement was taken from the same interface at a 55-degree angle from the horizontal physis extending to the inner anterior cortex. **Results:** Mean femoral condylar height increased sequentially with age, plateauing at 21.5 mm at sixteen years. Adjusted for age, average femoral condylar height was 18.8 mm for females and 19.7 mm for males ( $p < .005$ ). Mean tibial height plateaued at 15.2 mm at thirteen years, averaging 13.7 mm for females and 15.8 mm for males ( $p < .001$ ). Mean tibial transphyseal height plateaued at 35.5 mm at sixteen years, averaging 31.0 mm for females and 32.6 mm for males ( $p < .075$ ). **Conclusion:** Mean heights measured allow for safe placement and drilling of transepiphyseal tunnels of up to 10 and 8 mm in diameter on the femur and tibia, respectively, in patients between ten to seventeen years.

KEY WORDS: Orthopaedics, Pediatrics, Anterior Cruciate Ligament

**Effect of Temperature on a Hydrophobic Polyelectrolyte**

Presenter's Name: Arielle Waller and Makamba Sackey  
 Classification: Undergraduate Student  
*Presentation Type: Poster Presentation*

Coauthors: Preethi Chandran

The polymer polyethylenimine (PEI) is commonly used as a carrier for introducing DNA into cells. It consists of a hydrophobic backbone with positive-charged amine groups. The polymer interacts with negatively charged DNA, and upon charge neutralization, packages it into nanometer-size particles. We looked at the effect of the two opposing forces, hydrophobicity and electrostatic repulsion, on the polymer dynamics. The former tend to aggregate the polymer, whereas the latter keep it in the free state. Temperature affects the two forces differently. To our knowledge the effect of temperature on PEI dynamics has not been studied. We studied how the polymer dynamics changed with temperature between 15°C to 45°C using Dynamic Light Scattering. Our results indicate that temperature significantly alters polymer dynamics below 20°C but not above. We discuss the implications of this result in the context of how temperature affects pH and hydrophobic/charge interactions in solution. The study will allow us to tailor the interactions between DNA and PEI so as to produce stable carriers for delivering DNA in both basic science studies and clinical gene therapy.

KEY WORDS: temperature, hydrophobic polyelectrolyte, DLS, polymer

**Muscle birth defects in a human trisomy-18 fetus, comparisons with other trisomies and karyotypically normal humans, and discussion of implications for the understanding and surgical treatment of non-pentadactyl limbs shorten the title**

Presenter's Name: Sean Walsh  
 Classification: Undergraduate Student  
*Presentation Type: Poster Presentation*

Coauthors: Rui Diogo, Christopher Smith,  
 Janine M. Ziermann

Comparison and identification of abnormal muscles in a human fetus with Trisomy-18 and individuals with other trisomies as well

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with karyotypically normal humans are important for understanding the phenotypic/genotypic correlations and muscular-skeletal spatial associations in human birth defects. All muscles, including the muscles of the head, shoulder, and upper and lower limbs of a trisomy-18 fetus were dissected, this research being part of a larger project concerning the comparative muscle morphology of the human individuals with different genetic defects. In most cases, there were no drastic differences in the muscle appearance between the configuration found in this fetus and in karyotypically normal human fetuses. However, some significant malformations could be observed, especially in the muscles related to both hands, one with four and the other with six digits. The results of this project and recent study of birth defects reveal that in both normal and abnormal phenotypes the identity and attachments of limb muscles are mainly related to topological position, and not to the developmental anlage or even the homeotic identity, of the digits to which they are attached. Results also support the hypothesis that functional constraints are so important that even in cases of extreme anatomical defects there are “logical” patterns that can be predicted and that often mirror patterns seen in the normal phenotype of other taxa. The new data obtained in this long-term project have crucial implications for the study and surgical treatment of non-pentadactyl limbs, which constitute the highest proportion among the congenital limb defects of humans.

**KEY WORDS:** Trisomy-18, human anatomy, myology, polydactyly, developmental constraints

### **Introduction of Howard University Molecular Imaging Laboratory**

Presenter's Name: Paul Wang

Classification: Senior Faculty

*Presentation Type: Oral Presentation*

The Howard Molecular Imaging Laboratory (MIL) is a university core facility to promote and support a sustainable long-term research using modern imaging technology to study the mechanism of disease processes and their response to therapy at the molecular, subcellular, cellular, and whole animal levels. The objectives of MIL are (1) to provide state-of-the-art instrumentation, technical expertise and essential services for molecular, cellular and in vivo imaging (2) to provide a broader training in biomedical imaging through methodology-

centered seminars, workshops, mini-courses, and internships (3) to foster new multidisciplinary research collaborations using modern imaging techniques. The MIL has a 9.4T NMR machines for small animal imaging and MR spectroscopy studies, a Caliper Spectrum optical imaging machine, and an Olympus confocal microscope. The MIL provides expertise in imaging experiment design, and offers high resolution and high sensitivity MRI, optical imaging, and multi-photon confocal microscopy imaging services. The MIL also provides expertise and services in: development of efficient organ and intracellular targeting and amplification strategies, as well as in developing strategies for identifying suitable biomarkers, or imaginable gene products. The MIL provides assistance to develop nanoparticles with ligands to transfect cells with bioluminescent or fluorescent markers, targeted to specific receptors, proteins or biochemical pathways for in vitro and in vivo studies. Research supported by NIH/NIMHD 8 G12 MD007597, and DOD USAMRMC W81XWH-10-1-0767.

**KEY WORDS:** imaging, MRI, optical imaging, core facility

### **Resibufogenin and Cinobufagin Excite CNS Neurons by Performing Ouabain-like Action**

Presenter's Name: Zejun Wang

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

Coauthors: Liqin Sun, Thomas Heinbockel

Cinobufagin and resibufogenin are two major effective bufadienolides of Chansu, a Chinese medicine obtained from the skin venom gland of toad. Many clinic cases showed that of Chansu and Chansu-containing formulations are beneficial or toxic to nervous system. However, the pharmacological and toxicological influences in CNS and peripheral nervous system were rarely reported. We used whole-cell recording from brain slices to explore the effects of bufadienolides on excitability of mitral cells (MCs), a principal neuron in main olfactory bulb. Cinobufagin and resibufogenin induced irreversibly over-excitation of MCs at higher concentrations, indicating the toxicological effect. At decreasing concentrations, they concentration-dependently increased spontaneous firing rate, depolarized the membrane potential of MCs, and elicited inward

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currents as well. The excitatory effects were direct action on neurons rather than indirect phasic action. The similar properties of actions between bufadienolides and ouabain strongly suggested that the bufadienolides excited neuron by performing ouabain-like action, i.e., most likely mediated by inhibition of Na<sup>+</sup>,K<sup>+</sup>-ATPase. The direct action of bufadienolide on brain Na<sup>+</sup> channels were tested by recordings from transfected cells that stably expressed the Nav1.2 channel isoform. Cinobufagin failed to significantly change the main property of Nav1.2 channels in current amplitude, current-voltage (I-V) relationships, activation and inactivation, suggesting cinobufagin-evoked excitation of neurons is not through the Na<sup>+</sup> channels. Our results imply that the inhibition of Na<sup>+</sup>,K<sup>+</sup>-ATPase may involved in both the pharmacological effects of bufadienolides like anesthesia, analgesic, exciting CNS respiratory system, and severe side-effects like shortness of breath, breathlessness, seizure, coma and cardiac arrhythmia.

**KEY WORDS:** Bufadienolides; Neuronal excitation; Neural toxicology; Resibufogenin; Na<sup>+</sup>,K<sup>+</sup>/ATPase

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### **Phylogenetic relationships of Sulidae inferred from external morphological characters**

Presenter's Name: Jalesa Watkins

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Judith Jay, Nathan Smith

Sulidae are a group of seabirds comprised of ten species of gannets and boobies. They are classified within the avian order Pelecaniformes, a group notable for long-standing conflicts between molecular and morphological estimates of relationships. Diverse phylogenetic datasets focused on sulid relationships exist for DNA, osteological, and behavioral characters. However, no external morphological (plumage traits) dataset exists, and no attempt has been made to analyze the varying levels of congruence of these disparate datasets. We present a new dataset of over a dozen external morphological characters collected for Sulidae and several outgroups. The dataset was analyzed using maximum parsimony to infer evolutionary relationships within Sulidae. Our results exhibit some congruence with previous analyses (monophyly of Morus), but differ primarily in: 1) failing to recover Sula monophyly;

2) failing to recover a sister-taxon relationship between Sula neboxii and Sula variegata; and 3) recovering Papasula as nested within Sula. The latter result confirms that independent forms of character data (nuclear genes, mitochondrial genes, osteology, plumage) all differ in the placement of this enigmatic species. Surprisingly, trees inferred from osteological and behavioral datasets show more congruence with molecular trees than with the external morphological trees. This cautions against simplistic arguments regarding the "molecules vs. morphology" debate in phylogenetics. Our results are also consistent with previous studies noting high levels of homoplasy in avian plumage characters. Future work requires a two-fold approach of rigorously assessing hypotheses of primary homology in avian external morphological characters, and testing hypotheses of convergence using modern phylogenetic comparative methods.

**KEY WORDS:** Sulidae, Phylogeny, Plumage, Morphology, Evolution

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### **Isolation of a Unique Mycobacteriophage**

Presenter's Name: Ambriel Weatherly

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

The Phage Hunters Advancing Genomic and Evolutionary Science program is an Honors General Biology laboratory section that allows freshman students to conduct original research in the field of microbiology. My project involves characterizing a novel microbacteriophage that exists in a soil sample obtained from the Howard campus. A bacteriophage is a virus that infects bacteria by replicating inside of it or incorporating its DNA into that of the host. A phage infects a specific type of bacteria. In the lytic cycle, a bacteriophage inserts its genome into the host cell and then utilizes the host's gene products to produce more bacteriophages ultimately lysing the host. The bacterium used in these experiments is called Mycobacterium smegmatis, non-pathogenic species that has been used for many years as a host for mycobacteriophage propagation. Since there are many emerging infectious diseases caused by antibiotic resistant bacteria and since the ability of scientists to discover and develop new antibiotics has become very difficult, the use of phages to kill antibiotic

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resistant bacteria has become very important. This research involves a series of experiments from enrichment of the soil sample to annotation of phage's genome. This project will contribute to the continuing study of phage genomics. In my discovery of a new phage I hope to also discover new genes and new gene sequences. The information that can be found will be used in molecular biology, evolutionary research, therapy of antibiotic resistant diseases and manipulation of DNA for cloning and mutation.

**KEY WORDS:** phages, mycobacteriophages, mycobacteria smegmatis, DNA replication, microbiology

### **Silver Chloride Encapsulated Poly Hydroxybutyrate (PHBV) for Potential Use in Bone Tissue Engineering**

Presenter's Name: Lauren Wells

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Chandra Bhan, John Stubbs III, Dharmaraj Raghavan

The objective of this study is to formulate silver chloride encapsulated poly hydroxybutyrate valerate (PHBV) matrix (AgCl-PHBV) for preventing bacterial infection when used in joint arthroplasty. A combination of solvent casting and partial solute leaching technique was used in the preparation of sodium chloride filled macroporous PHBV films. The sodium chloride particle filled macroporous PHBV films were then placed in silver nitrate solution for five hours to form silver chloride encapsulated PHBV film. The films were then digested with 2% nitric acid, followed by ammonia treatment and analyzed for silver content using Atomic Absorption Spectroscopy. Thermogravimetric analysis (TGA) was used to assess the overall amount of sodium chloride and silver content in the films. Preliminary results indicate that a six hour wash time provides adequate pores allowing silver nitrate to react with sodium chloride in order to form a highly encapsulated PHBV film. Studies are underway to evaluate the release kinetics of silver ions from encapsulated PHBV film. Future studies will also investigate the antimicrobial efficacy of silver encapsulated films and the osteoblast biocompatibility of the AgCl-PHBV engineered matrix. Funding: NSF-AMP and NSF-MRSEC

**KEY WORDS:** Silver encapsulated PHBV, bone tissue engineering, atomic absorption spectroscopy, thermogravimetric analysis, biocompatibility

### **Integrative Pharmacophore Based Screening of Novel Antineuroinflammatory Agents to Treat Parkinson's Disease**

Presenter's Name: Shalonda Williams

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Henry North, Stanley Tran, Janiel Unisa, Parth Vashi, Jay-Shong Hong, Xiang S Wang

Parkinson's disease (PD) is a neurological disorder characterized by progressive degeneration of the nigro-striatal dopaminergic (DA) neuronal terminals and the neuronal cell bodies of DA neurons in the substantia nigra. Approximately one and a half million people in the United States are afflicted with PD and the prevalence rises to 4% of the population over 80 years of age. Currently, the etiology of PD remains unknown and current therapeutic regimens fail to halt the progression of the disease, only providing relief from the symptoms. There is a critical need in developing novel and effective strategies to study and alter the disease course. In recent years, mounting evidence indicates that neuroinflammation plays a pivotal role in the pathogenesis of PD. The microglial activation mediated by the MAC1-PHOX pathway in particular has been proved to be essential for chronic inflammation and progression of neurodegeneration. The gp91phox is the catalytic subunit of PHOX and the targeted site of both activators and inhibitors of this enzyme. Targeted inhibition of the MAC1-PHOX pathway is a promising avenue for treating the PD as well as other neurodegenerative diseases. Absent of a receptor structure, we used a ligand-based drug design approach and the validated pharmacophore models had been exploited to screen our specialized libraries. Hits have been measured for in vitro and in vivo activities with two new neuroinflammation-associated rodent PD models. At this phase we will continue to employ pharmacophore models to screen two new datasets of compounds which include metabolites and prostaglandins.

**KEY WORDS:** Parkinson's Disease, MAC1-PHOX Pathway, gp91

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**Non-invasive Evaluation of Myocardial Mechanical Function in Patients with AL Amyloid: Behavior of Strain with Wall Thickness and Inter-vendor Agreement**

Presenter's Name: Brittney Williams  
 Classification: Professional Student  
*Presentation Type: Poster Presentation*

Coauthors: Jocelyn Spoon, Sam Orde, Mamotabo Matshela, Patricia Pellikka, Hector Villarraga, Sergio Gomes

**Background:** Early identification of cardiac amyloidosis is important for treatment and outcome. Strain has been developed as a new, non-invasive modality for quantification of regional myocardial function and can be applied for earlier diagnosis. Our aim was to compare two methods of assessing left ventricular longitudinal strain by two-dimensional Speckle Tracking Echocardiography (2D-STE) in patients with primary cardiac amyloid and normal left ventricular ejection fraction; Syngo Velocity Vector Imaging (VVI) and Echo PAC (GE) software were compared for reproducibility and prognosis. **Methods:** A total of 45 patients with biopsy-proven Immunoglobulin Light Chain amyloidosis with a standard two-dimensional echocardiogram were enrolled and divided into 3 groups by wall thickness. Left ventricular longitudinal strain analysis was performed using GE in the 3 standard apical echocardiographic views. Echocardiographic data were retrieved and saved in Digital Imaging and Communications in Medicine format. All VVI analysis was performed offline by two observers blinded to GE findings. **Results:** For global longitudinal strain the inter-vendor agreement between VVI and GE 2D-STE software was high:  $R=0.78$ , and this correlation was more accentuated in wall thickness  $>14$  mm:  $R=0.79$ . In AL amyloid patients, as wall thickness increases, the global longitudinal S decreased with both methods. **Conclusion:** There is a high degree of agreement between the two methods, suggesting that the evaluation can be performed by either of the two softwares, especially in patients with increased wall thickness. Left ventricular strain measured with either system was associated with overall mortality.

KEY WORDS: Cardiology, Strain, AL Amyloid, Syngo VVI, EchoPAC

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**Study of Nitrate Rich Beetroot Juice on Cardiac Autonomic Modulation in Rest and During Exercise**

Presenter's Name: Brittney Williams  
 Classification: Undergraduate Student  
*Presentation Type: Poster Presentation*

Coauthors: Katrina Brown, Brielle Matthews, Thomas Weaver

Nitrate rich beetroot juice is reported to decrease blood pressure at rest and during exercise. The antihypertensive effect of beetroot juice has been attributed to the nitrate increasing nitric oxide bioavailability, which decrease total peripheral vascular resistance. Blood pressure is modulated by vascular resistance and cardiac autonomic neural activity. The effect of nitrate rich beetroot juice on respiratory sinus arrhythmia and sympathovagal autonomic signaling is unknown. This study tests the hypothesis that nitrate rich beetroot increases heart rate variability measured by the average Standard Deviation of Normal-Normal electrocardiogram R-R intervals and decreases the low frequency spectral component of heart rate variability. Volunteer subjects were 13 females, age  $20.9 \pm 0.3$  yr, body fat  $30.7 \pm 2.5\%$  and peak oxygen uptake ( $V_{O2peak}$ )  $27.8 \pm 1.7$  ml . kg-1.min-1. Placebo and control of orange juice and beetroot juice treatments respectively were given on separate days. Blood nitric oxide, cardiac output, blood pressure and R-R intervals were measured as rest and at constant workloads set to 40% and 80% of the predetermined  $V_{O2peak}$ . Two hours after ingestion, the beetroot juice treatment increased nitric oxide and decreased systolic blood pressure, and total peripheral resistance. Standard Deviation of Normal-Normal electrocardiogram R-R intervals was significantly higher and heart rate and systolic blood pressure were significantly lower after the beetroot juice than after the orange juice treatment. These results suggest that the blood pressure lowering effect of nitrate rich beetroot juice maybe in part attributed to a down regulation in the cardiac sympathetic neural activity.

KEY WORDS: Cardiac Neuroactivity, Nitrate, Nitric Oxide

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**Characterization of KIF23 in Dendritic cells**

Presenter's Name: Aamir Zariwala

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Dendritic cells are an integral part of the immune system. These antigen presenting cells communicate with T-cells to present potential threats to the body. This research focused on the study of a protein, KIF23, in dendritic cells. Through the use of the bioinformatics database, Immgen, it was found that KIF23 has high mRNA expression of KIF23 that is unique in comparison to other immune cell subtypes. In neurons, KIF23 is involved in the formation of dendrites and knockdown of KIF23 results in ablation of dendrites. This is significant in dendritic cells as they form dendrites in order to capture foreign matter. Reverse transcriptase polymerase chain reaction, RT PCR, was performed to amplify DNA and then perform PCR using primers designed with the NCBI BLAST search program. The mRNA expression of KIF23 was confirmed using ultraviolet transilluminescence. Next, Western Blot was performed to confirm the protein expression of KIF23. From there, siRNA knockdown using electroporation will be performed in order to knockdown the expression of KIF23 and evaluate the effects. Immunohistochemistry will also be performed in order to understand the location of KIF23 localization in dendritic cells.

**KEY WORDS:** Immunology, KIF23, adaptive immunity, microtubules, antigen presentation

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**Hypothalamic and Metabolic Regulation of Human Dopaminergic Neurons Derived from Inducible Pluripotent Stem Cells**

Presenter's Name: Xiping Zhan

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

Coauthors: Jonathan Sagal, Mingyao Ying and Serdia O. Mack

Obesity has drastically increased over the last few decades. This rise may be attributed in part to eating to produce feelings of satisfaction and pleasure. It is well established that the hypothalamus plays a central role in regulating food intake and energy metabolism. Exciting new evidence suggests that a subset of hypothalamic cells provide modulatory input to midbrain dopamine neurons that are essential players in food reward. In addition, peripheral orexigenic and anorexigenic signals may directly modulate motivation and reward through these midbrain neurons. The purpose of these studies is to determine how hypothalamic and metabolic agents regulate the function of dopaminergic neurons using a novel model generated from human inducible pluripotent stem cells (iPS). Induced dopamine (iDA) neurons exhibit key physiological properties of mature midbrain dopamine cells. Immunocytochemical staining of iDA cells showed positive labeling for tyrosine hydroxylase and other markers of midbrain dopaminergic neurons. High performance liquid chromatography and amperometric measurements confirmed that iDA neurons release dopamine. In patch-clamp electrophysiology studies, >90% of induced cells tested revealed neuronal spiking, with 60% showing spontaneous activity similar to neurons derived from human embryonic stem cells and primary neurons from the midbrain nuclei in animals. The results of these studies and the iDA model will provide a basis for using an individual-specific approach to elucidating mechanisms involved in pathological overeating and obesity.

**KEY WORDS:** Obesity, ventral tegmental area (VTA), food intake, motivation, reward

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Business

**Sustainability in the Restaurant Industry**

Presenter’s Name: Maryam Khan

Classification: Senior Faculty

*Presentation Type: Oral Presentation*

The objective of this research is to identify five set of sustainability indicators for the restaurant industry. These indicators can be used to see if the restaurants are using these sustainable measures or these measures can be implemented to be environmentally friendly. These sustainable indicators are: design, sitting, and construction; furniture fixtures and equipment; energy and waste; corporate responsibility; and food and beverage. Sustainability means that policies and strategies are in place to meet society’s present needs without compromising the ability of future generations to meet their own needs (US Environmental Protection Agency (EPA.). Sustainability policies promote and provide safe and effective preservation of energy and other natural resources. It includes use of those products and/or services that are proven to be environmentally safe. The United States has only 5 percent of the world’s population yet uses more than 25 percent of the world’s energy. With over 980,00 restaurant locations in the United States, the combined sectors of the foodservice industry represent 10 percent of the U.S. economy. The restaurant industry is the number one consumer of electricity in the retail sector. Kitchens and its services typically use more energy per square foot than most other building users. By using the above set of sustainable indicators a restaurant can be “environmentally friendly” and in the long run it can be cost effective. A list of effective energy use measures are discussed for each of the five indicators.

**KEY WORDS:** restaurants, sustainability, environmentally safe, green measures

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**Mentoring Experience, Perceived Benefits, and Impact on Current Job Ranking in African-American Accountants**

Presenter’s Name: Lucy Lim

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

Coauthors: Allyson Clarke, Frank Ross

**Background:** This paper examines the associations between gender and mentorship experiences and the association in gender and the perceived benefits of mentorship among African-American. Then, it analyzes the impact of mentorship on current job rankings to learn the potential for improving the use of mentorship to increase diversity in the accounting profession. **Methodology:** The data in this study is obtained from an online survey conducted by the Center for Accounting Education (CAE) at the Howard University. Chi-square tests are run to test whether there are associations between gender and mentoring experiences. T-tests are run to analyze whether the mean responses are different between females and males. Ordered logistic model is used to test the benefit of mentorship on one’s career. **Results and Conclusions:** The paper finds that there are associations between gender and: (1) current job ranking, (2) the quantity of mentors that the respondents considered beneficial, (3) the nature of the beneficial mentoring- formal, informal, or both, and (4) the advocacy support received from their mentors. Both African-American females and males perceived similar benefits of mentorship in their current work environment and had similar opinion on whether a powerful mentor is an important success factor. The multivariate test’s results show that the quantity of beneficial mentoring experiences and having informal mentors contributes have positive effects on current job rankings. However, the perceptions on mentoring benefits in their current workplace do not have any effect on current job rankings.

**KEY WORDS:** gender, diversity, African-American, mentor

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**Perceptions of Hiring Managers on the Lack of Racial Diversity and Inclusion in the Advertising Industry**

Presenter's Name: Sheryl Oliver

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

The Advertising industry has been under attack for decades concerning its hiring practices and the underrepresentation of African-Americans or persons of color at advertising agencies. This problem was thrust back into the spotlight in 2009, when attorney Cyrus Mehri and the NAACP released the "Madison Avenue Project," regarding a serious challenge to the advertising industry to end decades of racial discrimination. Academic research is scarce concerning advertising agencies' retention and recruitment efforts necessary to hire and retain diverse talent. This qualitative study involving 18 interviews

of advertising agency hiring managers and executives from five markets, analyzes perceptions regarding the lack of racial diversity and inclusion in the advertising industry and the strategies necessary to attract, recruit and retain African-Americans and other ethnic and racial minorities. While most executives perceived more barriers to recruitment and retention than effective solutions, all agreed that diversity recruitment and retention strategies must originate from C-Suite commitment and must be integrated into the agency in order to be truly successful. Hiring minorities with transferrable skills was among the top. Creating special programs and training opportunities was also paramount.

**KEY WORDS:** Advertising, Diversity, African-Americans, Hiring, Minorities

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## Computation & Modeling

**Exploiting Synonyms to Improve Question and Answering Systems**

Presenter's Name: Anietie Andy

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Anietie Andy, Robert Rwebangira

Question and answering systems such as Yahoo Answers are a popular way for Internet users to get answers to common everyday questions. But one of the challenges with such systems is that many questions have not yet been answered and hence a search will not return any results. In this work we propose a synonym based approach to resolving this issue that works by expanding each individual question into several related queries. Preliminary results using data from Yahoo Answers indicates this method has great potential for improving answer quality.

**KEY WORDS:** Question, Answering, Synonym, Yahoo Answers, Exploiting

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**Protein Structure Prediction of TrpE Site of Anthranilate Synthase**

Presenter's Name: Yayin Fang

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

Coauthors: W. Malcolm Byrnes, William M. Southerland

Anthranilate synthase (AS) is an enzyme catalyzing the first step of the tryptophan biosynthesis. AS from *Streptomyces venezuelae* (SvAS) is of particular interest since it uses chorismate as a precursor in the biosynthesis of the antibiotic chloramphenicol. Our previous studies had found that the SvAS was active as a monomer and was competitively inhibited by tryptophan. The site-directed mutagenesis experiments also found that some residues on the TrpE active site of SvAS were highly conserved among anthranilate synthases and some others were not. In order to have better understand of the SvAS, the structural information is needed. Since the structure of SvAS is not available, the homology model of SvAS with both TrpE and TrpG active sites was generated by using the PHZE structure (PDB id 3R76 chain A), which shares 50% sequence identity with SvAS. The proposed homology model not only revealed the structure of SvAS but also gave the molecular

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interactions between chorismate and the TrpE active site, which were in good agreement with the experimental results observed in the site-directed mutagenesis experiments. This study will be useful for a rational molecular design of new antimicrobial agents inhibiting the anthranilate synthase.

**KEY WORDS:** Protein Structure Prediction, Homology modeling, Molecular Binding, Anthranilate Synthase, Antibiotics

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### Combining Statistical and Example Based Machine Translation

**Presenter's Name:** Bisola Kamara  
**Classification:** Undergraduate Student  
*Presentation Type: Poster Presentation*

**Coauthors:** Prashant Thapa, Christine Task, Mugizi Rwebangira

In today's globalized world, accurate machine translation is in greater demand than ever before, but has proven much more challenging than was originally envisioned. There may be many ways to translate a word to another language, and there are some words that cannot be translated from their native language. Statistical translators, such as Bing and Google Translate, are the primary tools used today on the internet to provide translations. They learn translation using examples from previously translated published works, automatically finding associations between the patterns in each language without having any explicit model of the language's grammar. However, not all information about a language is captured in these statistical models. Overall there are noticeable problems in statistical translators, such as Google Translate and Bing Translator. For some translation tasks, such as converting English to Korean, they often produce incorrect or awkward sentence construction or give the incorrect translations. This is important because the translation is misleading and it could possibly create barriers between people. Additionally, for people who rely on these sources to learn languages, they may waste a lot of time learning the language incorrectly. However, there are steps that can be taken to help solve this problem. In this project we are developing a post-processor which automatically identifies and repairs several common mistakes in online statistical translators. Our approach is to

use an alternative approach, called Example Based Machine Translation (EBMT) which manages to avoid several weaknesses of statistical machine translators.

**KEY WORDS:** translation, linguistics, statistical machine translation, machine translation, example based translation

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### Sirtuin Benchmarking Datasets in Drug Discovery

**Presenter's Name:** Sarah Ngeki  
**Classification:** Professional Student  
*Presentation Type: Poster Presentation*

**Coauthors:** Abdoul Kader Doudou, Joe Gongga, Jie Xia, Terry-Elinor Reid, Xiang Simon Wang

Over the past decade, research involving sirtuins (SIRT) has become popular in drug discovery. It has been implicated in the regulation of numerous biological functions including DNA repair, gene silencing and cell proliferation. Recent studies suggested that SIRT play pivotal roles in several pathogenic processes of neurodegenerative diseases and are also being considered as promising drug targets for developing cancer therapy. Sirtuins are members of class III histone deacetylases (HDACs) and to date are known to comprise seven isoforms, i.e. SIRT1 – 7. Increasingly advanced computational techniques like structure-based virtual screening (SBVS) are being applied to identify SIRT inhibitors. However a major pitfall of SBVS is there is no accepted standard for quantitative evaluation. Hence, benchmarking datasets have been adopted to evaluate screening performance and offer a way of making well-informed choices regarding the ideal approach to utilize. Herein we report a novel and robust approach to building benchmarking sets for SIRT. We have applied our specialized methodology to build the least biased benchmarking sets specific to SIRT. The approach involves the usage of a series of filtering strategies based on property matching between decoys and ligands followed by Leave-One-Out (LOO) validation. The distribution plots show the properties of ligands and decoys match well thereby making our benchmarking sets challenging for SBVS. The LOO validation curves are close to the random distribution which indicates low bias within decoy hence, circumventing enrichment bias.

**KEY WORDS:** Benchmarking, Sirtuin, In Silico, Decoy

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**Cheminformatic Modeling of CXC Chemokine Receptors**

Presenter's Name: Loan-Chi Nguyen

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Sylvia Lee, Bernadette Abadejos, Terry-Elinor Reid, Xiang Simon Wang

Human C-X-C chemokine receptors are members of the chemokine receptorome and belong to the 7-transmembrane, G-protein coupled receptor superfamily. They bind specifically to cytokines of the CXC family and mediate their activities. There are currently seven subtypes of the CXC chemokine receptor family, i.e. CXCR1 through CXCR7. As signal transducers they play an important role in the pathogenesis of multiple human diseases: CXCR1 and CXCR2 appear to operate in inflammation hence is associated with various cancers; CXCR3 has been implicated in wound healing; CXCR4 is one of the primary co-receptors by which HIV infects human T cells. Hence, CXCRs are viable targets for drug design and development. The objective of this project is to conduct cheminformatic modeling studies of the entire CXCR family for identifying novel and subtype selective scaffolds. To adequately explore the binding profile of CXCRs, we built multiple externally predictive quantitative structure-activity relationship models using machine learning algorithms such as random forest (RF), support vector machines (SVM), and Genetic algorithm k-Nearest Neighbor (GA-kNN). Robust and predictive models were used to screen large chemical libraries to identify novel and subtype selective ligands. Our results suggest a correlation between structure and activity exists for CXCRs ligands that can be determined by RF, GA-kNN and SVM. This is indicative of models with correct classification rate and linear fit greater than 0.70. The models developed are valuable tools for virtual screening, and can be used to tackle specificity issues of current CXCR antagonists which are the main cause of increased toxicity.

**KEY WORDS:** Cheminformatic, modeling, QSAR, CXCR, virtual screening

**Molecular Modeling Approaches to Combat Chaga's Disease: Differentiation of Drug Affinities for Modeled Tubulin Protein for Homo Sapiens and Trypanosoma Cruzi, and the Exploitation of these Differences to Attack and Eradicate the Parasite without Significant Side Effects to the Host**

Presenter's Name: Charles Ogindo

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Dr. Yayin Fang, Dr. Oladapo Bakare

Chaga's disease is caused by the protozoan parasite *Trypanosoma cruzi* which leads to cardiomyopathy and megasyndromes involving the gastrointestinal tract. The disease is incurable with high mortality rates that translate into hundreds of thousands of deaths per year. An effective drug would typically attack the parasite and remain innocuous to the host. An ideal approach would be to identify protein targets present only in the parasite or alternatively, to target analogous enzymes or proteins with three dimensional structures sufficiently different from the corresponding host proteins. Microtubules are essential for cell growth and division and its constituent protein,  $\beta$ -tubulin, has been a target for various treatments including cancer<sup>5</sup>. Despite high homology observed between human and *T. cruzi* isotypes, it is expected that the 3D structures would exhibit varying affinity toward common antitubulin drugs. Eight human  $\beta$ -tubulin isotypes were identified as encoded on the genes TUBB1, TUBB2A, TUBB2B, TUBB3, TUBB4A, TUBB4B, TUBB6, and TUBB8 for the proteins tubulin  $\beta$ -I,  $\beta$ -IIa,  $\beta$ -IIb,  $\beta$ -III,  $\beta$ -IV,  $\beta$ -IVa,  $\beta$ -IVb, and  $\beta$ -VIII, respectively. Human  $\beta$ -tubulin templates 1JFF, ITUB, and 3UT5 were used for modeling, and were downloaded from a protein data base. Three *T. cruzi*  $\beta$ -tubulin sequences used are, TBB-TRYCR, Q8STF3-TRYCR, and Q4DQP2-TRYCR. Models of *T. cruzi*  $\beta$ -tubulin have been generated for docking experimentation to identify suitable drugs for Chaga's disease.

**KEY WORDS:** molecular homology modeling, protein sequences, genes, tubulin, ligand docking

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**Using an SIR Model to Understand the Conditions That Cause Staphylococcus Aureus to Develop Resistance to Certain Treatments**

Presenter's Name: Lauren Prince

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Katharine Gurski

Staphylococcus aureus continues to be a health concern, specifically in community-associated and hospital-associated populations, such as nursing homes and athletic teams. The bacterial infection tends to proliferate in this type of setting due to transmission from skin-to-skin contact with an infected area, and as a result causes complications to those infected. As time passes, the bacteria become resistant to certain treatments for which it previously was sensitive. The specific strain under review is Methicillin-resistant staphylococcus aureus. In order to understand the conditions in which a strain of staphylococcus aureus would develop into a strain resistant to treatment, we created a system of differential equations using a susceptible-infected-removed (SIR) model and appropriate parameters. We did this by computing the reproduction numbers for the sensitive and resistant strains when a disease-free equilibrium was reached. In addition, we computed the equilibrium values of the system and the conditions under which the disease-free equilibrium would be linearly stable. Simulations using biologically plausible data were implemented through Matlab Mathematica. Future possibilities may be the application of this type of model to bacterial systems with similar characteristics.

**KEY WORDS:** SIR Model, mathematical model, Staphylococcus aureus, resistant bacteria, disease-free equilibrium

**Effects of Salt and pH on the Polymer Properties of Gene Transfection Agent Polyethyleneimine: A Molecular Dynamics and Dynamic Light Scattering Study**

Presenter's Name: Bria Rice

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Tasneem Abdus-Shakur, Rick Venable, Richard Pastor, Preethi Chandran

Polyethyleneimine (PEI) is a polymer that consists of carbon-carbon-nitrogen repeating units, whose nitrogen groups

may be protonated or deprotonated depending on the pH of the surrounding solution. In its more protonated states, the polycationic PEI screens DNA's negative charge, allowing DNA to fold into tight nanoparticles, which can readily be transported into cells by endocytosis. Our goal was to generate and validate a Molecular Dynamics model of the PEI backbone so that the DNA-PEI interactions leading to the formation of nanoparticles can be studied. The PEI model was built with a modified CHARMM force field with bond parameters derived by fitting quantum mechanics calculations performed by collaborators. The polymer conformations at various salt and charge conditions were investigated. We found that the radius of gyration (measure of backbone extension) and flexibility increased significantly with backbone charge, but not with salt concentration (0 – 100 mM) range. Our simulation results were validated against measurements of the polymers hydrodynamics diameter determined with Dynamic Light Scattering. We report a novel finding that the polymer's behavior deviates from worm chain dynamics at high protonation levels.

**KEY WORDS:** Computational Biology, Molecular Dynamic Simulations, DNA, Polymers, Nanoparticles, Complex Formation

**Trends in Maternal Mortality and Pregnancy-Related Death in the United States over a Six Year Period**

Presenter's Name: Amber Rideout

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

In the United States the concern regarding maternal mortality and pregnancy-related deaths is often overlooked and there is a lack of awareness in the way this affects our country. Maternal mortality is vaguely documented and as a result the exact causes and implications of death remain ambiguous. In effort to alleviate this ambiguity, the purpose of this research is to explore trends in maternal deaths to identify who and what contribute most to maternal mortality in the United States. This will be completed by computing data from the National Vital Statistics System files over a six year period (2005-2010). As well as through the analysis of U.S. current methods of recording pregnancy-related deaths; specifically this will be accomplished by exploring U.S. death certificate certification and ICD-10 codes (the 10th revision of

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the International Statistical Classification of Diseases and Health-Related Problems). It is expected to find the leading conditions of maternal deaths in the U.S. and the gaps in accuracy in reporting of these deaths. This will help to identify areas of concern to address when considering initiatives and efforts to lessen the maternal mortality rates we currently face as a nation, in order to reach goals presented in Healthy People 2020. This also will engage in education on the issue of maternal mortality enhancing outreach efforts towards general awareness of the issue.

**KEY WORDS:** maternal, mortality, pregnancy-related death, United States, health-statistics

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### **A Converter from LilyPond to MusicXML**

Presenter's Name: James Samotshozo

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Qamar Muhaimin, Christine Task, Mugizi Rwebangira

In this age of technology, computers have arisen as the best medium for music composition and production. They augment the music making experience, just as word processors assist and enhance the writing process. But since the emergence of computers in music composition, there has been a longstanding question: how can music be symbolically represented? As a tool for music composition MIDI has been the standard but, though still crucial in other areas, it has become less pertinent for composers. One of the major problems with MIDI is that, unlike modern text-based formats like MusicXML, it cannot effectively represent a musical score, which is basically sheet music with printed notation. MusicXML was made to facilitate the transfer of scores between composers. It heavily resembles regular XML/HTML and the syntax follows the same outline. However, unlike the syntax, 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. Fortunately there is an alternative format which does offer a consistent interpretation called LilyPond. LilyPond is a software solution for representing quality scores, which are graphical representations of music. In addition, this text-based software can convert MIDI files to its native format. The drawback is that it is not portable. The goal of this project is to bridge this gap by creating a converter from LilyPond to MusicXML.

**KEY WORDS:** music, XML, MusicXML, LilyPond, score

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### **Automated detection of social structure from transcripts of conversations**

Presenter's Name: Ayodele Taylor

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Andres Alarcon, Mohamed Chouikha, Lori Levin, Mugizi Rwebangira

The last several decades have seen a substantial increase in public electronic communication such as opinion forums, chat groups, and social networks. These methods allow people with different customs, cultures, and locations to virtually interact and cooperate much more easily than they could before. But there is also greater potential for malicious individuals to coordinate nefarious plots by these very same means. Hence there is a need to understand the social structure in online communities in order to detect or disrupt any malicious activities. Of course due to the massive amounts of data generated, it is impossible to manually analyze this information. Therefore, automated methods are the only viable approach. One of the active areas of research in this direction is identifying members of a subgroup using written conversations. The idea is to identify members of a community who have similar ways of thinking or have the same affiliation and who may be cooperating with each other. Another important problem is identifying the hierarchy of the members of a particular subgroup. The hierarchy of a group is important because it allows us to determine the most influential members of a group as well as the role and importance of each member in a group. In this project we develop methods for automatically determining the social structure of a group by analyzing transcripts of its conversations. We use techniques from linguistics such as linguistic accommodation theory. Our algorithms are tested on transcripts of the hit HBO TV show "The Wire."

**KEY WORDS:** social structure, hierarchy, power, The Wire, Dialogue

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**Specifying Melodic Features for Jazz and Swing Melody Evaluation**

Presenter's Name: Malcolm Williams

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Andrei Coronel

The success of an automated music-generating algorithm relies greatly on the fitness function that is used to score the generated music. This fitness function is generally based on music features that a given algorithm is programmed to measure. This study explores features that are important for melody generation by investigating those that can separate jazz from swing music based on melody. A machine-learning tool called JSymbolic was used to collect 160 standard features from 400 MIDI files. First we used a decision tree algorithm (C4.5) to select the important features, and then we ran Naïve Bayes and support vector machine classifiers. We also compared the C4.5 features and the specified features of Towsey et al. who identified 21 important features out of the 160 standard features.

KEY WORDS: Machine-Learning, Genre-Classification

**An Unbiased Method to Build Benchmarking Sets for Ligand-Based Virtual Screening and Its Application to GPCRs**

Presenter's Name: Jie Xia

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Hongwei Jin, Zhenming Liu, Liangren Zhang, Xiang Simon Wang

Structure-based drug design (SBDD) and ligand-based drug design (LBDD) are two main strategies in modern drug discovery. Due to the lack of crystal structures for important drug targets such as G protein-coupled receptors (GPCRs), much of the efforts have to rely on LBDD. Normally, as part of

the routine prior to the large-scale screening, the retrospective small-scale virtual screening based on benchmarking sets is conducted to choose the optimum screening method(s). For this purpose, the quality of benchmarking sets proves to be rather crucial. Unfortunately, because prior benchmarking efforts mainly focused on evaluation of structure-based virtual screening (SBVS) approaches, the direct application of the benchmarking sets and their methodology to ligand-based virtual screening (LBVS) causes bias in the assessment. Therefore, there is a great need in designing novel algorithms to reduce such biases and build benchmarking sets for LBVS. A novel method composed of three strategies was proposed, i.e. 1) analogs excluding; 2) a physicochemical properties-based strategy, mainly 'similarity in properties' ('simp')-based filtering and 3) a topology-based strategy, mainly 'similarity in structure difference' ('simsdiff')-based filtering. As a case study, this workflow was applied to build an unbiased ligand set (ULS)/unbiased decoy Set (UDS) for 17 agonists/antagonists sets of 10 representative GPCRs targets. Leave-One-Out (LOO) Cross-Validation (CV) based on MACCS 'similarity in structure' ('sims')-based VS shows there exists a significant "analogue bias" in a currently available GPCR benchmarking set, i.e. GPCR Ligand Library (GLL)/ GPCR Decoy Database (GDD) rather than in ULS/UDS. External validation based on function class fingerprints of maximum diameter 6 (FCFP\_6) fingerprint shows the same improvement in ULS/UDS. Besides, physicochemical property distributions within UDS match well to ULS, which illustrates unbiased feature in "artificial enrichment" of ULS/UDS as well. Our proposed method has greatly reduced the "artificial enrichment" and "analogue bias", thus successfully ensures good quality of benchmarking sets. We anticipate benchmarking sets of various GPCRs to be built by our proposed method will be substantially useful for modern drug discovery.

KEY WORDS: Modern Drug Discovery, Ligand-Based Virtual Screening, G protein-coupled receptors, Benchmarking Sets, Unbiased Ligand Set/Unbiased Decoy Set



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## Creative Arts & Design

### **How Gender Identification Influences Appearance and Major Selection**

Presenter's Name: Liana John

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

This study focuses on the connection between clothing and self-actualization, while considering academic specialization within the Howard University Division of Fine Arts. Scholarly journals have revealed that the self-actualized individual possesses traits of androgyny as supported by Abraham Maslow's Hierarchy of Needs (1943). It is through the use of this framework and the Bem Sex Role Inventory (BSRI) that students majoring within the Division of Fine Arts are surveyed to determine how characteristics of androgyny correlate with gender identity reflected through appearance and selection of major. The data was collected through an anonymous assessment via an online survey of the Fine Arts student body. After which a selection of student volunteers were interviewed on the basis of self-perception and gender identity. The findings from both research methods were categorized based on the aforementioned frameworks.

KEY WORDS: gender identity, androgyny, appearance, academia

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### **Uniting the Divided: Film as an Intervention for Rebuilding Family Relationships**

Presenter's Name: Jordan Stewart

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

According to *The Intentional Family* by Dr. William J. Doherty, "One-third of American families eat dinner together most nights, and they believe that family dinner is one of the most important ways to maintain family communication." However, what happens when a family does not have time to sit down and have family dinner? What happens to the communication within the family relationship? "Spanglish," a 2004 comedy romance drama film, analyzes the lives of two families living under the same roof with two different lifestyles. When Flor, a beautiful Mexican woman becomes the housekeeper of the Clasky family, the collision of cultures and customs highlights the devotion of one's family in the midst of internal family issues. This study analyzes the themes, motifs, and symbols in the film "Spanglish." Using this film, this study will explore discover how film as a therapeutic intervention can become a bridge to rebuild broken family relationships. Through qualitative research, this study will analyze the issues within diverse families and how the lessons learned in film can help rebuild and create change within different family relationships.

KEY WORDS: Film Rebuilding Family Relationships

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## Education & Outreach

### **The Fundamental Theorem of Miller: An Examination of Kelly Miller's Deanship at Howard University**

Presenter's Name: Lennex Cowan

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

The condition of the Negro in early twentieth century American society was an issue Kelly Miller, influential Afro-American mathematician and first Black Dean of the

College of Arts and Sciences at Howard University continued to fight against throughout his career. *The Heart of the Race Problem: the Life of Kelly Miller* by Dr. Ida Jones is the only comprehensive examination of Miller's life, but the book addresses the enduring question Miller has concerning his people in a broad and general way by looking at his entire life. Unlike Jones' work, this paper will delve specifically into Miller's perspective during his administration as Dean. This essay examines Miller's position on race as it becomes

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the foundation of his educational philosophy and how this philosophy becomes the seed in the development of the College of Arts and Sciences during the educator's time as a professor of Mathematics at Howard University; his time as dean; the period of his demotion from deanship; and the five years after Miller's retirement from the institution. Looking at this educational philosophy Miller conceptualizes through mathematic analogies he uses in most of his work, the paper will provide a crucial discourse on a pivotal intellectual in the interdisciplinary field of Africana Studies.

KEY WORDS: Math, Education, Africana, Kelly, Dean

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**Understanding how Concrete and Abstract Goals in Stories Impact Narrations to Wordless Picture Books**

Presenter's Name: Christina Crowder  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

Coauthors: Peta-Gaye N. Bullock, Chastity C. McFarlen, and Dr. Danielle D. Brown

**Background:** The pervasiveness of narratives in daily conversation, social interactions, and our interpretation of others' goals and behaviors make evident the importance of narrative comprehension (Berger, 1997; Graesser, Golding, & Long, 1991). The constructionist approach to narrative comprehension posits that comprehenders construct mental representations of narrative events (Graesser, Singer, & Trabasso, 1994). Despite evidence that suggests mental representations are impacted by variations in goal plans (Trabasso et al., 1992), little is known regarding which characteristics of goals affect comprehension processes and how they impact the construction of mental representations. The current study observed adult narrations to two wordless picture books and how differences in the tangibility of the goal object (i.e., concrete or abstract) impacts goalbased mental representations. **Methods:** Two wordless picture books were created with varying goal object tangibility. Twenty-three adults were recruited to narrate both books. Based on data from all participants, we depicted the mental representations required to comprehend each book. These qualitative analyses show similar structures in the mental representations. Specifically,

each narrative has a main goal that leads to subordinate goals. Successful outcomes of subordinate goals enable attempts at the main goal. **Conclusion:** The current study contributes to a body of literature examining how the tangibility of characters' goals impacts adults' narrations to wordless picture books. This study has implications for operationally defining narrative complexity. Based on data from all participants, we have depicted the mental representations required to comprehend each book. These qualitative analyses show similar structures in the mental representations.

KEY WORDS: Narratives, Narrative Comprehension, Tangibility, Adult Narrations, and Goal Structures

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**Evaluation of Professionalism Culture Post-implementation of an Innovative Professional Development Program**

Presenter's Name: Kierra Dotson  
 Classification: Professional Student  
*Presentation Type: Poster Presentation*

Coauthors: Ikechukwu Oji, Oluwaranti Akiyode

Pharmacy was once a profession solely concerned with the safe, accurate and efficient distribution of drug therapy. Presently, the profession also focuses on the delivery of patient-centered care. This renewed approach forces the pharmacist to assume responsibility and accountability for medication therapy outcomes while working in a collaborative team effort. Professionalism is critical to the delivery of patient-centered care and striving towards becoming "the best pharmacist in the world." It is essential that both pharmacy schools and students realize that there is an expanded sense of professionalism to be embodied in order to perform in the renewed pharmacist role. The purpose of this cross-sectional study is to evaluate the impact of an implemented Professional Development Program, which took place over the academic year, and its role in cultivating professionalism amongst pharmacy students. This program consists of professionalism seminars, newsletters, class chairpersons, and certification workshops. A survey containing 30 questions that concentrated on professionalism outcomes as a result of participation in the Professional Development Program was administered to the College of Pharmacy student body (n=P1,P2,P3,P4).

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A change in professional culture was defined by a trend of positive agreement (“strongly agree” and “agree”) using a 5-point Likert Scale. This survey will aid in determining if the various aspects of the program have been crucial in improving the professional attitudes and behaviors of pharmacy students. Through this research, it is expected that the professional behavior of College of Pharmacy students would improve and translate to the practice of pharmacy.

KEY WORDS: professionalism, professional, pharmacy, patient-centered care, pharmacist

**Senior Year Pharmacy Student's Opinion and Knowledge of New Treatment Guidelines**

Presenter's Name: Shanu Eapen

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Dejene Woldemariam, Bisrat Hailemeskel

**Introduction:** Healthcare professionals are expected to update their treatment guideline knowledge regularly to provide efficient patient care. However it is not sure how many of those healthcare students actually update their knowledge of treatment guidelines regularly. **Objective:** The objective of the study is to determine knowledge and opinion of senior doctor of pharmacy students in keeping up with new or updated treatment guidelines. **Methods:** The target population was fourth year pharmacy students of Howard University and 35 (57.3%) of them participated. A survey consisting of sixteen questions with ten “Opinion Questions” and six “Knowledge Questions” administered. **Results:** The mean score for knowledge question section was 3.17 (52.8%) with a range of one to five. About one out of five (17.1%) of the participants said were not familiar with the term treatment guideline. Although 77.1% said it is important to update themselves on new guidelines, only 48.6% of them said they are able to keep up with new guidelines. About three-fourth (71.4%) of them said the length of the guidelines discourages them from updating their knowledge. Overwhelming majority (94.1%) of the students prefer to have instructors include treatment guideline updates and 54.3% said it is the responsibility of the professors to update them. **Discussion/Conclusion:** Lack

of familiarity with treatment guidelines (17%) and lack of initiative to update their knowledge by themselves (54.3%) prevents students from effectively keeping up with new treatment guidelines. This apathetic attitude can negatively affect the students' ability to provide effective patient care after graduation.

KEY WORDS: treatment guidelines knowledge pharmacy students

**Evaluation of assessment tools utilized in the experiential program: a decade in review**

Presenter's Name: Alexandria Edwards

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Lanszie Jean-Pierre, Dr. Salome Weaver

The American College of Pharmaceutical Education (ACPE) outlines the competencies to be mastered by each institution with a doctor of pharmacy degree program. However, there is not a universal method to evaluate the mastery of each competency. As a result, many institutions have chosen to implement their own tools. The goal of this research was to analyze the assessment tools used in the Introductory Pharmacy Practice Experiences (IPPE) and Advanced Pharmacy Practice Experiences (APPE) programs among U.S. colleges of pharmacy and schools of pharmacy. As a retrospective literary review, PubMed and Scopus were used in order to find articles within a 2002-2012 timeframe relevant to the research topic. The results showed a variety of tools have been implemented across the United States in order to properly analyze the effectiveness of IPPE and APPE. In relation to IPPE, these include exams, OSCE, evaluations, student-faculty mentoring, and the incorporation of professionalism throughout the curriculum. In terms of APPE, evaluations were the primary tool used. The result of the study illustrated that while there is no set standard for evaluating preparedness, institutions use a variety of tools for IPPE while relying heavily on evaluations in assessing APPE preparedness.

KEY WORDS: pharmacy assessment, IPPE, APPE, methodology, United States

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**Jumpstart: Case study of service achieving general education learning outcomes**

Presenter's Name: Rochelle Ford

Classification: Senior Faculty

*Presentation Type: Poster Presentation*

Coauthors: Charles Prince, Ali Erol

In 2013, Howard University's Undergraduate Studies Committee recommended 21 new learning outcomes for the university's new general education program. These were based on Liberal Education And America's Promise's (LEAP) national standards for all undergraduate students called Essential Learning Outcomes (ELO) That should be achieved before graduation through curricular and co-curricular programs offered through colleges and universities. Jumpstart, An AmeriCorps Grant Program that partners Howard students to work with pre-school aged children in low-income early learning programs in Washington, DC provides an opportunity for Howard University students to help the community and achieve educational learning outcomes. Through the collection of indirect and direct assessment measures of learning in 2013, students engaged as Jumpstart Corps Members reported achieving many of those 21 learning outcomes. Some of the outcomes achieved include competencies in critical thinking and problem solving, creative thinking, ethical reasoning, oral communication, intercultural knowledge and foreign language competency, African Diaspora awareness, teamwork, and integrative and applied learning. This pilot case study (qualitative self-reports and field observations) shares the assessment process and results of this pilot case study on how this service project might be used to achieve learning outcomes. Other Service and co-curricular programs may chose to assess learning in their programs to determine the impact of service on general education learning outcomes of LEAP's Essential Learning Outcomes.

KEY WORDS: service-learning, general education, assessment,

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**Hip Hop Music in the Classroom: A Motivational Tool for African American Student Success in School?**

Presenter's Name: Felicia Gangloff-Bailey

Classification: Graduate Student

*Presentation Type: Poster Presentation*

This case study examined the effects of a hip-hop integrated classroom on the motivation of African American high school students. African American students from a public charter college preparatory high school in Northeast Washington DC were observed as they participated in their hip-hop integrated digital arts classroom. Results supported the hypothesis that students were motivated through interest in hip-hop to learn and succeed academically. Findings and future research discussed the importance of motivation and hip hop integrated instruction as a culturally relevant teaching strategy that can be beneficial for the promotion of learning and academic success for African American adolescents, the use of hip-hop as a concentration tool, and the significance of resiliency.

KEY WORDS: Hip-Hop, Motivation, Interest , Engagement, African American students

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**Community Voices for Health Expansion Project**

Presenter's Name: Avis Graham

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

Coauthors: Verona Mulgrave

This project was designed to train school foodservice vendors and self-prep employees of public and charter middle schools in the District of Columbia, in menu writing and food preparation techniques for preparing recipes that reflected the diversity of the students they served. Included in the training was 'Nudge Technique' for creating an inviting environment in the school cafeteria, and displaying food in a manner that encouraged acceptance by the students. The process involved preparing cycle menus for four cultural themes: Soul Food, Asian, Latino, and Italian. Recipes for the menus were obtained from the USDA approved recipe list for the National School Lunch Program, and were in compliance with the guidelines of the Healthy Schools Act, Healthy US School Challenge, and the 2010 Dietary Guidelines for Americans. Prior to the

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training the recipes were prepared and taste tested by faculty, staff, and a representative sample of middle school students for acceptability. Evaluation of the results of the training included the extent to which the cultural themed menus and/or recipes were incorporated into the new menus at the beginning of the school year, 2013-2014, and the extent to which nudge techniques were adopted. The menus reviewed came from vendors and self-prep schools. Sixty percent of the menus from vendors incorporated cultural themed menus or recipes into their menu offerings and implemented nudge techniques. Fifty percent of self-prep schools incorporated cultural themed menus or recipes into their menu offerings while 100% implemented nudge techniques.

KEY WORDS: School lunch menu diversity

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**Relationship Impact and African American Males' Response to Health Care Practitioner Recommendation**

Presenter's Name: Lennox Graham

Classification: Junior Faculty/ Lecturer/ Instructor

Presentation Type: *Poster Presentation*

This phenomenological research study was conducted to explore and identify reasons African American men comply or do not comply with the medical recommendations of their health care practitioner. The research sample was 20 African American men living in Baltimore City, Maryland, who visited their health care practitioner within the past year. Open-ended, objectively phrased interview questions were used for this study, which allowed participants to respond with their own words to describe their decision making regarding their health care practitioner's advice. Invariant themes were revealed by data mining. Three clusters of themes emerged: relationship, apprehension, and trust. The research revealed participants viewed the doctor-patient relationship as critical in establishing trust and respect and in building rapport. Participants felt these elements would serve to promote patient compliance to their health care practitioner's recommendations.

KEY WORDS: African American Health-care Practitioner

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**Acclimatization and Integration: An exploration of the experiences of the African immigrant teachers in the DC metropolitan area public schools**

Presenter's Name: Judith Imoite

Classification: Graduate Student

Presentation Type: *Oral Presentation*

Globalization is a reality and we see its effects more dominantly in our lives now than ever before (Papastephanou, 2005). In an increasingly globalized society, the number of professionals, including teachers working in foreign countries has increased. Increased immigration has resulted in greater linguistic and cultural diversity in the society, especially in metropolitan areas which attract the majority of newcomers and their children. As a result, students in schools and colleges are becoming increasingly diverse. There is therefore an urgent need for a teaching force that reflects the multicultural student body in the public education system in the United States (Quincho & Rios, 2000).

**Research questions**

1. What pathways do African immigrant teachers follow as they transition from teaching in their home countries to teaching in U.S. urban schools?
2. What professional and contextual experiences impact their teaching efficacy within the U.S. classroom?
3. What challenges do immigrant teachers experience in U.S. urban schools?
4. What factors contribute to the persistence of African immigrant teachers within the U.S.?

Research Design This research will follow a phenomenological study design. The researcher will use the snowballing technique to recruit eight teachers (N=8). For data collection, the researcher will use one on one interviews and a focus group. NVIVO 10 will be used for data analysis. The study will be driven by Lysgaard's U-Curve Theory of Adjustment and Berry's theory of acculturation.

KEY WORDS: immigrant, teachers,acclimatization, Integration, acculturation

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**Professionalism Among Professional Health Sciences Students**

Presenter's Name: Porscha Johnson

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Danielle DelVillano, Oluwaranti Akiyode, Mary Maneno

The objective of this cross sectional study was to assess and analyze the differences in the level of professionalism across the following health science disciplines: pharmacy, medicine, dentistry, and nursing. Once identified, the areas of weakness will be effectively addressed in order to strengthen the level of quality healthcare and patient satisfaction through professionalism awareness and application. An 8 week cross sectional study was conducted between October and November 2013. A validated questionnaire consisting of 18 questions addressing professionalism was administered in classroom lectures to graduate and professional students studying pharmacy, medicine, dentistry, and nursing. Study variables included participants' sociodemographic characteristics and professionalism. Professionalism was defined by the level of positive agreement ("strongly agree" and "agree") with the scenarios presented in the 18 question survey instrument using a 5 point Likert scale. According to the data collected using the 18 question survey instrument, nursing has the highest percentage of positive agreement and, in turn, the highest level of professionalism among the 285 health sciences students who participated. Utilizing the interpretation of the results, professionalism seminars will be developed to address and identify strategies for correction of each health science discipline's area(s) of weakness in regards to professionalism and their pursuit of providing quality healthcare.

**KEY WORDS:** professionalism, health sciences students, survey instrument, healthcare, patient satisfaction

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**Ease of Access to and Availability of Drug Information on Selected Free Websites.**

Presenter's Name: Kin-Sang Lam

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Sharon Ihezue

The goal of this study is to explore the relationship of availability and perceived ease of use of six selected web-based drug information resources (Rxlist, DrugDigest, Medscape, MedicineNet, Drugs.com, and MayoClinic.com). A sample of 61 first year pharmacy students completed a survey as a part of their Drug Informatics class assignment. The survey was graded for accuracy and analysis performed to determine the correlation between users' rating on ease of use and the total percentage score on correct responses. Majority of the pharmacy students were in the age group of 20 to 25 (52.5%) holding a Bachelor's degree (60.7%) and had 0 to 2 years of work experience (65.6%). Students answered questions with the most accuracy with Drugs.com (Mean =  $9.3 \pm 1.4$ ) and the least accuracy with Medscape.com (Mean =  $7.8 \pm 1.7$ ). Medscape.com. Drugs.com was rated the easiest to use (Mean =  $4.2 \pm 0.92$ ) and MayoClinic.com was rated the most difficult to use (Mean =  $3.5 \pm 1.02$ ). Drugs.com had the highest positive variance score and Medscape.com had the highest negative variance score (-.77). Medscape.com ( $r = 0.279$ ,  $p = 0.03$ ) and Drugs.com ( $r = 0.256$ ,  $p = 0.046$ ) had a significant weak positive relationship between the total scores and the corresponding ease of use rating by students. In this study, there is no strong correlation found between the ease of use rating and total score. It is concluded that the ease of use of the Drug Information databases assessed in this study may include factors other than just the availability of the information. Future studies need to be conducted to determine what these factors are to help understand how users perceive the ease of use of health information databases.

**KEY WORDS:** drug, pharmacy, informatics, informaiton, reference

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A B S T R A C T S

**Prevalence of Sickle Cell Disease and Trait in the Metropolitan District of Columbia Area General Population**

Presenter's Name: Xiaomei Niu

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Xiaomei Niu<sup>1</sup>, Simon K. Mugerwa<sup>1</sup>, Angela Mason<sup>1</sup>, Tatiana Ammosova<sup>1,2</sup>, Barbara Harrison<sup>1,3</sup>, Juan Salomon-Andonie<sup>1</sup>, Sergei Nekhai<sup>1,2</sup>, Patricia A. Oneal<sup>1,2</sup>

**Background:** Sickle Cell Disease (SCD) is an inherited recessive disorder that predominantly affects populations of African descent, with about 90,000-100,000 patients in the US. It is estimated that 8% of African-Americans are carriers of a single defective hemoglobin gene, usually sickle cell trait (SCT). The purpose of our analysis is to understand the prevalence of SCD and SCT in the DC area and identify and inform individuals who carry the sickle cell gene in the general population. **Methods:** The retrospective study data was acquired between 2008-2013 from free walk-in screenings at Howard University Hospital and community-based health fairs in the greater metropolitan area. All individuals participated in the screening voluntarily, with no restrictions on age, demography, gender, and ethnicity. Testing was completed in the Clinical Laboratory Improvement Amendments (CLIA)-certified laboratory at the Howard University Center for Sickle Cell Disease. The hemoglobin variant (F, A, A2, S and C) levels were determined by electrophoresis and high performance liquid chromatography. **Results:** We collected 2,400 blood samples. The median age was 50 years old. 35% of the participants were male, 87% self-identified as African-American. 50% were from DC, 41% were from Maryland, and the remainder was from 25 other states. 286 cases of HbAS or HbAC (12%) and 11 cases of different forms of hemoglobinopathies (0.45%) were identified by the screening. **Conclusions:** SCD and SCT is still a major public health concern. A critical challenge is promoting the public awareness of the prevalence and risk of having SCD, SCT or other hemoglobinopathy carrier.

KEY WORDS: Sickle trait prevalence hemoglobinopathy inherited

**No Pain! Great gain!! Improving pain management in Howard University Hospital**

Presenter's Name: Jennifer Obi

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Oral Presentation*

Coauthors: Anand Deonaraine, Joan Pearson

Pain is inevitable. Poor pain management in hospital settings is known to be associated with slower recovery, greater morbidity, and longer lengths of stay, lower patient satisfaction, and higher costs of care. This suggests that optimal pain care in these settings is of utmost importance in promoting acute illness management, recovery, and adaptation. We explore the various causes of delays in pain management at Howard University Hospital from the Nurses perspective via a closed ended questionnaire and propose solutions based on their suggestions. Overall, doctors and pharmacists were listed as the major causes of delays. Improvement recommended include hourly rounding, Soarian pain management order sets and pain management education. The ultimate goal of this quality improvement research is to boost our Press Ganey scores in the area of pain management.

KEY WORDS: Quality Improvement project:pain management

**Bi-Lingual ESL Interfacing: Challenges and Triumphs Encountered and Surmounted in Rendering Tertiary Instruction**

Presenter's Name: Jean Purchas-Tulloch

Classification: Senior Faculty

*Presentation Type: Oral Presentation*

This research will address the challenges and triumphs encountered in the instruction of English as a Second Language (ESL) students at the tertiary level. Although references will be made regarding the rendering of this instruction at other educational levels, priority focus will be given to various pedagogical components as they pertain to the Brazilian Mobility Program (BSMP) 2013-2014, here at Howard University. This presentation will highlight the progress of this pioneering joint venture between Brazil and Howard University. Discussion will trace the continuum from where

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this joint venture began to its current status. Recommendations and suggestions for the future and for the propagation and replication of this and other similar programs with this and other ESL populations will be outlined and presented.

KEY WORDS: Bi-Lingual ESL Interfacing Tertiary Instruction

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**An Outdated System: The Need for Public Education Reform in Detroit, Michigan**

Presenter's Name: Larry Sanders  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

Detroit's problems can be linked to an abundance of issues, but none arguably more important than its failing public educational system. In *Politics in States and Communities*, Thomas R. Dye and Susan A. McManus (2012) write that approximately 11 percent of the country's adult population had earned or were working toward college degrees, while that number had risen to 27 percent by 2007. Undoubtedly, that percentage continues to trend upward, and there are statistics displaying the importance of education on socioeconomic success. The eighth-most populous state in the United States, Michigan only has the 34th-highest per capita income and 34th highest percentage completing college, respectively, in the country (Dye, McManus, 2012). As a greater microcosm of the issue, Detroit – Michigan's largest and most populous city – has become a key example of the effects of poor education. In 2011, the National Institute for Literacy estimated that 47 percent of Detroit's residents are functionally illiterate yet still obtained their high school diplomas (Detroit Regional Workforce Fund, 2011). Economists have repeatedly contended that economic growth, which is directly tied to educational growth, principally involves an advancement of the working class; with this, it is clear Detroit cannot rebound from its current state without providing better education for its students. Detroit's current issues can be traced to its approach toward education: the standardization of education, the lack of relevant educational programs, poor tertiary education preparation, and mediocre educational leadership must be transformed so that Detroit's public schools can be of greater service to its students past, present, and future.

KEY WORDS: public education reform detroit michigan

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**Organizational communication and its effects on Howard University students**

Presenter's Name: Jerel Saul  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

This research examines the effects of Howard University's organizational communication on the academic progress of its students. Since communication is a fundamental aspect of every organization, it is highly important to understand its implications on the various elements within the organization of Howard University. This research utilizes academic journals on organizational communication to determine the effects of efficient and inefficient organizational communication. The sampling techniques used in this research will be surveys, which will be distributed to 80 Howard University students. It is anticipated that poor organizational communication will have negative effects on the academic progress of Howard University students while effective organizational communication will prove the contrary.

KEY WORDS: Organizational Communication, Academics, Howard University, Students

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**Getting back to the basics: Advocating for social justice in our schools through the Organic Home-School-Community Model**

Presenter's Name: Rufus Spann  
 Classification: Graduate Student  
*Presentation Type: Poster Presentation*

Coauthors: Jerez Roberson Mitchell

Due to over population, poverty, cultural diversity, and community violence, urban school systems face unique physical and demographical challenges that suburban and rural school systems do not typically endure. Bodies of literature suggest that problems that are propagated within the community are also perpetuated within the school environment. To combat this phenomenon, several government supported interventions are created and implemented to provide a sense of respite for the community. However, this refuge is not enduring due to temporary fixes and defaulted promises. To rectify this social injustice, the theoretical Organic Home-School-Community Model (OHSC Model) relies on a



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community staple that has been reared in the community and simultaneously taps into the pulse of its residents. The OHSC Model is based on the home-school-community model and the ecological model. Understanding the intersectionality of these models is pivotal in addressing the issues that span the epoch of the urban educational system nationwide. This dialogue will lead to a platform that identifies issues while increasing awareness. Additionally, it will engage students and practitioners by increasing social consciousness while concurrently providing the fundamentals of the OHSC model that address the resources needed for diverse demographics. The model will illustrate culturally specific constructs of self-identity, empowerment, and positive self-image. The OHSC Model offers the structure needed to attend to the rampant urban school system concerns.

**KEY WORDS:** School/ Community Based Model, Education, Interventions, School Psychology, Cultural Diversity

### Using Peer Educators to Address Childhood Obesity in the District of Columbia

Presenter's Name: Linda Thompson

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

A 2007 report by the Trust for America's Health found more than half (51.9%) of poor children in the District of Columbia (D.C.) are overweight or obese. Geographic areas (Wards) in the District that are predominately African American and low-income have been the most impacted with childhood obesity. A Peer to Peer Educator Program was developed by Summit Health Institute for Research and Education, Inc. (SHIRE), to educate residents of a low income Ward about childhood obesity prevention. Ten peer educators were recruited from Ward 8 and received training from a culturally appropriate childhood obesity prevention curriculum. The peer educators conducted a minimum of 30 community based childhood obesity prevention presentations. Post-presentation survey feedback from community presentation audiences was very positive. On a scale of 1-10 where 10 indicated the highest positive rating, 71% percent of participants rated the presentations a 10, 13% rated them a 9, and 16% rated them an 8. In addition, at least 95% of respondents affirmed that after listening to the presentation there were additional things

they could do to help prevent or reduce obesity and make better nutritional choices for themselves and their family. Peer educators were shown to be a viable vehicle to disseminate information and awareness of health issues to members of their community. Further research is needed to determine the long term impact of peer educator interventions.

**KEY WORDS:** Peer Educator, Childhood Obesity, Community

### Inexpensive IT solutions for Teaching of Clinical Anatomy and Radiology Correlation

Presenter's Name: Irieon Walker

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Ojore Jones, BS<sup>1</sup>, Claude E. Guerrier MS<sup>1</sup>, Jean Sebastien Rowe, BS<sup>1</sup>, Faezeh Razjouyan, MS<sup>2</sup>, Iman Boston, BS<sup>1</sup>, Brittney Williams, BS<sup>1</sup>, Vanessa Pinard, BS<sup>1</sup>, Barun Aryal, BS<sup>1</sup>, Najeeb Crossley, BS<sup>1</sup>, Ikechukwu Amobi, BS<sup>1</sup>, Crystal Babb, BS<sup>1</sup>, Rebekah Belayneh, BS

Teaching the skill of image interpretation and imaging software navigation is important to training physicians. Initiating these skills early in medical training could have an important impact on performance on licensing examinations, acquiring clinical competencies, patient safety, patient satisfaction, and medical care quality by enhancing effective communication between radiologists, referring physicians, and patients. Medical education is undergoing a major paradigm shift towards the vertical integration between the basic and clinical sciences. Thus, a major goal of vertical integration is transferring the knowledge gained during the basic science years into clinical applications and skills. The third year of this multi-year project introduces an expanded Radiographic Skills Module. **Content Organization:** We will review, describe and discuss:

1. Inexpensive IT solutions for computer based clinical radiology and clinical anatomy learning.
2. Evaluations of preclinical independent learning from a comprehensive Radiographic Skills Module that uses video tutorials, testing with interactive group quizzes, using Top Hat classroom-response system (<https://tophat.com>), and emphasizing radiographic reasoning and navigation of DICOM viewing software.

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3. Results of three years of experience with our inexpensive IT solutions using surveys.
4. Evaluations of the didactic value of this teaching model using classroom and licensing exam performance.

**Summary:** While using inexpensive IT tools, students are becoming more comfortable with multiple imaging modalities that enhance retention of clinical anatomy in addition to improving future communication with radiologists. Prospective phases of this multi-year project will include studying the impact of this early exposure to radiology on clinical rotations and residency experience.

**KEY WORDS:** Medical education, Radiologic anatomy, Video-based education, Radiology

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**The Impact of Classroom and Instructional Quality on the Expressive Language of African American Preschoolers.**

Presenter's Name: Chakoria Wells

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Greg Reed, Ph..D.

Pre-K and early childhood education programs are largely designed to stimulate growth and promote the early social, and cognitive abilities of children. The overarching goal of these programs is to improve the academic trajectory of young children, particularly with regard to at-risk populations (i.e., children from impoverished or diverse backgrounds). One of the most significant predictors of academic success is a child's language development, specifically, their vocabulary. The PPVT and EVT are widely accepted measures of language development and vocabulary. This study evaluated the performance of African American children on the Expressive Vocabulary Test (EVT-III) and how their overall Expressive language skills compares to African American and Caucasian children from the standardization sample. The study also examined how much expressive language growth did they show over the year (from pre to post).

**KEY WORDS:** Vocabulary, expressive, language Instructional quality

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**The Value of Occupational Therapy in Primary Care as Part of an Interprofessional Medical Missionary Team**

Presenter's Name: Sarah Wetmore

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Kimberly Hagwood, Erika Haley, Brittany Muse, Shardae Portee, Lanita Sumpter

The purpose of the research study is to explore the self-perceived value of occupational therapy as a contributor to an interprofessional medical missionary team. Through a non-experimental survey research design, this study explores the perceived role of occupational therapists as a part of a medical missionary team in primary care. One hundred surveys were distributed to registered occupational therapist in the USA. Results from the study were analyzed using SPSS version 21 and will be used to better understand how occupational therapy can bring value to a medical missionary team.

**KEY WORDS:** occupational, therapy, missionary, medical, primary

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**(Re)inscribing Meaning: An Examination of the Effective Approaches, Adaptations and Improvisational Elements In Closing the Excellence Gap for Black Students**

Presenter's Name: Amy Yeboah

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

From great African nations as the Ancient Kemites, Akan and Gikuyu, the world witnessed the development of the most powerful social structures, governance systems, groundbreaking innovations in science and technology, and systems of thought that still exist today. Hence, in looking at the low performance levels of Black students today, the question becomes, how do the descendants of those who created writing, mathematics, and science; and then in the face of episodic disruptions laid their lives on the line to read, write, and built public schools, Sabbath schools, and Historically Black Colleges and Universities, close the excellence gap between their actual performance and deeply rooted cultural expectations? While embracing the essential questions and solutions of closing the excellence gap that has been raised by previous generations

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of scholars, this study examined answer to the question, using the methodological framing questions of Africana Studies’ to examine the long-view experiences of African people, and a three tier critical ethnographic research methods approach. The results in analyzing the childhood experiences of African people across the Diaspora reveals student gain a level of excellence in the face of disruption through: (1) Collective Training, (2) Spiritual and Moral Balance, and (3) Content Mastery. The prerequisite for sustaining educational excellence is in the individual roles female and male representatives and the collective Black Family demonstrate in being the primary

educators of Black children. Secondly, nurturing a sense of identity through a spiritual understanding of social order and moral responsibility to the collective is also a requirement. Nevertheless, what unites and emerges, as the chief element is content mastery. The ability to retain and keep content through listening and reading completes the reciprocal process of educational excellence.

KEY WORDS: Education, Teaching, Learning, Africana, Achievement Ethics & Religion

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## Ethics & Religion

### **The Role of Muslim Women Scholars in Family law Reform in Morocco**

Presenter’s Name: Zainab Alwani

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

The divergence between Islamic law in theory and Islamic law in practice is the result of how Islamic family law was written into state law in the 19th and early 20th centuries throughout the Muslim world. A growing body of scholarship suggests that the process of legal codification was both selective and partial (Hallaq 2009; Tucker 2008). Far from advancing the legal status of women, legal codification actually narrowed the range of rights that women had access to in classical Islamic jurisprudence (Quraishi and Vogel 2008; Sonbol 2008). Hence, for Muslims, the sphere of family law is regarded as a fundamental stronghold for religious values, and any concessions to perceived Western influence therein are met with particularly vociferous resistance. This paper aims to: (1) examine the wave of changes in the approaches to Islamic jurisprudence, contemporary interpretations of Islamic texts related to women in order to advance women’s rights; (2) document the voices of Muslim women scholars and their work on Islamic family law, and their contributions to Islamic jurisprudence in general including the Mudawana reforms in Morocco (2004); and (3) Study and analyze how these legal aspect influence Muslim women socioeconomic reality. The paper also seeks to outline the most promising strategies for advancing gender justice in Islamic states and beyond. The paper

will conclude by discussing failed reform strategies, outlining effective reform strategies, and exploring the role of sharia on gender justice, family stability and societal development.

KEY WORDS: Islam, Muslim women scholars, Family law, Morocco, Islamic Jurisprudence

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### **Hegel on Crime, Self, and Community**

Presenter’s Name: Brandon Hogan

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

If we are to reform our punishment practices, we must first develop a clear conception of crime. In this paper, I develop a conception of crime grounded in Hegel’s political philosophy. For Hegel, persons are only free to the extent that they are recognized as such by other free persons. For Hegel, it is the role of the state to articulate and enforce laws that facilitate reciprocal recognition, and, thus, political freedom. Given this conception of the relationship between recognition and freedom, Hegel is able to offer a simple and compelling conception of crime. For Hegel, a crime is a specific instance in which one fails to recognize another. The assailant fails to recognize his victim as the owner of her body, and the thief fails to recognize his victim as a person entitled to own property. In both instances, the crime, the failure to recognize, undermines the victim’s status as free. Here I explicate Hegel’s conception

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of recognition and explain in greater detail the conception of crime Hegel provides in his Philosophy of Right. I conclude by drawing attention to a seemingly paradoxical implication of the Hegelian conception of crime: the criminal, in failing to recognize his victim, actually harms himself as well as the victim. This is an implication that Hegel does not emphasize, but one that we must take into account if we are to articulate not only a Hegelian conception of crime, but also a Hegelian conception of punishment.

KEY WORDS: Criminal Justice, Hegel, Punishment, Recognition, Political Philosophy

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**Microfinance: The New Storehouse in Our Contemporary Society**

Presenter’s Name: Sheena Hutchinson  
 Classification: Professional Student  
*Presentation Type: Poster Presentation*

Can the Church use the framework of microfinance to help the marginalized poor? Microfinance is the supply of loans, savings, and other basic financial services to the poor. Usually the microfinance loans are given to women to start small businesses in their communities. The microfinance model has been around for hundreds of years, and has been utilized in countries around the world. Faith communities and/or institutions should provide services to help empower families and communities. In the Hebrew biblical scriptures, the storehouses were barns, granaries, storerooms and treasuries that were used to help individuals when there was a famine or lack in the land. Therefore, the concept of the “new storehouse” is an innovative way of thinking about the term “storehouse.” The “new storehouse” should be a model used in our contemporary society to help the marginalized poor to become entrepreneurs to empower their communities. Oftentimes, our conceptualization of the term “storehouse” is limited to tithes and offerings in the scripture. However, in our contemporary society we can bridge the “new storehouse” with microfinance. This research seeks to discover ways to access resources and develop communities locally and globally through microfinance in our contemporary society.

KEY WORDS: Microfinance, Poor, Storehouse, Church, Contemporary Society

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**Feminism**

Presenter’s Name: Victoria Lockhart  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

Feminist theory emerged from feminist movements. The movement aimed to understand the nature of gender inequality by examining women’s social roles and life experience. It has developed theories in a variety of disciplines in order to respond to issues such as the social construction of sex and gender. Black feminism argues that sexism, class oppression, and racism are inextricably bound together. “Women, they existed not for themselves, but for men, they were not beings, they were relations and these relations were enflamed with mystery and secrecy”(Du Bois 95). In W.E.B Du Bois chapter titled, “The Damnation of Women”, he desires to promote women by acknowledging their labor in the home, the workplace and the black church. This chapter in Darkwater has been described as one of the first pro-feminist analysis by a male intellectual. In the chapter, Du Bois gives the black mother even more glorification for her role as child bearer. He supports his claim of the glorification of the black mother through African history, “Everywhere in Africa, I have noticed that no greater affront can be offered a Negro than insulting his mother,”(Du Bois 97). Du Bois also believes women need to seek a life of economic independence, so he argues that women have a right to control their own bodies and reproductive choices. Du Bois describes the future women as a Michelle Obama, or a Hillary Clinton, a woman with knowledge, life, work, and economic independence to display her great success. This presentation will argue that black women are positioned within structures of power in fundamentally different ways than white women. It will also describe how African American women have overcome sexism, oppression, and racism, while retaining modesty and womanliness.

KEY WORDS: feminist theory, gender inequality, African American women

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## A B S T R A C T S

### **Bridging the Gap of Silence: An Examination of The Book of Enoch and its Influence in the Development of Ethiopian and Early Christianity**

Presenter's Name: Rhonda Rhea

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Ethiopia as a cultural center served a major role in the existence and development of Christianity. For centuries, the study of Christianity has overwhelmingly produced gaps of silence as it relates to the development of Christianity in general and in Ethiopia, specifically. According to the well-established and accepted theological research position, there is insufficient scholarly or historical data which establishes Christianity in Ethiopia prior to the third century. This research project challenges these established and accepted theological norms through the examination of The Book of Enoch. **Methods:** This research examines and brings forth the specificity of Ethiopian Christianity. The research will

focus on Ethiopia's early contact with Jewish Christians from Syria, Palestine, and Jerusalem. The connection to The Book of Enoch, addresses two tensions: the gap or the silence in the development of early Christianity and the role that The Book Enoch played in linking this gap. **Results:** The Book Enoch played an important role in connecting Ethiopian Christianity to first century Jewish Christians. It exercised a very important influence on the Christian and Jewish literature of the first three centuries. It is an apocalyptic work containing Jewish religious and 'theological' thought of the late Second Temple period. **Conclusions:** It is the position of the presenter that the study of Christianity is both incomplete and inadequate without the study and consideration of Ethiopia. The research findings contradict the established theological norms and moves theological studies to reconsider the role and influence that The Book of Enoch had on Christianity.

KEY WORDS: Ethiopia Enoch Influence on Christianity

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## Humanities

### **Sight Unseen: A Study of How Perception of an Interviewee during a Radio Broadcast Affects Perception of the Event Being Covered**

Presenter's Name: Taylor-Rae Collins-Headley

Classification: Junior Undergraduate Student

*Presentation Type: Oral Presentation*

When listening to a news segment in the radio, what stands out to the audience the most? It could be the reporter, the background music, or the information, but it is more likely to be the people interviewed. This person adds a human perspective to the event being covered in the story by either stating the facts as he or she knows it, or stating an opinion. Whether it is television or radio, a segment is seen as incomplete without interviews. The human element helps the viewer comprehend what is happening. This presentation investigates the influence

the person being interviewed has on the listener's perception of the event being reported. This will be a qualitative study to see if this phenomenon exists. Interviews containing men and women who attend or attended a college or university between the ages of 18-25 will be used to examine whether or not perception of an event can be influenced by the perception of an interviewee without the visual element. The Researcher chose this demographic because she thinks that their perception can be manipulated more easily than those who are older or who did not attend college. At its conclusion, this study shows empirically whether or not the way young adults think of a person, based on what they hear and not what they see, impacts their understanding of what is presented to them.

KEY WORDS: Communications, Media-Broadcast, Radio, Perception, Bias

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**Investigating the Themes of Afrocentrism and African Nationalism in W.E.B Du Bois' Darkwater: Voices from within the Veil**

Presenter's Name: Aisha Daniels

Classification: Junior Undergraduate Student

*Presentation Type: Oral Presentation*

In W.E.B. Du Bois' *Darkwater: Voices from within the Veil*, he quotes from a Roman consul, whom he says voiced the verdict of forty centuries, "Semper novi quid ex Africa" (32), which literally means "There's something new always coming out of Africa." First of all, it's vital to establish what exactly "Afrocentrism" is. Afrocentrism is a cultural ideology that is dedicated to the history of black people, particularly in the United States. However, there should not be a "cultural ideology;" there should be a scientific study of black ideas done by black people themselves. How a people be centered on what they already are by nature, not science, but by nature? When did we ever stop being African? Due to the misfortune that the memory of Africans globally is managed and financed by white supremacy, it's simply a matter of remembering. On the other hand, maybe identifying it as African remembrance would be more understanding--the commitment to restore the African's profoundness. Remembering our culture, spirituality, our governmental systems, and economics—are the essentials needed for nation building. Du Bois explains the method of creating new African states, joining conflicting African countries to establish absolute independence and self-governance. He challenges, "...is it really so far-fetched to think of an Africa for the Africans, guided by organized civilization?" In this paper, I'll investigate the concept of Afrocentrism as well as examine Du Bois' *Darkwater* and on the theme of Afrocentrism and the methodology of African nationalism in relation to black subjectivity.

**KEY WORDS:** Afrocentrism, African Nationalism, Du Bois, Activism, Knowledge

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**Catalytic Words: Aida Cartagena Portalatín of the Dominican Republic Pioneers the Literary Discourse on Women and Racial Awareness in the African Diaspora**

Presenter's Name: Keenan Glover

Classification: Junior Undergraduate Student

*Presentation Type: Oral Presentation*

Aida Cartagena Portalatín (Moca, Dominican Republic, 1918-1994) was one of the most praised writers of the Dominican Republic for her over half a century. In a setting of the diaspora where a dictator ruled and colorism dominated citizens, Portalatín was a woman who went beyond the boundaries of the traditional woman. Through many movements and activities, she helped to modernize and universalize Dominican literature. The purpose of my study is to analyze political and social factors that shaped Aida Cartagena Portalatín's provocative thinking as displayed through strong feminist consciousness and racial awareness, in pioneering literary works such as "A Woman is Alone," "La Poesía Sorprendida," and "Wasted Effort," challenging traditional societal thinking. My study applies the culturalist methodology that situates these literary texts within their cultural framework. Previous research focuses on women transitioning from being housewives to factory workers during World War II, exploring the notion of women breaking traditional roles; however, Portalatín is both "inside and outside" tradition. This writer's role in literature is seen to support the observation of the literary critic Elaine Showalter, who writes: "Women writings are not then inside and outside of male tradition; they are inside two traditions simultaneously..." My study concludes that Aida Cartagena Portalatín's "edgy-slickness," provocative metaphorical language, and fearless attitude provided a phenomenal breakthrough for twentieth-century writers, especially female writers of color.

**KEY WORDS:** Womanism, Feminism, Womanhood, Sistership, Tradition

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A B S T R A C T S

**How Does History of Falls Affect Instrumental Activities of Daily Living Participation in Older Adults?**

Presenter's Name: Jessica Goddard

Classification: Junior Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Elizabeth Adeyefa-Olasupo, Robin Baker, Alicia Fason, Kikelomo Idowu, Kendra Plummer, Shanee Justice, Jessica Goddard, Jelena Bdarski

The United States Census Bureau states that 13 percent of the United States population is age 65 years and older. Of the total population (40,267,984), 1 out of 3 older adults fall each year. The purpose of this pilot correlation study is to determine the relation between older adults with a history of falling and their subsequent confidence in participating in ADLs (what is ADL?). The subjects participated in a randomized control trial where they were administered The Fall Interview Schedule, Activity Card Sort: Community Living Version, ABC Confidence Scale, and Timed Up and Go assessments. Findings were organized with excel and then analyzed with The Mann-Whitney U Test in the SPSS software. Previous studies have shown that after running the nominal data through many non-parametric analyses, there was no relationship found between confidence and history of falls.

KEY WORDS: Falls, IADLs, Aging, Artist, Risk

**The Aftermath of the Guatemalan Civil War: Psychological Implications and Consequent Impacts on the Social, Educational, and Political Opportunities of Women**

Presenter's Name: Leah Hairston

Classification: Junior Undergraduate Student

*Presentation Type: Poster Presentation*

From 1960 to 1996, Guatemala faced a gruesome civil war between the government and local guerrillas. Each side eventually relied upon femicide, or the murder of women based on gender, in attempts to control the actions of their opponents. These malicious practices persist even today through physical violence toward women and by hindrances of social and educational progress. Consequently, most Guatemalan women live, and are forcibly kept, in a form of Post-Traumatic Stress Disorder. This research seeks to more fully understand the

impacts the Guatemalan Civil War had on Guatemalan women by examining the presence of symptoms similar to that of Post-Traumatic Stress Disorder in this population. Likewise, the importance of such symptoms to the social, educational, and political well-being and future of Guatemalan women is examined within the context of current literature. The recent increase in literature reviews, first-hand research, and global press concerning the wellbeing of Guatemalan women in terms of the consequences of the 36 year-war lead the researcher to believe the current social, educational, and political climate for women is a direct result of the historically cultural biases in Guatemala and the war-time practices used. Effective solutions that would present women with more equal opportunities and social justice require a thorough understanding of these customs and history, as well as an understanding of the grand-scale implications of Post-Traumatic Stress Disorder.

KEY WORDS: Guatemalan civil war, women, civil rights, PTSD-social, psychological well-being

**Human Responses to Epidemics from Ancient Athens to Modern America**

Presenter's Name: Alana Jones

Classification: Junior Undergraduate Student

*Presentation Type: Oral Presentation*

The plague of Athens, which took place from 430 to 426 BCE, was arguably the most devastating epidemic of classical Greece. The mysterious disease claimed the lives of as many as 100,000 people, quarter of the population, in five years. According to the Greek historian Thucydides, the social impact of this epidemic was far reaching: reactions ranged from intensified religiosity born of fear to lawlessness and impiety bred by despair. Similarly, HIV/AIDS has been the most devastating epidemic of modern America. On average, 50,000 Americans are infected every year, and more than 1.1 million Americans have been diagnosed with the disease. As in fifth century Athens, the social implications of this American epidemic have been formidable. At first, HIV/AIDS in the United States was stigmatized as a "gay white men's disease." Although widespread infection belied this claim, some still argue that the HIV/AIDS epidemic is God's punishment for sexual perversion and describe this plague in apocalyptic terms reminiscent of antiquity. Both the Athenian plague and HIV/

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AIDS in the United States appeared suddenly, confounded physicians, and provoked a spectrum of social and religious responses. The paper analyzes the social and religious impacts of the plague of Athens and HIV/AIDS in America with a comparative focus on human responses to epidemics across time. It will integrate both classical and current literature to deepen our understanding of the human response to epidemics whose etiology and medium of infection is uncertain.

**KEY WORDS:** ancient medicine; medical humanities; HIV/AIDS; Plague of Athens; Thucydides

**The Native American Ghost Dance Movement of the 1890s and how it has Influenced Current Dance Therapy Practices**

Presenter's Name: Alexis Jones

Classification: Junior Undergraduate Student

*Presentation Type: Oral Presentation*

The Native American Ghost Dance movement of the 1890s was a manifestation of Native Americans' fears, hope, and anger regarding being onslaught by white invaders, the U.S army, and U.S legislative oppression on their Indigenous nations. Those who practiced the Ghost Dance spiritually believed that performing the Ghost Dance would eventually reunite them with their ancestors, who would heal the sick and protect the Earth. This practice called for the ancestral restoration of the traditional lands and ways of life. Connected with a political movement, this religious dance is a central feature of Native Americans traditions. This paper will provide documentation reflecting how the ghost dance movement of the 1890s has influenced and relates to dance therapy practices today. It will address what pioneered the understanding of how the mind and body interact in health and illness. It will explore how Native American traditional rituals serve as a foundation for dance therapy practices that are based upon the therapeutic application that the mind and body work together. Through dance, it is thought that people can identify and express their innermost emotions and bring those feelings to the surface. Some people claim dance therapy can create a sense of renewal, unity, and completeness that has been witnessed in the Native American Ghost Dance Movement traditional rituals.

**KEY WORDS:** Native American Ghost Dance Therapy

**"A Sufficient Number": The Historic African American Community of Peterborough in Warren, Maine**

Presenter's Name: Kate McMahon

Classification: Junior Graduate Student

*Presentation Type: Oral Presentation*

**Background:** Warren, Maine is located in the midcoast region of southeastern Maine. The small town has a long history that is intrinsically linked to the maritime activities of the region, which began in the mid-seventeenth century. Sometime around 1782, Sarah Peters was brought to Warren as a slave on a ship owned by Captain James McIntyre. After slavery was outlawed in Massachusetts in 1783/1784, Sarah successfully sued for her freedom and married a man named Amos Peters. Together, they raised a large, mixed-race family, and settled near South Pond, a good distance away from the main village. By the 1820s, they had their own school district, were part of the Baptist church, and had a good deal of land. Their population peaked in the 1850s and 1860s, with as many as eighty-two mixed-race people living in the village of Peterborough. **Methods:** This paper is based on primary document research, combed from the local historical society, as well as genealogical research, and work with the census records. **Conclusion:** This paper focuses on how African American and mixed-racial communities were able to establish themselves in maritime northern New England in the years prior to the Civil War, particularly during the antebellum period. Peterborough is a case study toward understanding African American communities outside of the plantation setting and their relationships between agriculture and the sea.

**KEY WORDS:** history, African Americans, antebellum, Maine, New England

**Sex and Satire: Responses of Asian American Writers to Stereotyped Identities**

Presenter's Name: Justin Nalos

Classification: Junior Undergraduate Student

*Presentation Type: Oral Presentation*

Defined by overgeneralized ideas of effeminacy, exoticism, and the model minority stereotype, characters of Asian descent in the American media have been unfairly represented through limiting and often contradictory stereotypes. Asian



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American writers, however, have effectively countered these media representations. The representation of Asian and Asian American characters by Asian American authors is critical to understanding the conflicted and split identities of Asian Americans and their experiences with established generalizations. I examine the portrayal of Asian characters who come to terms with their own beliefs about their identities in conscious reassessment of society's depiction of Asian culture in Maxine Hong Kingston's *The Woman Warrior*, David Henry Hwang's *M. Butterfly*, and Adrian Tomine's *Shortcomings*. With Asian American writers depicting Asian characters in literature, I have found a common denominator: the authors of my selected works have used satire to portray main characters who ultimately question their identities as Asian Americans in order to become accepted in mainstream society. Many of the stereotypes about Asians and Asian Americans are rooted in sexuality, and these authors use satire to highlight an identity that is confined to sex. The issue of becoming accepted in society eventually raises the issue of internalization: the unconscious acceptance of beliefs concerning ethnic stereotypes and a racial hierarchy. I will show that Asian American writers are using satire to depict the internalization of hegemonic ideology and to highlight its effects on the typical Asian American who hopes to be accepted into society without being defined by sexual stereotypes.

KEY WORDS: Asian-American Ethnic-studies Literature  
Stereotype

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### Code Switching Awareness and Behavior in African American College Students

Presenter's Name: Sheena Newson  
Classification: Junior Graduate Student  
*Presentation Type: Oral Presentation*

Coauthors: Tracey Calvo Clarke, Kara Tamayao, Alicia Thompson

Code switching is the ability to adapt behavior in response to a change in context. For African Americans, linguistic code switching means having both Standard American English (SAE) and African American English (AAE) for use as appropriate. For almost every professional, possession of good communication skills, that is SAE, is a requirement. This is

especially true for speech-language pathology, wherein the professional becomes the speech model for the client. The process of code switching requires the desire to speak the alternative variety plus an awareness of one's speech. It is herein posited that many African Americans are unaware of the AAE features in their speech. As a result they may not code switch as desired. The aim of this investigation was to examine the attitudes and perceptions of African American college students toward code switching. The study also assessed participants' awareness of their code switching practices. Research questions included: Are there relationships among attitude, self-code switching perception, peer code switching perception, and observed speech behavior in African American college students? Is there a significant difference between African American college students' self-perception of the presence of AAE features in their speech and their peers' perceptions? Is there a significant difference in self-perception, peer perception and observed speech behavior as a function of gender, academic major and geographic origin? Three surveys were completed by students, including a Speech Attitude Survey, Self-Evaluation and a Peer Evaluation completed by classmates following an extemporaneous speech. Participants also completed a writing prompt.

KEY WORDS: African American English, Standard American English, Code Switching, Awareness, Perception

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### Young Children's Attention Network Skills and Narrative Goal Structure Understanding

Presenter's Name: Laura O'Shea  
Classification: Junior Graduate Student  
*Presentation Type: Poster Presentation*

Coauthors: Porsche Boddicker, Chastity McFarlan, Danielle D. Brown, Barbara Burns

Individual differences in narrative comprehension processes of preschoolers predict reading comprehension skills in older children (Kendeou, van den Broek, White, & Lynch, 2009; van den Broek et al., 2005). Less skilled readers have difficulty integrating information to derive the overall main theme of the passage (Hannon & Daneman, 2001, Cain & Oakhill, 2006) affecting their goal structure understanding. Allocation of attention has been shown to impact narrative comprehension of

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older children with attention deficit disorders (Lorch, Milich, Flake, Ohlendorf, & Little, 2010). This study examined relations between young children's attention network skills and goal structure understanding. Participants included 66 3- to 5-year-old children ( $M = 47.82$ ,  $SD = 7.51$ ). Children narrated a wordless picture book. Narrations were coded following the discourse analytic model for goal structure understanding (Trabasso & Nickels, 1992). Attention network skills were measured with computerized tasks (Berger et al., 2000; Chang & Burns, 2005). We found patterns of correlations between attention network skills and goal structure understanding depended on the specific wordless picture book. There was a marginally significant negative correlation between attempts for One Frog, Too Many and orienting accuracy ( $r = -.54$ ,  $p = .056$ ). We also found a negative correlation approaching significance between goals for A Boy, A Dog, and A Frog and orienting reaction time ( $r = -.49$ ,  $p = .089$ ). Increased orienting flexibility may allow children to disengage from more salient narrative aspects (Trabasso et al., 1992) in order to engage to information necessary for understanding characters' goals (Trabasso et al., 1989).

**KEY WORDS:** narratives, developmental, cognitive, attention, psychology

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### Measuring the Stature of the Minority Perspective in Modern Literature

Presenter's Name: Joel Rhone

Classification: Junior Undergraduate Student

*Presentation Type: Oral Presentation*

For me, literature is powerful in its capacity as a time capsule. It provides insight into the sentiments of people from ages past and responses to the events that they experienced. I find the early twentieth century most appealing because of the multitude of transformative events that were experienced, and the revolutions in perception and behavior that followed in response. The overthrow of religiosity, disillusionment inflicted by war, and unprecedented sexual expression without a doubt make a recipe for a good read. What has my attention the most, however, are the perspectives and points of view of the authors, and just what demographic groups are represented in modernism. Or more importantly, what groups are not? I want to investigate the minute minority presence in modernist literature. From nation-wide AP Literature curriculum to

recommended reading lists on Amazon, it seems that the portion of the American literary canon that represents the early twentieth century is ethnically incomplete. While *A Tree Grows in Brooklyn*, *Catch 22*, and *Great Gatsby* represent their corresponding time periods well, do they represent everyone from those periods? Do they convey the fear and hardship of Black life in sharecropping, the Great Migration, or Draft Riots? Are the narratives of Mexican-American sufferings during Eugenics present? Can we abstract some idea of what American life was like for the persecuted Chinese and Japanese immigrants? I aim to investigate what the volume of the minority voice in literature means not only for the modern American academy but also for the average American mind.

**KEY WORDS:** Literature, Modernism, Minority, Marginalize, Implications

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### The Russian Federation and Integration in the Modern World

Presenter's Name: Alexis Shaw

Classification: Junior Undergraduate Student

*Presentation Type: Oral Presentation*

This research project is centered on explaining the transition of the Russian Federation into the modern world. This will be done by exploring the past governmental practices of Russia and exploring their transition, as well as what this transition means for international relations in the future. This integration to the modern world is important because Russia is a permanent member of the United Nations Security Council, they possess substantial resources, and they have strong relations with leading states of the world. Therefore, Russia has significant influence on the formation of the new world order. While Russia has already overcome obstacles keeping them from progress in the new world, such lingering consequences of the Cold War and remaining tension, they still have more obstacles that they are currently facing in their transition such as the current unipolarity of international politics. I will be orally delivering my research paper in an attempt to inform listeners on the importance of international relations and explain how Russia's integration will completely change international policy making as well as the globalization of the world economy.

**KEY WORDS:** Russian Federation, Federation-Russia, Russia, Modern Russia, Russia-Modern

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**Parallels in Russian Fairy Tales**

Presenter's Name: Keyana (Ashley) Simmons

Classification: Junior Undergraduate Student

*Presentation Type: Oral Presentation*

This research project examines an aspect of Russian history and culture that has never before been examined by experts; it dissects the intricate parallels between Russian fairytales and the treacherous age of the Stalin era. While many have analyzed the Stalin era and how he used folk culture to manipulate the lower class citizens, no one has ever drawn specific parallels between Stalin and Russian folk tales. There are many similarities to be drawn between the two entities. Many of Stalin's characteristics and actions were typical of the villains often depicted in fairytales, another highly unobserved but intriguing irony. Stalin utilized fear and his positions in government to control and manipulate his followers into doing his bidding, until such a time came when he had amassed enough power that he could state a command and it would be done. Similarly to how the villains of fairytales (usually tzars or noblemen) controlled the protagonist, until the protagonist rose up and overcame their plight. This never-before researched connection sheds new light on the Stalin era and brings insight into the inner workings of the Stalin regime.

KEY WORDS: Russian Folktales Stalin Folklore Fairytales

**Health Beliefs, Performance Patterns and Activity Levels Amongst Normal Weight, Overweight, and Obese College Females**

Presenter's Name: Gabrielle Styles

Classification: Junior Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Catherine Eliot, Emi Funawatari

The purpose of the research project is to compare health beliefs with performance patterns and activity levels between female students with normal, overweight and obese BMI. The primary research question is to examine if there is a relationship between health beliefs, activity levels, and performance patterns in female college students (ages 18-25) that are obese, overweight and normal weight. Individuals who are overweight are at greater risks for certain health

conditions including heart disease, sleep apnea, diabetes, and a decrease in life expectancy. There are several factors including genetics, diet, exercise and other health habits like sleep and stress management that directly relate to being overweight and obese. Since obesity and being overweight is a multi-dimensional problem, it requires understanding the individual, his or her environment, and his or her behavior to advance novel solutions. This will be a cross-sectional, non-randomized study with one hundred participants at Howard University. They will complete a consent form prior to completing the self-reported survey. Each participant will receive a goody bag with a healthy snack. The survey is designed by the investigators to identify trends in performance patterns and to identify the participants' values about self-care. The survey consists of 21 questions, which include Likert Scale and multiple choice. This is a quantitative survey based design. What statistic will be used to analyze the data will be determined at a future time.

KEY WORDS: Female College Students Weight Factors

**Medu Netcher: Ancestor of Ebonics**

Presenter's Name: Layla West

Classification: Junior Undergraduate Student

*Presentation Type: Poster Presentation*

Ebonics is a language pattern unique to African-Americans that is composed of words and structures created seemingly in opposition to the traditional English language. Scholars have denied the autonomy of this language pattern since its unofficial recognition, which was as early as 1775. The true sophistication and deep roots of this language pattern can only be recognized when analyzed in context of its predecessors: ancient African languages. There are a number of indisputable structural parallels between the language of Middle Egypt, Medu Netcher, and Ebonics. These parallels are in grammatical structures, vocabulary, and ideology. The connection between these two languages has survived thousands of years. Denial of the possibility of this connection ignores documented research of the lasting linkage between the predecessor cultures of the world and their progeny visible today. The notion that linguistic signifiers, grammar, and other notable structural components of the language pattern were purposefully created in opposition to European formal standards assumes that the tradition is Eurocentric. This then makes Ebonics not just a

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language but also an act of rebellion to the European influence on American culture and a projection of the unwillingness of African Americans to assimilate fully into European culture. I focus specifically on two analogous grammatical structures from both languages, two idioms, and two ideologies that are rooted in the vocabulary/language itself. The parallels between

the two languages support the claim of Ebonics' true roots and sophistication.

KEY WORDS: Ebonics, Middle Egyptian, Linguistics, Language, Medu Netcher

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## Physical Sciences & Engineering

### Surface Phonon-Polariton-Assisted Thermal Radiation Transport in a One Dimensional Nanoparticle Chain

Presenter's Name: Olalekan Adewuyi

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: James S. Hammonds

In this work we used an analytical model, applicable in the dipole limit, to describe coherent near-field electromagnetic interactions between silicon dioxide nanoparticles arranged in a onedimensional chain. The dispersion relation generated from this analytical model is combined with a Green function approach to show that surface phonon polaritons can play an important role in the thermal transport properties of the nanoparticle chain when thermal radiation is a dominant heat transfer mechanism. The results demonstrate that the surface phonon polariton contribution could allow for thermal interface materials with tunable thermal properties. The resulting model was compared to, and found to agree with, an existing model that predicts the near-field thermal transport between a nanoparticle and a substrate.

KEY WORDS: near-field, nanoparticle, surface phonon polariton, interface, transport

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### Synthesis and Characterization of Collagen Grafted Poly(hydroxybutyrate-valerate) (PHBV) Scaffold for Loading of Bovine Serum Albumin Capped Silver (Ag/BSA) Nanoparticles in the Potential Use of Tissue Engineering Application

Presenter's Name: Rotimi Bakare

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Chandra Bhan, Samantha Hawthorne, Dharmaraj Raghavan

The objective of our work is to synthesize a potentially implantable polymeric scaffold/device loaded with antibiotics (silver nanoparticles) which can maintain a sterile environment by inhibiting the growth of bacteria and simultaneously promote the growth of bone cells when used in joint arthroplasty. We synthesized and characterized collagen grafted poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) film for loading of bovine serum albumin capped silver (Ag/BSA) nanoparticles. Thermal radical copolymerization and aminolysis methods were used to functionalize macroporous PHBV films, followed by collagen grafting so as to formulate collagen-g-poly(hydroxyethylmethacrylate)-g-poly(3-hydroxybutyrate-co-3-hydroxyvalerate)[collagen -g-PHEMA-g-PHBV] and collagen-g-aminated-poly(3-hydroxybutyrate-co-3-hydroxyvalerate) [collagen-g-NH<sub>2</sub>-PHBV] films, respectively. Spectroscopic (FTIR, XPS), physical (SEM), and thermal (TGA) techniques were used to characterize the functionalized PHBV films. The amount of collagen present on collagen grafted PHBV film was quantified by the Bradford method. The Ag/BSA nanoparticles were then loaded on collagen grafted and untreated PHBV films, and the nanoparticles loading were determined by graphite furnace atomic absorption spectrometry (FAAS). The amount of

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nanoparticles loaded on collagen grafted PHBV film was found to be significantly greater than that on the untreated PHBV film. The nanoparticles loaded PHBV film can potentially serve as a scaffold to promote the growth of bone cells while inhibiting the bacterial growth.

**KEY WORDS:** Protein coated silver nanoparticles, collagen grafted PHBV, antimicrobial activity, and Atomic Absorption Spectrometry

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### Size Based Method for Selective Anammox Retention Low Solids Retention Time for Deammonification Systems

Presenter's Name: Heather Battiste-Alleyne

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Haydee De Clippeleir, Yaolin Liu, Kimberly Jones, Bernhard Wett, Ahmed Al-Omari, Sudhir Murthy

**Background:** The deammonification process for nitrogen removal from carbon limited streams has matured over the years, but still contains areas for improvement pertaining to the balance and enrichment of the microbial population. Anammox bacteria have a notoriously long doubling (7-20 days) comparing to ammonium oxidizing bacteria (1 day). To allow a balanced process, the retention time of ammonium oxidizing bacteria and anammox bacteria must be different. **Methods:** In this study, a novel method of coupling reactor sludge retention time with particle size selection was carried out to maintain the difference in retention time for both bacteria in the same reactor. Studies recommended a sludge retention time of at least 30-45 days for anaerobic ammonium oxidizing bacteria. Two screening sizes, 212  $\mu\text{m}$  and 355  $\mu\text{m}$ , were selected for two different deammonification reactors to obtain and maintain a sludge retention time of 15 days. **Results:** Results show that wasting with large screens selects for larger particles in the system. However, in the deammonification system, larger particles did not show increased specific anaerobic ammonium oxidizing bacteria activity and moreover tended to contain more nitrite oxidizing bacteria. The optimal particle size with high anaerobic ammonium oxidizing bacteria activities and low nitrite oxidizing bacteria activities was observed in the 212-355  $\mu\text{m}$  range. This fraction was efficiently retained by the 212  $\mu\text{m}$  screen while it was wasted with the 355  $\mu\text{m}$  screen. **Conclusions:** The deammonification reactors retained anaerobic ammonium

oxidizing bacteria for stable nitrogen removal at a 14 day retention time utilizing size selection by the screen.

**KEY WORDS:** Screens, Deammonification, SRT, DEMON, Retention

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### Solutions for Wastewater Treatment in Rural Mining Communities

Presenter's Name: Ahnna Beruk

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Ariel Ward

The quality of communal drinking water is a principal factor in the overall health and development of a community. Limited availability of potable water in rural communities has been an issue of great significance. Many low cost methods have been implemented to improve the accessibility and quality of water for residents. However, the water supply of populations supplemented by the mining industry is overly exposed to heavy metal contaminants. While many of the traditional methods are sufficient for providing biological and chemical treatment of wastewater, several of these systems do not adequately remove certain pollutants, including nitrogen, phosphorus, and toxic heavy metals. Service learning is applied in this research project, which employs the engineering design process to develop a sustainable water filter that utilizes nanotechnology. Recently, magnetic nano-sized metal oxides have gained notoriety because of their ability to remove heavy metals from water with the use of a simple magnetic field. The proposed filter, entitled the "Clean Water Tree," provides a simplified water treatment process that does not require electricity, incorporates readily available resources, and is suitable for inhabitants of rural areas. The filter couples the magnetic particles with a decentralized household treatment system to create a solution that will harvest the many benefits of nano-sized metal oxides, such as regeneration. Future research is required to examine the implementation feasibility of this filter, which aims to reduce costs incurred during advanced water treatment and increase the accessibility of clean water to communities with deficient resources.

**KEY WORDS:** Nanotechnology, water-treatment, communities-mining, rural-South-Africa, metals-toxic

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**Synthesis and Characterization of Novel Emetine Dithiocarbamate Ester Derivatives**

Presenter's Name: Nailah Brandy

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Oladapo Bakare PhD

Alkaloids are natural products that are known to possess a wide array of biological activities. Emetine, an isoquinoline alkaloid from the ipecac species, has shown interesting medicinal properties including anti-cancer, anti-viral and anti-parasitic activities. However, toxic side effects such as cardiomyopathy made this bioactive natural product undesirable for clinical use. In efforts to improve the pharmacological properties associated with emetine and its derivatives; we are exploring chemical modification of the N-2' position of emetine for the development of less toxic analogs as potential anti-parasitic agents. A series of novel dithiocarbamate ester derivatives of emetine have been synthesized. Dithiocarbamic acid salt was first synthesized from emetine dihydrochloride and carbon disulfide in ethanolic sodium hydroxide. Subsequent SN<sub>2</sub> reaction of the salt with a number of 2-chloroacetamide derivatives furnished the dithiocarbamate ester derivatives which were then purified via column chromatography. The target dithiocarbamate ester derivatives were obtained with an average yield of 52%. The products were characterized by infrared spectroscopy (IR), nuclear magnetic resonance (NMR) spectroscopy as well as by electrospray ionization mass spectrometry (ESI-MS).

KEY WORDS: Synthesis, Alkaloids, Dithiocarbamate, Emetine, Natural Product

**A Novel FPGA-Based Algorithm For Message Authentication Using Hybrid Encryption Scheme**

Presenter's Name: Jonnetta Bratcher

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Bunji Ringnyu, Yusinyu Nsami

The importance of this research is highlighted by the need to authenticate messages from various senders. This presentation presents a new hybrid scheme which could be used for message

authentication, integrity and non-repudiation. The research method includes a multi-level structure and uses the RSA, convolutional codes and wavelet techniques. At the first level, a public-key RSA signature converts the original plaintext into a ciphertext. Iterated subband coding splits the ciphertext into different levels of decomposition. At subsequent levels of decomposition, the ciphertext from the preceding level serves as input data for encryption using convolutional codes. The research findings produced a new algorithm using the Virtex-5 FPGA parameters with 8-bit key lengths by applying the RSA algorithm to each key length. The security level of the new algorithm is high due to the propagation of the cryptographic complexity on all decomposition levels. Future research should implement the new algorithm to the 64-bit key length to accommodate larger messages. [Acknowledgement: This material is based upon work supported by the National Science Foundation under Grant No. 1052861. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.]

KEY WORDS: encryption, key lengths, ciphertext, FPGA, security

**Are Hydrogen Vehicles Still A Rational Investment?**

Presenter's Name: Joshua Brown

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Joshua Brown, Howard University, Washington, DC Jordan Gill, Howard University, Washington, DC Huseyin Yavasogluh, Istanbul Technical University, Istanbul, Turkey

Hydrogen is a well-known, abundant element that is believed to be the next major fuel source for automobiles because it contributes fuel efficiency nearly double that of fossil fuel automobiles. According to the Istanbul Metropolitan Municipality, there are an overwhelming number of public transportation vehicles, including 5,356 buses as well as approximately 25,000 taxis in Istanbul, Turkey. These vehicles are the cause of excessive amounts of exhaust and emissions being released into the atmosphere, which fueled the initiation of a hydrogen fuel cell-powered bus designed

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by engineering students at Istanbul Technical University. The purpose of this research was to examine the global feasibility of Hydrogen fuel cells for use in everyday vehicle and how it is applicable to public transportation in Istanbul. A literature review that encompassed engineering thesis papers as well as upcoming motor company and university-based research on hydrogen fuel cell vehicles was conducted to investigate their effectiveness in reducing the amount of vehicle emissions, the safety of Hydrogen as a fuel source, and finally, the feasibility of the mass- production of Hydrogen fuel cell vehicles. This research indicated that, after major breakthroughs in 2013 that significantly lowered fuel cell costs, as well as government support, the Hydrogen fuel cell has become more affordable in the private sector making it an excellent new alternative for public transportation. [Acknowledgment: This material is based upon work supported by the National Science Foundation under Grant No. 1238466. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.]

KEY WORDS: Alternative Energy

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### Column Studies of Fate and Transport of Titanium Dioxide and Silver Nanoparticles from Biosolids through Porous Media

Presenter's Name: Shauna-Gaye Campbell

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Dr. Kimberly L. Jones, Dr. Yaolin Liu, Dr. Malaisamy Ramamoorthy

The use of wastewater treatment plant biosolids as soil amendments has widely been practiced in the agricultural community. However, the increase in concentrations of nanomaterials such as Ag<sub>2</sub>S and TiO<sub>2</sub> in biosolids raises concerns with the environmental and regulatory bodies. The physicochemical properties (pH, ionic strength, size distribution, solubility) of nanoparticle colloidal solution may change in such a way to enhance its toxic potential. It is therefore necessary to explore the conditions favorable for the release of nanoparticles from biosolids and its subsequent transport and transformation in porous media. This study intends to examine the stability of

TiO<sub>2</sub> and Ag<sub>2</sub>S nanoparticles in biosolids and their transport behavior through saturated porous silica columns (add conditions). Artificial rainfall (0.01 M NaCl, pH=6) is applied to porous column at moderate rainfall intensity to mimic natural rainfall conditions. The leachate was collected and analyzed with furnace atomic adsorption spectroscopy. Preliminary results show a slower release or desorption rate of nanoparticles from biosolids than from sand. The interaction between organic content and nanomaterial in biosolids may play an important role in the releasing rate. The effect of pH and ionic strength of the influent will be explored to better understand the interactions.

KEY WORDS: Biosolids, Nanoparticles, Porous media, Transport

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### Development of Optimal Data Fusion of 2D Laser Scanner and Camera for Rear View Gap Detection of an Autonomous Vehicle

Presenter's Name: Camille Carter

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Patrick Buah

Three dimensional scanning collects data on surrounding objects and textures to fabricate a 3D model of the scanned environment. The manner in which this data is fused varies upon the apparatus and application. 3D scanning methods, similar to the principles of triangulation, are most commonly used in robotic navigation and localization [1]. Istanbul Teknik Universitesi (ITU) is currently developing an autonomous vehicle, with hopes that it can perform tasks unmanned. The frontal navigation of this vehicle consists of two standalone 3D scanners that collect and fuse data. Such scanners are highly accurate, but expensive. Because rear vehicle navigation is not as pertinent, rear navigation utilized one 2D scanner and one camera to create more cost-effective 3D scanner. Triangulation employs a detector and 2D scanner to discern the location of an object and fabricates a 3D model of the real world. Positioning the laser relative to the camera is vital to the accuracy of this model. The goal of this project was to create a 3D scan of the rear environment while focusing on detecting the width of a gap. This detection ability would improve rear-functions such

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as backing up or parallel parking. We hypothesized that by positioning LMS laser on a self-adjusting rig, and a stationary rear-facing camera, this vehicle could detect the edges of a gap and return data on the two closest edge points. Additionally we are developing a method of extracting and analyzing both sets of raw data that would be relevant for the vehicle's master code. [1] Fredy Tungadi, Lindsay Kleeman, Discovering and restoring changes in object positions using an autonomous robot with laser rangefinders, Robotics and Autonomous Systems 59 (6) (2011) 428–443

KEY WORDS: Autonomous Car, Triangulation, 3D scanning, detection

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**Raman Spectroscopic & Molecular Dynamics Simulation Study of the Thermal Expansion of Single Walled Carbon Nanotubes**

Presenter's Name: Daniel Casimir

Classification: Graduate Student

Presentation Type: Oral Presentation

Coauthors: Dr. Prabhakar Misra, Raul Garcia-Sanchez

The mechanical properties of nano-sized materials seem to differ significantly from the predicted behavior of their bulk macroscopic counterparts. The former tend to be stronger, more malleable and exhibit greater flexibility. The thermal properties of materials have also been shown to be altered significantly after having been shrunken to nanometer dimensions. The nano material and thermomechanical quantity this study is based on in the examination of this unique behavior is the linear thermal expansion of single walled carbon nanotubes respectively. Single walled carbon nanotubes are hollow cylindrical tubes of sp<sup>2</sup> hybridized carbon atoms with the majority of samples having diameters on the order 1 nm, with lengths ranging from 1 μm - 1cm. The foundational material in the mathematical description of these objects' properties is the planar graphene sheet of graphite. Hence, since both single walled carbon nanotubes and graphite share intra planar, sigma-bonded, hexagonally arranged carbon atoms in their structural make up, the latter is usually used as the bulk material in the transition from the nanometer length scale to macroscopic dimensions. In conclusion, there is much incentive in examining the thermal expansion of these quasi one-dimensional objects. In this study

we examine this important property of single walled carbon nanotubes using Resonant Raman Spectroscopy and Molecular Dynamics Simulation based on the Adaptive Intermolecular Reactive Empirical Bond Order potential. The latter is a well established potential that is well suited to modeling chemical reactions in condensed hydrocarbons.

KEY WORDS: Raman Spectroscopy, Molecular Dynamics Simulation, Carbon Nanotube, Thermal Expansion, Chirality

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**DNA nanoshells**

Presenter's Name: Preethi Chandran

Classification: Junior Faculty

Presentation Type: Oral Presentation

We report a novel packing of DNA into nanoshells in the presence of cationic polymers. The shell structure was investigated by indentation with the sharp probe of an Atomic Force Microscope. The shells buckled reproducibly at large indentation strains. The thickness and permeability of the shell wall were estimated by complementary measurements of the particle's dried and swollen volume using AFM and Dynamic Light Scattering. Understanding the novel self-assembly will lead to the synthesis of a new generation of biomaterials and nanomedicines.

KEY WORDS: shell DNA biophysics assembly polymer

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**Inoculates and Their Effects on Anaerobic Biogas Production at Ruai Wastewater Treatment Plant**

Presenter's Name: Kinyata Cooper

Classification: Undergraduate Student

Presentation Type: Oral Presentation

Anaerobic digestion has played an important role in wastewater treatment for its ability to transform organic matter into biogas (most importantly methane gas). At the Ruai Wastewater Treatment Plant in Kenya this technology is found in the form of anaerobic ponds. In this study, we will try to improve Ruai's method by researching the sustainability issues that occur when constructing a functional anaerobic digester on a large scale. Here, wastewater will undergo anaerobic digestion using two inoculums—sludge and rumen fluid—to test which has a higher yield of biogas production. Using the batch process, two 210L anaerobic digesters



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were utilized and connected to two 100L drums in order for more feed to be added in long term use. In the duration of three days the tanks were agitated and monitored at mesophilic conditions to determine the how much biogas was formed.

KEY WORDS: anaerobic digestion, inoculum, sludge, rumen fluid, biogas production

**Polyethylenimine polymer: A dynamic interplay of hydrophobic, charge, and charging effects**

Presenter's Name: Kimberly Curtis

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Quentinn Roby, Preethi Chandram

Polyethylenimine (PEI) is a hydrophobic polymer with negative charges on its backbone from the pH protonation of its amine groups. It is widely used for compacting DNA into nanoparticles for delivery into cells in both basic molecular biology studies as well as for drug delivery applications. The polymer hydrophobicity, intra-chain charge repulsion, and the pH protonation compete to dominate the backbone dynamics. We studied the interplay between these three factors and the conditions in which each dominates. The pH protonability of the polymer was systematically increased and the aggregation/extension of the backbone was tracked with Dynamic Light Scattering. We report that the polymer prefers specific backbone states and jumps from one to the other based on the pH and solution conditions.

KEY WORDS: polymer chemistry, DNA transfection, nanoparticles

**Synthesis of Two Nanoparticle-Polymer Composite Systems with Tunable Optical Phonon Mode Transmission: SiC-, and SiO<sub>2</sub>-Polyethylene**

Presenter's Name: Cory Davis

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: James Hammonds, Kimani Stancil

When silica and silicon carbide nanoparticles uniformly mix in a polymer so that the particles are separated by 100's of nanometers, the resulting material can transmit infrared optical phonons more effectively than bare polymer. Consequently, silica nanoparticle/polymer composites may have tunable thermal properties, since optical phonon transmission depends on the spacing between the nanoparticles in the composite. The ability to achieve desired nanoparticle spacing can thus enable the development of specialized thermal interface materials for energy and electronics applications. Mechanical mixing, in which viscous forces compete with the attractive forces between particles to disperse the particles in the polymer solution, may be an inexpensive approach to synthesizing tunable thermal composites at commercial scales. In this work we investigate a melt mixing approach to synthesize two separate polyethylene thin film systems containing 1) silicon carbide (SiC), and 2) silicon dioxide (SiO<sub>2</sub>) nanoparticles. Film synthesis, deposition methodologies, and various melt recipes are explored to achieve nanoparticle-polymer composites with typical particle distances on the order of 100's of nanometers. Scanning electron microscopy (SEM), energy-dispersive X-ray spectroscopy (EDX), and Fourier transform infrared spectroscopy (FTIR) with attenuated total reflectance (ATR) are used to confirm the typical nanoparticle distances and verify optical phonon mode transmission.

KEY WORDS: Synthesis Nanoparticle Polymer Composite System

**The Biochronicity of Regulatory Networks during Cellulose Fermentation in Neurospora crassa**

Presenter's Name: Miah Davis

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

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, xylose) for fermentative pathways. Very

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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. My specific project was 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: Bioethanol, biomass decomposition, lignocellulosic biomass

### **Magneto-resistance in normal metals under a strong magnetic field**

Presenter's Name: Roberto De Leo

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

It was postulated theoretically in Fifties by the physicist I. Lifschitz and his school in Kharkov that the conductivity in a metal (which is an essentially Quantum phenomenon) can be explained through a Classical model. In this model, the Energy Function  $H(x,y,z)$  is periodic in all variables and electrons move on a iso-energy surface called Fermi Surface. When a magnetic field  $B$  is applied, electrons must also move on planes perpendicular to  $B$ . Moreover, the conductivity in a metal under a magnetic field is dictated by whether  $S$  has or not open planar sections. This behaviour was confirmed experimentally in Sixties for several metals (such as Au, Ag, Pb, Cd) but, despite many attempts, no analytical method was found to predict the existence and behaviour of open orbits given a Fermi Surface  $S$  and a direction of  $B$ . Starting from Eighties, the mathematician S.P. Novikov and his school studied the problem with topological methods and discovered a rich mathematical structure underneath it. In

particular they discovered that, given a Energy Function, the topology of the open section perpendicular to  $B$  with some of its energy levels is dictated by an integral of motion  $I$ , and the dependence of  $I$  on the direction of  $B$  is of fractal nature. Based on these results, I wrote a computational topology  $C++$  library able to predict, from first principles, the experimental results mentioned above. I will present my results on Au and Ag and show the future directions of this activity at Howard University.

KEY WORDS: Magneto-resistance, Topology, Computational Geometry, Semiclassical Approximation, Fractals

### **Optimization of Biogas Production Conditions Using Pilot Scale Mesophilic and Thermophilic Anaerobic Digesters**

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. A digester design was implemented to accommodate effective heating methods and mixing mechanisms for the reactors. Determination of optimal flow rate of wastewater to the digesters as well as characteristics of feed wastewater (BOD, COD, pH, TS) was undertaken using analytical methods. Measurement of biogas production rates in mesophilic and thermophilic anaerobic digesters, maximum gas yield and biogas quality was determined using standard operating procedures. Under specific monitoring parameters and methods (OLR 0.5 L/min, thermostated heating system, inoculum to substrate ratio of 1:3) the bioreactors produced a final average volume of biogas (corrected to STP) and relative retention times: Mesophilic-  $2.04 \times 10^{-3}$  m<sup>3</sup> (21 days, 37C, pH 6.5 -7.2), Thermophilic-  $7.42 \times 10^{-3}$  m<sup>3</sup> (10 days, 55C, pH 6.5 -7.1). Biogas average production rates were: Mesophilic-  $1.41 \times 10^{-5}$  m<sup>3</sup>/day, Thermophilic-  $4.08 \times 10^{-4}$  m<sup>3</sup>/day. Average percentage composition of biogas produced by thermophilic digester was CH<sub>4</sub> 66.6 vol. %, CO<sub>2</sub> 30.4 vol. % and other gases were assumed 3 vol. %. Thus, the biogas

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quality produced was of good quality. Overall, the yield and production rate in the thermophilic reactor far exceeded that of the mesophilic as evident from total volumes of gas collected and hourly production rates. Recommendations for Nairobi Water & Sewerage Company include: an advanced digester design that supports an efficient mixing technique and pH sensor, pretreatment of feed wastewater for removal of harmful toxins, co-digestion of organic wastes to raise BOD content of wastewater, and use of portable gas analyzers.

KEY WORDS: biogas, mesophilic, thermophilic, anaerobic, digestion,

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**Manganese Complexes of Schiff-Base and Reduced Schiff-Base Ligands: Synthesis, Characterization and Use in epoxidation of Olefins with H<sub>2</sub>O<sub>2</sub>**

Presenter's Name: Rita Egekenze

Classification: Graduate Student

Presentation Type: Poster Presentation

Coauthors: Dr. Y. Gultneh

Manganese complexes of Schiff-base and reduced Schiff-base ligands formed between salicylaldehyde or salicylaldehyde derivatives and pyridyl ethyl amine were synthesized and characterized. The solid-state structure of the complexes determined by X-ray crystallography shows that the metal is coordinated by the Oxygen and Nitrogen atoms of the ligands. Cyclic voltammetry experiments indicate one electron transfer for the Schiff-base complexes and two electron transfer for the reduced Schiff-base complexes. UV-Vis spectroscopic study of the complexes with H<sub>2</sub>O<sub>2</sub> of different mol concentrations, at neutral pH and room temperature, showed new peaks at wavelengths of 255nm and 312nm. Comparing the reaction of cyclohexene with H<sub>2</sub>O<sub>2</sub> and that of cyclohexene, H<sub>2</sub>O<sub>2</sub> and the complexes, it was observed that manganese complexes of Schiff base ligands and their corresponding reduced Schiff base ligands catalyze epoxidation of cyclohexene with H<sub>2</sub>O<sub>2</sub>.

KEY WORDS: Manganese Complexes, Schiff-base, Reduced Schiff-base, Epoxidation, Olefins

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**Implementing Safe Cooking Methods in Senegal**

Presenter's Name: Mame Fall

Classification: Undergraduate Student

Presentation Type: Poster Presentation

Citizens in rural areas of Africa have been cooking over open fires for hundreds of years; however, recent studies have revealed the harmful effects that cooking over open fires can have on the women who cook over it and the children who are not far off. Current methods of cooking in Senegal mostly involve the burning of biogas, biomass, charcoal, coal, ethanol, liquefied petroleum gas, and kerosene. Research has been conducted in Senegal with the goal to design a stove that emits less toxic chemicals into the environment and decreases health hazards on women and children. There were two stages of research: (A) the first stage involved an in depth literature review of the relevant impacts of existing methods of cooking in Senegal; (B) the second stage involved an investigation of materials found in Senegal appropriate for the construction of a safer cooling stove. The literature review aided in the complete design of a stove that is to be built using the Tchiky and Sebikotane refractory clays. The stove has five key components:(1) the chamber of pyrolysis, (2) the nozzle, (3) the combustion chamber, (4) the exchanger, and (5) the chimney. Recommendations for future research involve building and perfecting the prototype of the stove, implementing several stoves throughout Senegal in order to research its usefulness among Senegalese people, and finally, mass-producing the product. Ultimately, this stove has the potential to improve the quality of life in Senegal as households will have access to a safer method of cooking.

KEY WORDS: Pyrolysis, Stove, Africa, Senegal, Energy-Use

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**Fluorescence nitric oxide sensor based on Copper (II) complex of 5-dimethylamino-naphthalene-1-sulfonic acid (2-pyridin-2-ylethyl)-pyridin-2-ylmethy amide**

Presenter's Name: Mosissa Fayissa

Classification: Graduate Student

Presentation Type: Oral Presentation

Coauthors: Yilma Gultneh

The Copper (II) complex with 5-dimethylamino-naphthalene-1-sulfonic acid (2-pyridin-2-ylethyl)-pyridin-2-ylmethy amide is a sensitive sensor for nitric oxide based on

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fluorescence measurements. In this study, we have analyzed the effect of nitric oxide on the fluorescence signal of the complex by calculating the quantum yields of the complex and the complex nitric oxide adduct. The desired concentration of nitric oxide was obtained by diluting the calibration gas with nitrogen in a mixing chamber. The quantum yields of the complex before and after reaction with nitric oxide were  $0.168 \pm 0.001$  and  $0.187 \pm 0.002$ , respectively. In addition to the solution chemistry, solid state properties of the complex in the form of thin films were analyzed with scanning electron micrograph, atomic force microscopy, and Raman spectroscopy to unravel the morphology and structural changes due to nitric oxide reaction with the complex. Analysis of the data from scanning electron micrograph showed that there was a significant difference in the morphology, whereas atomic force microscopy and Raman spectra almost exhibited similar morphology and structural composition. Molecular orbital and excitation energies were also calculated to explain the rationale behind fluorescence nitric oxide sensor of Copper (II) complex. A summary of these results and their implications will be presented.

**KEY WORDS:** Fluorescence, Copper (II) complex, Ligand, Nitric oxide sensor

### **Classifying Nanomaterials Using Raman Spectroscopy**

Presenter's Name: Kenisha Ford

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Raman Spectroscopy is a spectroscopic technique that relies on Raman Scattering (an inelastic scattering, of monochromatic light from a laser in the visible, near ultraviolet range). Spectroscopy is the use of light, sound or particle emission to study matter and to study vibrational, rotational and other low-frequency modes in a system. Raman Spectroscopy was used to test samples of nanomaterials created by various preparation methods. In this study, 14 samples were tested using two Raman Spectrometers of various wavelengths, 633 nm and 780 nm, to test for the presence of diamond and graphene. The tests were run to determine the effectiveness of the various methods used to grow diamond and graphene on silicon (Si) substrates. Each spectrometer ran two tests per sample. The results using the 780 nm wavelength laser of

the DXR SmartRaman were inconclusive. The results using the 633 nm wavelength laser of the Delta Nu, Nu Spec were more in line with what was expected on a Raman Spectra for these materials. The information received from the tests is useful to researchers because it allows for the evaluation of the processes used to create samples and determine the changes that need to be made.

**KEY WORDS:** Raman Spectroscopy, graphene, diamond, silicon, spectrometer

### **The effects of increasing temperature and humidity on the Raman Spectroscopy Features of WO<sub>3</sub> Materials**

Presenter's Name: Raul Garcia-Sanchez

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Prabhakar Misra, Daniel Casimir, Tariq Ahmido, Shankar Baliga

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. The purpose of this research is to determine a method for predicting material-gas combinations in metal oxide gas sensors through changes in the sensor's Raman Spectroscopy features. Thermal effects are one of a variety of effects that this research will study. The Raman Spectroscopy analysis was carried out on three different Tungsten Oxide (WO<sub>3</sub>) samples at 780 nm wavelength under temperatures of 30-160°C. The major vibrational modes of WO<sub>3</sub> on Silicon substrate and WO<sub>3</sub> nanopowder, located at ~807, ~716, and ~271 cm<sup>-1</sup>, are consistent with the Raman features of a monoclinic WO<sub>3</sub> structure and correspond to O-W-O stretching, W-O stretching and O-W-O bending, respectively. For the WO<sub>3</sub> nanowires samples only the O-W-O bond stretching feature is present and asymmetric stretching of the W-O bonds occurs, resulting in a 750 cm<sup>-1</sup> band. Additionally, the O-W-O bond bending Raman feature present in the WO<sub>3</sub> on Silicon substrate and WO<sub>3</sub> Nanopowder at 271 cm<sup>-1</sup>, the nanowires sample show a bond stretching feature at 239 cm<sup>-1</sup>. Features such as 750 cm<sup>-1</sup> for nanowires and 492 and 670 cm<sup>-1</sup> for WO<sub>3</sub> on Silicon substrate, appear to slowly

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fade as temperature increases. Understanding the effect of temperature on the Raman features of WO<sub>3</sub> has helped extend our knowledge regarding the behavior of metal oxide-gas interactions for sensing applications.

**KEY WORDS:** raman spectroscopy; gas sensor; metal oxide; thermal effects; tungsten oxide

### Single Layer Graphene as Nitrogen Oxide Gas Detectors

Presenter's Name: Gina Greenidge

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Joshua Halpern, Michael Spencer, Dominick Littleton

The simplicity of graphene belies its superlative properties and its potential for use in a variety of applications. It consists of a single layer of sp<sup>2</sup> hybridized carbon atoms arranged in a hexagonal pattern. Pi-bonds project vertically from the plane: a characteristic that allows the 2D material to easily interact with electron-withdrawing chemical groups. Through a charge transfer process, a molecule can be adsorbed onto the surface causing a measurable change in the graphene's conductivity. Therefore, graphene is an excellent sensing material. The purpose of this research is to investigate the effectiveness of graphene as a sensor of the atmospheric pollutants nitric oxide and nitrogen dioxide (NO<sub>x</sub>). These gases are instrumental in the formation of smog, acid rain and tropospheric ozone. We are interested in graphene as it has the potential to be an inexpensive, portable and highly sensitive detector when compared to the instruments currently used by environmental organizations. We designed and assembled apparatus to calibrate the detectors and fabricated two-contact sensing devices via lithographic techniques. Calibration tests were performed using water vapor and it was observed that changes in conductivity are not only dependent on the concentration of the gas, but also on the operating temperature of the device itself. Currently, we are fabricating four-contact devices to improve the accuracy and sensitivity of the measurements.

**KEY WORDS:** graphene, sensor, detector, nitrogen dioxide, nanotechnology

### The Role of Intermittent Preventive Treatment (IPT) and the Spread of Drug Resistance to Malaria:

#### A Mathematical Approach

Presenter's Name: Katharine Gurski

Classification: Senior Faculty

*Presentation Type: Oral Presentation*

Intermittent Preventive Treatment (IPT) is a malaria control strategy in which vulnerable asymptomatic individuals are given a full curative dose of an antimalarial medication at specified intervals. Though the use of IPT in vulnerable humans has been shown to positively impact certain aspects of malaria transmission in these groups, this control strategy also faces the problem of drug resistance. Developing studies to understand how IPT impacts the spread of drug resistance is essential. However, because the same drug is used for both IPT and the treatment of symptomatic cases, determining which treatment protocol drives the spread of drug resistance is challenging to investigate experimentally, thus a mathematical model is beneficial. **Method:** We develop a structured model using a system of differential equations to investigate the relationship between IPT and the spread of drug resistance to malaria to determine both the critical level of IPT treatment that would minimize the spread of drug resistance in addition to the IPT dose that will lead to invasion of a resistant parasite strain. **Conclusions:** We determine that the growth of drug resistant strains of malaria is dependent on the half-life of the drug administered for IPT.

**KEY WORDS:** mathematical model, differential equations, mathematical biology, malaria, IPT

### Geo-engineering

Presenter's Name: Glynn Hill

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Over the past one hundred years the United States has been chiefly responsible for the vast increase in carbon emissions in the world. As such, global warming has become a very real and very relevant part of life for not just Americans but in many corners of the Earth, affecting precipitation in central Africa to sea levels from Italy to the Pacific Islands. Despite detractors, global warming is an undeniable part of

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life today, and to come. While some have aimed to curb the effects of global warming and slow its growth, other have turned to alternative methods and solutions to counter global warming's effects as they permeate daily life more and more. Such solutions, which include altering the composition of the sky and the flow of the oceans' waves, are called geoengineering. While some are radical, some are being considered as potential options to offset the dangerous effects of global warming. My research will delve into the history, development, feasibility, and future of geoengineering as a potential solution to global warming as well as examining the negative effects that altering natural environments may pose. Global warming is an impending threat and reality, are such drastic measures a reasonable, tangible, and safe solution? My research will examine such questions and matters.

KEY WORDS: Global Warming

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#### Low-Gravity Liquid Gas Contactor

Presenter's Name: Janelle Holmes

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Aara Ajamu Abdullah, Ryan Yarber, Donnell, Raul Garcia-Sanchez, Prabhakar Misra (Howard University), Bradley Carpenter (NASA HQ)

Liquids are incompressible fluids that move in response to applied forces. The forces present in a liquid at rest are due to gravity and surface tension. The surface tension present in water is due to the van der Waals forces between molecules within the water causing the internal molecules to be at a lower energy state than the molecules on the surface of the water. Because it takes more energy to create surface water molecules, the water resists expansion and forms a shape with minimum surface area. On Earth, the weight of the liquid dominates the effect of surface tension. During this experiment, a syringe was used to eject water, forming a liquid column between two plates. The behavior of this column was then recorded using cameras placed at different angles and analyzed. This procedure was performed in an airplane that flies a series of parabolas to induce a microgravity environment. The purpose of this experiment was to observe the behavior of liquid and the effects of surface tension without the dominating force of gravity.

KEY WORDS: Physics, microgravity, fluid dynamics, NASA Microgravity Undergraduate Research Education Program, NASA Reduced Gravity Education Flight Program

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#### Modified Back-Projection Algorithm for Landmine Detection

Presenter's Name: Ayobami Idubor

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Mihai Dimian

This research aims to use a modified Back-Projection (BP) algorithm for detection of landmines. Ground Penetrating Radar (GPR) is an electromagnetic technique that uses high resolution for detecting objects buried on the sub-surface of the earth. GPR has been in use for over three decades. GPR signals reflected from detected objects provide 3-D pseudo image which may also include color, dimension and depth estimates depending on the image reconstruction algorithm in use. GPR for landmine detection uses three basic steps that include reduction of ground bouncing from transmitted signals, feature extraction, and pre-detection. Reflected signals from objects, called clutter, contain noise which needs to be removed to obtain the required signals that will aid feature extraction and pre-detection of objects. There are several approaches to the detection of objects' images. One widely used approach is the BP Algorithm which can be implemented in MATLAB. Some lapses in the BP method include image formation in slant plane, refraction at air-soil interface, and soil dispersion thereby resulting in image defocusing and geometric distortion. This research therefore attempts to reduce the lapses inherent in the conventional BP method by proposing a 'Modified BP Algorithm' implementable in MATLAB. The Modified BP would aim to determine the actual ground location of detected landmine as there is need for geometric correction that will map the image from the slant to ground plane while at the same time taking into consideration the air-soil interface refraction and soil dispersion.

KEY WORDS: Back-Projection Algorithm, Landmine Detection, Ground Penetrating Radar

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**Novel Graphene-Oxide Functionalized Polyethersulfone (PES) Membrane: Fabrication, Characterization and Anti-fouling Behavior**

Presenter's Name: Efosa Igbinigun

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Ramamoorthy Malaisamy, Kimberly Jones, and Yaolin Liu

This study presents a novel technique of incorporating the superior properties of graphene oxide (GO) and polyzwitterions (PZW) with traditional polyethersulfone (PES) membranes to improve pollutants rejection, increase the mechanical stability, and potentially reduce fouling for wastewater reclamation. Firstly, amine functional groups were grafted to the surface of the 0.1m PES membrane by polyallylamine under ultra-violet radiation at inert atmosphere. Graphene oxide was then synthesized by the modified Hummer's method and introduced to the modified membrane surface by repeatedly spin-coating solution of 1,3,5-benzentricarbonyl trichloride ( TMC)/hexane and GO/ethanol dispersion. Lastly, the membrane will be modified with sulfobetaine to enhance surface hydrophilic properties.

KEY WORDS: Graphene Oxide GO, Polyzwitterions PZW, Surface Modification, Water Flux and Pollutant Rejection

**Growth and Characterization of Graphene on SiC substrates**

Presenter's Name: Gurpreet Kaur

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Dr. Gary Harris, Crawford Taylor

**Background:** Graphene is a planar sheet of  $sp^2$  bonded carbon atoms arranged together to form a honeycomb lattice structure. Graphene proves to be a promising material for future electronic device applications, due to its extraordinary high mobility and quantum properties. It is the thinnest material known, but also exhibits high mechanical strength. Graphene has high thermal transport, high thermal conductivity at room temperature, optically transparent, and has low sheet resistance. **Method:** In the current study, Sublimation method is investigated, where either a monolayer or multilayers of Graphene are formed on Silicon

Carbide substrates by annealing at high temperature and low pressure. This approach of forming Epitaxial Graphene on Silicon Carbide is adopted for the production of largesized films. In the recent years, Epitaxial Graphene has emerged as a new material for largescale production of wafersized materials that facilitates the development of Graphenebased electronics. In this process, following parameters such as reactor temperature, gas pressure, and Silicon sublimation rates are studied. In addition, electrical properties and crystal structure of the films are also observed. **Conclusion:** In the initial case result, a layer of Graphene was formed on the SiC substrate by using this technique. Raman spectroscopy confirms the formation of Graphene on SiC. Further, surface morphology and roughness will be investigated using Scanning electron microscope and Atomic force microscope, respectively. Hall measurements will also be utilized to determine mobility and resistivity of the grown samples.

KEY WORDS: Epitaxial Graphene, Sublimation, Raman Spectroscopy, Atomic force microscope

**Examining the Chemical and Biological Characteristics of Aerosols**

Presenter's Name: Valerie Keene

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Vernon Morris

Particulate matter (PM) consists of very minute liquid and solid particles that are suspended in the air. Knowledge of the size distribution and chemical composition of PM in the lower atmosphere is important because they can potentially enter human respiratory systems and cause health problems. This study will consist of analyzing samples of PM collected in the mid-Atlantic urban area of Washington, DC. We have been analyzing ambient urban PM<sub>2.5</sub>, suspended particles that have an average diameter of  $2.5\mu\text{m}$  and below. The objective of this study is to identify correlations between chemical composition, urban air mass characteristics, microbial presence, and bio-toxicity in PM collected in Washington, DC.

KEY WORDS: particulate matter bio-aerosols atmospheric chemistry

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**Simulations of noble gases adsorbed on graphene**

Presenter's Name: Sidi Maiga

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Silvina Gatica

We present results of Grand Canonical Monte Carlo simulations of adsorption of Kr, Ar and Xe on a suspended graphene sheet. We compute the adsorbate-adsorbate interaction by a Lennard-Jones potential. We adopt a hybrid model for the graphene-adsorbate force; in the hybrid model, the potential interaction with the nearest carbon atoms (within a distance  $r_{nn}$ ) is computed with an atomistic pair potential  $U_a$ ; for the atoms at  $r > r_{nn}$ , we compute the interaction energy as a continuous integration over a carbon uniform sheet with the density of graphene. For the atomistic potential  $U_a$ , we assume the anisotropic LJ potential adapted from the graphite-He interaction proposed by Cole et.al. This interaction includes the anisotropy of the C atoms on graphene, which originates in the anisotropic  $\pi$ -bonds. The adsorption isotherms, energy and structure of the layer are obtained and compared with experimental results. We also compare with the adsorption on graphite and carbon nanotubes.

KEY WORDS: Adsorption, graphene, Monte Carlo Simulation, anisotropic potential, Isotherm

**Isosteric Heat of Adsorption of CO<sub>2</sub> Within the groove of Carbon Nanotubes**

Presenter's Name: Mamadou Mbaye

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Silvina Gatica

The study of the adsorption of CO<sub>2</sub> molecules in nanoporous materials continues to gain ground as scientists and environmentalists struggle to find ways to contain toxic emission of gases into the atmosphere. With there beign a hole in the ozone layer coupled with the rapid expansion of our industrialized world, an urgent solution is needed to address the issue concerning air pollution. The adsorption of CO<sub>2</sub> molecules in nanoporous materials have been experimentally

investigated by many groups. The objective of this study is to explore the thermodynamic properties of CO<sub>2</sub> molecules adsorbed within the groove of Carbon Nanotubes. Our work is motivated by the experimental studies of Migone et al. on the isosteric heat ( $Q_{st}$ ) of absorption of various gases physisorped in the groove of NTs. In their studies of the isosteric heats of CO<sub>2</sub>, Kr, and Ar adsorbed within carbon nanotubes, Vilches and Migone observed that the isosteric heat of CO<sub>2</sub> behaves differently from the other gases studied. They observed that the isosteric heat of CO<sub>2</sub> molecules in the groove has a U-shape, whereas the  $Q_{st}$  of Kr and Ar increase monotonically. We will explore the behavior of the isosteric heat of adsorption using different potential models and compare our results with experimental findings.

KEY WORDS: Adsorption of CO<sub>2</sub> in carbon nanotubes

**Nanoparticle Toxicity on Biofilms Developed within an Environmentally Relevant System: A comparison of a mixed bacterial community to a single bacterial strain**

Presenter's Name: Mandy Mitchell

Classification: Graduate Student

*Presentation Type: Poster Presentation*

This study compared the susceptibility of a controlled mixed bacterial community and a single bacterial strain of *Pseudomonas aeruginosa* to nanoparticle toxicity. The analysis was based on the minimum inhibitory concentration (MIC) for biofilm development evaluated through bacterial staining with crystal violet. Healthy biofilms were also subjected to the same concentrations of the metal and graphene oxide nanoparticles. The impact of these nanoparticles on the healthy biofilms was evaluated using the frozen section technique at multiple time intervals over a period of one week. In total, four nanoparticles; silver sulfide, titanium dioxide, zinc oxide and graphene oxide, were chosen to investigate the toxic impact of both well-known and novel nanoparticles on biofilm health and development. Additionally, further comparison was established to elucidate the toxic impact of the metal nanoparticles on the bacterial biofilms versus the planktonic forms of the same bacterial strains. Our initial data and research indicate that biofilms are less susceptible to metal nanoparticle toxicity as compared to the planktonic forms of the same bacteria. This reduced toxicity is shown to be as a



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result of the extra cellular polymeric substance excreted by biofilms, which inhibits penetration of the metal nanoparticles to lower layers of the biofilm. This inhibition of the biofilm against the nanoparticle impact was determined by tagging the nanoparticles with a fluorescent marker which allowed the depth of the nanoparticle penetration to be visible through the fluorescent microscopy technique.

**KEY WORDS:** Biofilms, Nanoparticle toxicity, Metal nanoparticles, Graphene oxide, Zinc oxide

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**Heteroepitaxial Growth of Polycrystalline Diamond films by hot filament chemical vapor deposition for device application**

Presenter's Name: Bokani Mtengi

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Garry Harris, James 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 first diamond synthesis was through the high pressure - high temperature method. Besides the high price, the diamond is in the form of small particles that are too small for large-scale production. We investigate the effects of growth parameters and nitrogen doping on diamond properties synthesized by hot filament chemical vapor deposition method on silicon and single crystalline diamond substrates. Hot filament chemical vapor deposition allows for excellent and repeatable uniform growth processes for diamond. The silicon substrates are pre-treated with nanodiamond seeds for nucleation enhancement. The growth parameters; the methane and hydrogen flow rates and ratios, growth distance growth temperature, filament temperature, growth time and process pressures are investigated and their effects on diamond properties are discussed. In-situ growth process is monitored using the laser reflectance interferometer to determine growth rate, start and termination of diamond

growth. Raman spectroscopy is used to confirm the presence and quality of diamond. The surface morphology and structure of the films are examined using scanning electron microscopy. Atomic force microscopy is used to measure the grain size of the diamond films. Resistivity and carrier concentrations are measured are measured using the Hall effect measurements.

**KEY WORDS:** Hot filament chemical vapor deposition, Polycrystalline, Diamond, nano diamonds, Scanning electron microscopy

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**Deposition of Graphene on Various Substrates Using Different Methods of Chemical Vapor Deposition**

Presenter's Name: Mpho Musengua

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Gary Harris, Crawford Taylor, James Griffin

Since its isolation in 2004 graphene has attracted a lot of attention because of its exceptional unique properties such as its high electronic conductivity, good thermal stability and its excellent mechanical properties. These promising properties together with the ease of processibility and functionalization make graphene based materials ideal candidates for incorporation into a variety of future applications. Importantly, graphene and its derivatives have been explored in a wide range of applications, such as electronic and photonic devices, clean energy, and sensors. 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), hot filament CVD, and radio-frequency plasma CVD. The methods were selected because they provide the option to use various substrates under unique conditions. From these methods, graphene growth was attempted on the following substrates: copper, 3C-silicon carbide on silicon, nickel, nickel chrome, and nickel films on 3C-silicon carbide. These

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substrates were selected due to their properties of strength, ductility, and resistance to corrosion and heat. The substrates were characterized using scanning electron microscopy and Raman spectroscopy. Raman results have confirmed multi-layer graphene on nickel films on 3C-silicon carbide, diamond nanoseeded nichrome, Ni foil, and annealed Ni foil.

KEY WORDS: Graphene, Chemical vapor deposition, Mpho Musengua

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### **An iterative $\ell_1$ -Regularized Least-Squares Algorithm for Ground Penetrating Radar Imaging**

Presenter's Name: Mandoye Ndoye  
 Classification: Post Doc/ Resident/ Fellow  
*Presentation Type: Oral Presentation*

Coauthors: John Anderson

We propose a fast majorize-minimize (MM) based  $\ell_1$ -regularized least-squares ( $\ell_1$ -LS) algorithm that is applicable to large-scale, real applications. We then use the algorithm to effectively estimate reflection coefficients of scenes-of-interest using ground penetrating radar (GPR) datasets. The  $\ell_1$ -regularization choice guarantees that the model incorporates the expected sparsity of reflection coefficients. The MM principle is used to efficiently solve the  $\ell_1$ -LS optimization problem and arrive at an iterative algorithm that is effective yet straightforward-to-implement. The MM principle also decouples the estimation of individual reflectance coefficients and thus the resulting algorithm is readily amenable to fast implementation via parallel or graphical processing unit (GPU) processing. Furthermore, for GPR image reconstruction or any related applications using synthetic aperture imaging concepts, we derive a fast implementation technique that lead to significant gains in both computational speed and memory usage efficiency. The performance and effectiveness of the proposed MM-based  $\ell_1$ -LS algorithm are evaluated using numerical experiments and large-scale, real GPR datasets.

KEY WORDS: Radar Imaging, Signal Processing, Regularized Least-Squares

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### **Sensitivity Analysis: Extended Fourier Amplitude Sensitivity Test**

Presenter's Name: Blanche Ngo Mahop  
 Classification: Undergraduate Student  
*Presentation Type: Poster Presentation*

Sensitivity analysis can help determine which parameters are the key drivers of a model's results. Often used in many fields like engineering, econometrics, or biology, this study provides methods capable of computing the influential relationship between the model's uncertainty input and output parameters. In this paper, we explore the relationship among the coefficients used in one of the sensitivity analysis method: the Extended Fourier Amplitude Sensitivity Test (EFAST). Based on the Fourier Amplitude Sensitivity Test, EFAST provides a way to estimate the variance of the output variable and the contribution of individual factors to this variance. We will also look at some applications of the EFAST and interpret the results.

KEY WORDS: Sensitivity Analysis, Fourier coefficients, Variance,

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### **A MAP method for landmine and IED Detection using GPR Datasets**

Presenter's Name: Henry Ogworonjo  
 Classification: Graduate Student  
*Presentation Type: Oral Presentation*

Coauthors: John M. Anderson

In this work, we use the maximum a posteriori (MAP) method to develop an algorithm which we call the GPR MAP Reconstruction (GMR) algorithm that reconstructs sub-surface images from ground penetrating radar (GPR) datasets. The negative of the objective function resulting from the MAP method is minimized using a majorize-minimize algorithm that is guaranteed to monotonically decrease the negative MAP objective function. Two different prior probability density functions were applied each with its own unique advantage. The first prior probability density function that we have chosen is novel and incorporates the information that scatterers are sparsely distributed within the typical imaging space. It has a parameter that is judiciously chosen in a

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straightforward manner for applications where it's desirable to have a tunable parameter. A second probability density, based on the Jeffrey's non-informative prior is even simpler to implement, enforces sparsity and is parameter-free. This prior therefore overcomes the problem of parameter estimation while retaining a comparable level of performance. The GMR algorithm using either prior has advantages over more popular image reconstruction algorithms like the delay-and-sum, sparsity learning via iterative minimization, and the recursive side lobe minimization. We tested the algorithm on both synthetic and real datasets and compared the images obtained with that of delay-and-sum (DAS) algorithm. The results obtained were very promising in that the images obtained were more accurate and less noisy when compared with those of the DAS algorithm. Also, the proposed method is amenable to parallel implementation.

KEY WORDS: GPR, majorize-minimize, MAP, image reconstruction, sparsity

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### Nanoparticle Diffusion in Biofilm

Presenter's Name: Mariama Orange

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Bacteria often band together to form sticky, robust communities known as biofilms. In fact, bacteria are much more likely to be found in nature in the form of biofilms than in their isolated, planktonic form. Biofilms are ubiquitous in the ecosystem and have ample opportunity to come in contact with nanoparticles, extremely small materials on the order of  $10^{-9}$  meter. From wastewater treatment to medicine to water filtration, whether by chance or by intention, the system interaction of nanoparticles and biofilms provides interesting research opportunities. Many prominent questions relate to how nanoparticles will diffuse through a biofilm. Given the typically heterogeneous make-up of biofilms -- live microbial cells embedded in an adhesive extracellular polymeric substance (EPS) matrix -- the diffusion of nanoparticles in biofilms can often be anomalous and described by a fractal matrix. Using computer modeling, this study explores characteristics, for example size and shape of the nanoparticle, that may have an effect on the phase transition of the system from anomalous to normal

diffusion. Bacteria and molecular-sized particles operate at low Reynolds number, where Brownian motion, or diffusion caused by thermal noise, competes with directed motion. The diffusion of nanoparticles is modeled by a fractal substrate to capture the heterogeneity of the biofilm for input into the diffusion equation.

KEY WORDS: biofilm, fractals, diffusion, cellular automata, nanoparticles

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### Visual Keccak

Presenter's Name: Wayne Patterson

Classification: Senior Faculty

*Presentation Type: Oral Presentation*

Coauthors: Philip Browning, Acklyn Murray, Ebel Nwafor, Karen Green

Two important problems in the securing of information are the secrecy problem and the authentication problem. The solution to the secrecy problem is addressed generally by cryptographic methods, and the authentication problem by digital signature methods. A US national standard for digital signatures was adopted about 20 years ago. The United States Digital Signature Standard of 1993 contained a secure hashing algorithm that enables files or documents of any length to possess a digital signature. This hashing algorithm originally adopted was recently found to be partially insecure and thus a new standard, called Keccak or SHA-3, was adopted, after about seven years of review. The standard has yet to be widely adopted, because it represents a dramatically different approach to hashing. The purpose of this project has been to provide an instructional and visual tool for teaching SHA-3.

KEY WORDS: cybersecurity, digital signatures, secure hash functions, Keccak, SHA-3

A B S T R A C T S

**The Three Cases of Ternary Numbers**

Presenter's Name: Roshil Paudyal  
 Classification: Undergraduate Student  
 Presentation Type: Oral Presentation

The Catalan numbers appear in many contexts in many parts of mathematics. Among them are the number of lists that can be sorted using a first in, first out single stack, triangulations of an n-gon, one dimensional random walk with an absorbing barrier, fluctuations of the lead, number of 2 by n standard tableaux, complete binary trees, and Dyck paths. Our research considers an extension to the ternary numbers. One way these would show up is as lists of sortable by a first in, first out stack of length 2n with a side condition that elements are put in the stack 2 at a time. In some sense this goes from dimension 1 to dimension  $(1 + \sqrt{5})/2$ , the golden ratio. Both the mathematics and the applications are of interest. Other items of interest where the ternary numbers appear are:

- a) walks on the family tree of a honey bee where a male has only a mother while a female (the queen bee) has both a mother and father.
- b) red-green trees, which are a variant of ordered trees with edges colored either red or blue with a constraint that there can be no red edge to the left of a green edge.
- c) even trees, an extension to binary trees where any node can have a degree of any even number instead of just two.

KEY WORDS: Combinatorics, Ternary numbers, Generating functions, Random walks, Graphs-Trees

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**Bathyal meiofaunal community structure in relation to oxygen gradients off Costa Rica**

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

Coauthors: Carlos Neira, Lisa A. Levin

Metazoan meiofaunal communities of bathyal sediments (400, 620, 800, 100, 1200 and 1800 m) were investigated along a transect within and beneath the oxygen minimum zone (OMZ;  $O_2 < 0.5 \text{ ml L}^{-1}$ ) in the Costa Rica continental margin. By using samples collected in February 2009 with a multicorer,

and extracted on a 40- $\mu\text{m}$  mesh, we tested the hypothesis that changes in oxygen concentrations would be reflected in the density and taxa composition of meiofaunal communities. Meiofaunal densities ranged from  $\sim 300 \text{ ind } 10 \text{ cm}^{-2}$  to  $3627 \text{ ind } 10 \text{ cm}^{-2}$ . Nematodes were the dominant group at every station, contributing 99.9% of density in the OMZ core (400 m). Harpacticoid copepods were the second important taxon and its relative dominance increased consistently with depth and increasing bottom-water oxygen. Meiofaunal taxon richness and meiofaunal densities showed a positive, and negative correlation with oxygen concentration, respectively. The lower meiofaunal diversity and hence trophic complexity in oxygen-depleted sites rises concerns about impoverishment of ecosystem functioning in the face of OMZ expansions.

KEY WORDS: meiofauna, bathyal sediment, ecology, Costa Rica, Oxygen Minima Zones

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**Human Powered Vehicle Safety: Recumbent Tricycle Visibility of Surroundings**

Presenter's Name: Sydney Revelle  
 Classification: Undergraduate Student  
 Presentation Type: Poster Presentation

Coauthors: Mark Thom, Jordan Gill, Ernest Samotshozo

This research presents the design of an innovative and energy – efficient safety component for general human powered vehicles (HPV). A specific focus is on the design integration for a recumbent tadpole configured tricycle. The design addresses vehicle and driver visibility. Two human senses closely associated with driving, sight and sound, are capitalized on for this design. The details on power analysis, performance limitations as well as advantages and disadvantages of the design components are included in this paper. This design serves to provide an increase in the safety of the HPV riding experience by enhancing visibility in a cost effective way.

KEY WORDS: Human, Powered, Vehicle, Safety, Tricycle

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## A B S T R A C T S

**Understanding the Fouling Mechanisms of Cross-Flow Filtration Systems for Nuclear Waste Applications**

Presenter's Name: Ryane Rollock

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Concerns for the adverse impacts from the underground radioactive waste have been explored by the development of innovative methods for the effective waste separation and volume reduction. A rational approach is to put the fuel through a chemical reprocessing operation to separate out the uranium and plutonium, which are valuable for future use as fuels, and to convert the residual material into a form suitable for burial. Cross-flow microfiltration has proven to be an effective method for low-activity radioactive waste volume reduction. However, membrane fouling by the heavy metals is a definitive hurdle to overcome in this type of remediation and is responsible for reduced membrane life, reduced flux, altered rejection of particles and increased costs in remediation. In this study, we analyze the fouling dynamics of individual waste components such as boehmite (AlO(OH)), gibbsite (Al(OH)<sub>3</sub>) and goethite (FeO(OH)), which were identified as the major by-products in the radioactive waste process. The three major tasks explored in the study include:

- 1) Fouling behavior of these three foulants in different conditions
- 2) Understanding of the fouling mechanisms, including the effects of ionic strength, pH and flow conditions on fouling behavior as well as interfacial forces between membrane surface and foulant.
- 3) Development of effective fouling control methods.

We conducted cross-flow filtration experiments using 0.1M Polyethersulfone membrane and Boehmite feed solution containing powdered activated carbon (PAC) to enhance membrane recovery. Preliminary results indicate that the use of PAC may assist in membrane cleaning and recovery. SEM and EDS results show similar amounts of foulant from top to bottom of the boehmite fouled membrane cross-section with and without PAC but flux analysis shows that recovery flux is 98% of the initial flux when PAC is added and 82% of the initial flux when it was not added. Fouling experiments using gibbsite and goethite are in progress. We have also designed a series

of experiments that assess the interfacial forces between the foulant and the membrane surface under different operational parameters using an atomic force microscope (AFM) and the results would be presented.

KEY WORDS: membrane nuclear waste remediation cross flow filtration interfacial forces

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**Detection and Diagnosis of Tropical Storms in High-Resolution Atmospheric Models**

Presenter's Name: Keren Rosado

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Keren Rosado, Venkatramani Balaji, Kyle Olivo

The National Oceanic and Atmospheric Administration (NOAA)/Geophysical Fluid Dynamics Laboratory (GFDL) has built a software called TSTORMS code. TSTORMS identifies storms in climate model data. This software uses known physical features associated with tropical storms i.e. vorticity, vertical temperature, and moisture structure. These physical features are used to detect storms and categorize them by strength. As the models grow in resolution, this analysis software has also grown in computational expense and complexity. Scientists at Lawrence Berkeley Labs (LBL) have created a version of the TSTORMS code called: A Parallel Toolkit for Extreme Climate Analysis (TECA). For this project, a comparison of the computational cost of running the TECA code and the TSTORMS code was done. The comparison was performed for a 15 year simulation (1981-1995) using the GFDL atmospheric data. The TSTORMS code runs serial in a single core and finished the job in 3 hours for a 15 year simulation. On the contrary, the TECA code runs parallel with 15 cores and finished in 24 hours. After finishing the comparison it can be conclude that the TSTORMS code is more efficient in terms of time and computational cost. As a result of this diagnosis, a new and faster version of the TSTORMS code was developed. This new version of the TSTORMS code is a storm diagnosis installed at the GFDL automated analysis suit.

KEY WORDS: Hurricanes

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## A B S T R A C T S

**Associating Finite Groups with Dessins d'Enfants**

Presenter's Name: Ahmed Tadde

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Katrina Eidolon, David Heras, Yuan Feng

Each finite, connected planar graph has an automorphism group; such permutations can be extended to automorphisms of the Riemann sphere. In 1984, Alexander Grothendieck, inspired by a result of Gennadii Belyi from 1979, constructed a finite, connected planar graph via certain rational functions by looking at the inverse image of the interval from 0 to 1. The automorphisms of such a graph can be identified with the Galois group of the associated rational function. In this project, we investigate how restrictive Grothendieck's concept of a Dessin d'Enfant is in generating all automorphisms of planar graphs. We discuss the rigid rotations of the Platonic solids (the tetrahedron, cube, octahedron, icosahedron, and dodecahedron), the Archimedean solids, and the Catalan solids via explicit Belyi maps. Conversely, we enumerate groups of small order and discuss which groups can – and cannot – be realized as Galois groups of Belyi maps.

KEY WORDS: Belyi Functions, Enfants, Graph Theory, Group Theory, Algebraic Geometry

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**An Investigation of Biotransformation and Bioaccumulation of Polychlorinated Biphenyls (PCBs) in Vermi-Bioreactor Systems with earthworms**

Presenter's Name: Moses Ukaoma

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Moses Ukaoma, John Tharakan

In this study, an understanding of the biotransformative capability of *Eisenia hortensis* species earthworms in the biological treatment of sediments contaminated with polychlorinated biphenyls (PCBs) was investigated. 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 thirty years, the damaging effects remain. In a similar study previously conducted in our laboratory demonstrated the biotransformative

capability of *Eisenia foetida* species earthworms in the treatment of PCB-contaminated sediments. In the present study, our focus was to test the PCB biotransformative capability of this different earthworm species and to understand how and where, if any, biological transformation of PCBs occurs, specifically focused on identifying PCB biotransformation in the anterior, medial and posterior segments of the earthworm. In our studies, a sample of earthworms was placed in a PCB-contaminated sludge-soil mix. Samples were removed periodically and the PCB distribution in the samples' biomass was analyzed. Each earthworm was sectioned into proximal, central and distal sections, each of which was analyzed for PCB content. A gas chromatography equipped with an electron capture detector was used to analyze earthworm samples after appropriate extraction. The results of these analyses will provide information on the biotransformative capabilities of earthworms in any proposed use of vermicompost bioreactors for the treatment of PCB contaminated media. Data analyses will also shed some light on the biotransformation and bioaccumulation of PCBs in earthworms exposed to PCB contaminated sediments.

KEY WORDS: Bioremediation, Polychlorinated biphenyls, PCB, biotransformation, earthworm

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**The minimum-uncertainty squeezed states for simple harmonic oscillator**

Presenter's Name: Jose Vega Guzman

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Oral Presentation*

Coauthors: Sergey Kryuchkov, Sergei Suslov

We describe a multi parameter family of the minimum uncertainty squeezed states for the harmonic oscillator in nonrelativistic quantum mechanics. They are derived by the action of the corresponding maximal kinematical invariance group on the standard ground state solution. We show that the product of the variances attains the required minimum value  $1/4$  only at the instances that one variance is a minimum and the other is a maximum, when the squeezing of one of the variances occurs. The generalized coherent states are explicitly constructed and their Wigner function is studied.

KEY WORDS: Schrodinger equation, uncertainty principle, variance

## A B S T R A C T S

**Renewable Energy Credits for Residential Pellet Stoves Through Thermal Energy Metering**

Presenter's Name: Alexis Wells

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Pellet stoves are currently used as a renewable energy alternative to residential space heating sources such as gas and electric space heaters. However, while pellet stove use could be leveraged by states to achieve their renewable energy goals, this and similar thermal energy technologies do not yet qualify for benefits such as renewable energy credits (REC's). This report compares the functionality, efficiency, and emissions of pellet stoves to technologies that are currently certified REC technologies, and we argue that residential pellet stoves should also be made eligible for certification in renewable energy credit production with the implementation of metering and sensors. Our analysis includes discussions of pellet stove components and properties; current state and federal regulations of emissions including particulate matter, carbon dioxide (CO<sub>2</sub>), and mono-nitrogen oxides (NO<sub>x</sub>); and state and federal incentive programs. Finally, we discuss how metering and sensing will also allow pellet stoves to meet requirements for state and federal renewable portfolio standards by providing a measurement of useful thermal energy.

KEY WORDS: pellet stove, renewable energy credit, thermal metering, particulate matter emissions

**Age-Dating Star Clusters in the Luminous Infrared Galaxy VV340**

Presenter's Name: Aara'L Yarber

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

The luminous infrared galaxy (LIRG: i.e., L\_IR [8-1000 microns]  $\gg 10^{11} L_{\text{sun}}$ ) VV 340 is observed to be a pair of  $z = 0.03$  interacting spiral galaxies, with one being observed face-on (VV340North) and one edge-on (VV 340South). The interaction has triggered a burst of star formation in both galaxies, and we make use of Hubble Space Telescope ultraviolet (ACS/SBC) and optical (ACS/WFC) imaging data to constrain the age of luminous optical clusters in the face-on galaxy VV 340South. We find that, for an instantaneous starburst, a Salpeter IMF and no reddening, the cluster ages are

in the range of 10-300 million years old. However, the clusters can be as young as a few million years with significant amounts of reddening. The upper limit cluster age range is consistent with detailed modeling of a subset of LIRGs which show that pericentric passage in many LIRGs occurred 200-500 million years prior to when these systems are being observed. This study is part of the Great Observatories All-sky LIRG Survey (GOALS), which is a multi-wavelength campaign designed, in part, to study the evolution of star formation in LIRGs.

KEY WORDS: Astronomy, Galaxy Evolution, Galaxy Merger, Star Formation Rates, LIRG

**Earth Effects, Radiation Patterns and Transmission Property of Antennas Applied in a Subsurface Object Detection System**

Presenter's Name: Ang Yu

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Skander Chaouch-Bouraoui, Mihai Dimian

The incidents related to landmines and improvised explosive devices have increased significantly during the last years in the Afghan and Iraq wars. As a result, there exists an intensive research focus on developing detectors acting at a reasonable range characterized by high sensitivity and low rate of false alarm. The Army Research Laboratory has developed a vehicle-based radar system forward looking with range coverage of about 25 meters. This synchronous impulse based reconstruction radar employs a pair of transmitters located at both ends of a receiving antenna array operating at the nominal frequency band of 500 MHz – 2500 MHz. In order to further decrease the false alarm rates, we believe that information about the environmental conditions could come from the platform used for the radar and/or from prior knowledge about the terrain to be imaged. This presentation is aimed at providing an insight into the earth effects on transmitting and receiving antennas characteristics by considering a moderately complicated bi-static subsurface object detection system including, as well as a bilayer model for the earth with different soil properties. Another purpose of this paper is to investigate the effect of the earth model on the transmission between horn antennas and microstrip patch antennas.

KEY WORDS: subsurface object detection, antenna, radiation pattern, transmission coefficients, soil property

A B S T R A C T S

Social Sciences

**Centralized Science in the Soviet Union: Genetics and Michurinite Lysenkoism**

Presenter’s Name: Pavilya Appleberry

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Bolshevik revolutionaries, and eventual Soviets, engendered radical ideals about society. By the time the ideals of the “Manifesto of the Communist Party” were implemented into the Soviet Russian political system, the implementation of ideology into society was underway. At the forefront of creating this revolutionized society, was the Soviet Union’s centralization of science. This ideology-motivated goal forged what became known as Soviet science. However, this effort was initiated by the Soviet Union’s initial plan to create a utopian society through its eugenics program. In addition, to establish this new science, classical genetics was deconstructed, and Soviet genetics was instituted through Michurinite Lysenkoism. However, the fallacies of this pseudoscience resulted in its unpopularity and ultimate failure, and the formation of a dystopia. This paper seeks to examine how the Soviet Union engendered an ideologically based pseudoscience to create a formfitting utopian Soviet society and culture under the guidance of Lysenkoism.

KEY WORDS: Lysenkoism-Michurinite Soviet-Science Genetics Soviet-Union ideology

**Exploring Barriers and Cultural Assets as Predictors of Psychosocial Adjustment among African American Youth in Out-of-Home Care**

Presenter’s Name: Nere Ayu

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Every year, in the United States, thousands of children are placed in out-of-home care (i.e. foster homes, group homes, kinship homes, etc.). On September 30, 2011, the Adoption and Foster Care Analysis and Reporting System (AFCARS, 2012) reported that over fifty percent of the 406,000 children

in the United States living in foster care placement were children of color. African American children and youth in foster care face a unique challenge academically and socially, especially after taking into consideration the disparities that exist within the child welfare system. Hence the present study has two aims: 1) to examine cultural socialization and racial identity as protective factors in the relationship between racial discrimination and academic outcomes and self-esteem; and 2) to explore the role of cultural socialization in the context of foster care placement. At the present time, there are very few studies that examine modes of cultural socialization and racial identity within foster care populations. Further, there are no studies to date that examine race-related stress, i.e. racial discrimination, and its effects on academic outcomes and self-esteem among foster care youth. Therefore, as long as a significant number of African American youth enter and remain in care, the importance of examining psychosocial adjustment of foster care youth cannot be over emphasized.

KEY WORDS: foster care, cultural socialization, academic achievement, African American

**Caribbean Cultural Transmission: An Analysis of Second Generation West Indians**

Presenter’s Name: Chynere Best

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

This paper focuses on the factors affecting cultural transmission from Caribbean immigrants living in the United States, to their children. The term second generation West Indians is used to refer to the American born and raised offspring of Caribbean immigrants. The literature has shown some in depth analysis of ethnic identification among second generation West Indians and the benefits and drawbacks of accepting or rejecting this identity. Previous studies have also highlighted the dilemma faced by the second generation in choosing to identify as either American, ethnic or a combination of the two. Class and environment are presented as having great influence over cultural transmission and ethnic identification. However,



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there is a clear gap in the literature with regard to Caribbean immigrants on how cultural transmission takes place, which cultural elements are passed on and which elements are inculcated by the second generation. Based on preliminary analysis of our data, it is hypothesized that parents with a higher sense of ethnic identity tend to place more value on educational achievement and attainment compared to those who have a low sense of ethnic identity.

**KEY WORDS:** Caribbean immigrants, cultural transmission, ethnic identity, second generation, identity

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**Variations in Early Developing Goal Structure Understanding and Causal Inference Generation: An Update**

Presenter's Name: Porsche M. Boddicker

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Chastity C. McFarlan, Danielle D. Brown, Barbara Burns

Narrative comprehension is a collaboration of multiple cognitive processes, such as understanding of characters' goal plans and causal inference generation. Goal structure understanding is the ability to identify characters' goals, attempts to achieve goals, and outcomes of attempts along with their hierarchical relationships. Causal inferences unite elements of a goal structure and allow comprehenders to fill in information that is not explicitly mentioned in a narrative. Processes involved in narrative comprehension are essential to everyday social understanding, adaptive behaviors, and school readiness in young children and aid in future school-related behaviors. The current study focused on how the variations in the goal structure influenced goal structure understanding and causal inference generation in preschoolers.

**KEY WORDS:** Narrative, Goal Structure Understanding, Causal Inference Generation, Narrative Comprehension, Cognitive

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**Rhetoric and Homelessness: The Formidable Affects of Language on Social Conditions**

Presenter's Name: Alexis Boyd

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

The people of the United States of America take a strong interest in numerous and various socio-political and human rights global issues. Public and private businesses and non-profit organizations have countless initiatives to promote equality of life across the globe, and Americans all over the country volunteer their time and services to improving the living standards of the global community. However, many Americans often overlook those members of their own community who are struggling. Homelessness Is a pressing problem that affects each and every state in this country yet is perhaps one of the most overlooked and least discussed social issues. American people are conditioned to walk past those fellow Americans who huddle on street corners, while refusing to make eye contact. There Is a pervasive stigma associated with people who are considered homeless perpetuated by the media, but more importantly, by the language and behavior engaged with when discussing this issue. The purpose of this research is to study how the interactions, attitudes, and language of both caretakers who work at homeless shelters and members of the larger community influence the representations and understandings of the people's who are considered homeless. This paper will couple both extensive analysis of secondary sources and empirical data gathered from interviews of community members, shelter caretakers, and people who have lost their homes, in order to gain a full understanding of the ways language determine and shape societal structure.

**KEY WORDS:** homelessness, language, social-rhetoric, culture, anthropology

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**Punch First Ask Questions Later: Reality Television's Effect on college aged Women's Conflict Resolution Skills**

Presenter's Name: Antonya Bruno

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

According to the U.S. Department of Education (2010), there were 33 murders on college campuses nationwide in 2008 and 21 in 2009. This data does not, however, reflect the amount of small disputes that happen in college dorm rooms. It does show that there is some serious violence taking place on campuses nationwide. In 2011 there was a murder involving a female student stabbing her roommate at Bowie State and a similar incident at Middle Tennessee State University the same year. At the same time there has been an increase in the consumption and production of reality programming like Mob Wives, Basketball Wives, Real Housewives, and similar shows. Reality television shows have grown in popularity exponentially since the early 2000s. Now many of them consistently demonstrate women employing poor conflict resolution skills and having altercations. This quantitative research study sees if watching this type of programming had an effect of African- American women's conflict resolution skills.

KEY WORDS: conflict resolution, reality television, women, college, Howard University

**Comparing Goal Structures According to Outcomes**

Presenter's Name: Peta-Gaye Bullock

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Christina Crowder, Chastity McFarlan, Danielle Brown

**Background:** Our comprehension of the narratives (or stories) we hear daily depends on our ability to interpret the goals and behaviors of others (Graesser, Singer, & Trabasso, 1994). Most narratives follow a plot that can be organized hierarchically according to characters' goals (G), attempts (A) and outcomes (O). Variations in these hierarchal goal structures depend on a successful versus failed outcome (Trabasso, van den Broek, & Suh, 1989). The formations of these goal structures are reflective of the mental representations that readers form when comprehending a story. The current study analyzes narrations

to see if goal success or failure is influential on the number of GAO episodes produced and the mental representations procured during comprehension.

KEY WORDS: narrative comprehension, goal plans, outcomes

**Comparing Adult Recalls of Televised Narratives According to Goal Structure**

Presenter's Name: Silas Burris

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Laura A. McGhee, Mudiwa S. Ford, Chastity C. McFarlan, Danielle D. Brown

Narratives are goal-directed stories structured by protagonist goals, attempts, and outcomes. Comprehension processes (i.e., goal structure understanding, causal inference generation) are used to comprehend narratives of all types (e.g., books, television; Graesser et al., 1994). Causal inferences connect narrative information, while goal structure understanding coherently organizes narrative events (Trabasso, et al., 1992). These processes construct narrative mental representations of goal structure events (i.e., goal-attempts) to retain content. However, mental representations are susceptible to inaccuracies when narrative goal structures vary. Research has identified benefits of comprehending televised narratives (Anderson & Hanson, 2010) but remains uncertain how goal structure variations impact mental representation formation. The current study examines how various goal structures impact mental representations as indicated by their recall of televised narrative goal structure events. We employed free recalls to assess the accuracy of adult mental representations across eight televised narrative goal structures. College participants (N=50) viewed eight televised narratives and were asked to recall after each. Recalls were transcribed and divided into idea units. Coding is ongoing for 400 recalled narratives. Master codebooks of goal structure events were compiled for each narrative. Comparing recalls to codebooks, percentages of identified goal structure events will indicate how mental representations are influenced by narrative structures. Preliminary findings suggest structures with more events and competition between primary characters yield lower recall accuracy. Results will identify goal structure variations

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that negatively impact adult recall. Findings may identify comprehension and retention trends that would improve the writing and development of televised narratives for all audiences.

**KEY WORDS:** narratives-televised, comprehension, recall, adult, goal-structure

**Eating Behavior, Inflammation and Cognitive Associations among African Americans**

Presenter's Name: Desiree Bygrave, MS

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Kimberly Bell, PhD, Jules P. Harrell, PhD, Clive O. Callender, MD, & Alfonso Campbell, PhD

Previous research suggests that diet modifies cognitive performance and systemic inflammation. However, these findings have been focused on specific dietary nutrients or foods with few examining the effect of overall dietary patterns reflected through eating behaviors. Recent animal studies have established significant associations among eating behaviors high in fat and sugar, with inflammation and cognitive impairment in memory domains, sometimes without significant weight gain. This association has not been fully examined using human samples. Moreover, the association among eating behaviors, inflammatory profiles and cognitive performance has not been fully examined in African American adults who are disproportionately at risk for cognitive impairment, inflammatory conditions leading to chronic disease, and, brain-associated pathologies compared to their Caucasian counterparts. The objective of this study was to examine the relationship among eating behaviors, markers of inflammation, and cognitive performance. The analysis was a part of a larger behavioral research project and consisted of a sample of 97 African Americans from the Washington, DC community who completed a battery of neuropsychological and behavioral measures including the California Verbal Learning Test (CVLT), STROOP and Eating Behavior Patterns Questionnaire. Hierarchical regression analysis showed an inverse relationship among total recall score of the CVLT, and, high density lipoprotein, cultural/lifestyle eating behaviors, and, a direct relationship with low fat diet eating behaviors. There was also an inverse relationship among Stroop raw

color/word and Interleukin-6 (IL-6), and C Reactive Protein  $F(5,96) = 8.733$ ,  $R^2 = .324$  and  $F(3,98) = 4.298$ ,  $R^2 = .120$  respectively with no significant eating behavior associations. Findings suggest increased inflammation is associated with a cultural/lifestyle of eating a diet high in fat, and, poorer cognitive performance, specifically within the verbal memory domain. Future studies should examine possible moderating effects and additional cognitive domains.

**KEY WORDS:** Inflammation, Eating Behavior, Cognition, Memory, Executive function

**Comparing Four Books According to Types of Inferences**

Presenter's Name: Marcia Calloway

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Chastity McFarlan, Danielle D. Brown, Ph.D.

Narrative comprehension involves establishing causality between events and understanding underlying narrative structure (Graesser, McNamera, & Louwerse, 2003). Two interdependent cognitive processes are required for narrative comprehension — causal inference generation and narrative goal structure understanding. Causal inference generation allows for comprehenders to “fill in” missing information for narrative information that is not explicitly stated (Kendeou et al., 2008; Graesser et al., 1994). Narrative goal structure focuses on character goals, characters' attempts to achieve goals, and the success or failure of the attempt (i.e., narrative elements). Causal inferences are generated to connect narrative events within and across episodes. These inferences are usually generated on-line and causally connect narrative events, time and places of actions, ideas and emotions (Graesser et al., 1994; Trabasso et al., 1989) as well as events across elements of the narrative goal structure (Graesser et al., 1994). Complexity of causal inferences vary according to the type of events are connected. Though causal inference generation has been researched in immature and mature comprehenders, the effects of narrative goal structure on the on one's mental representation has been less researched. The current study examined the types of causal nferences generated according to the variety of narrative goal structure. It was hypothesized that complex inferences would be generated to connect character

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goals with attempts, because motivational inferences link character action and intention. One hundred college students were asked to narrate four wordless picture books that varied in goal structure. College students were used to ensure that differences among causal inference generation were due to goal structure variety rather than developmental differences. Preliminary results demonstrated that the complexity type across books were determined according to the connecting goal structure elements. Likewise, physical inferences were generated to connect character attempts with their successful outcomes. The current study has implications for children's educational material, such that narratives can be constructed according to children's mental representation.

KEY WORDS: narrative, comprehension, low-income children

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**Shining a Light on African Freedom Struggles: The Council on African Affairs' Newsletter New Africa.**

Presenter's Name: Alhaji Conteh

Classification: Graduate Student

*Presentation Type: Oral Presentation*

The Council on African Affairs (CAA) was a very important and influential Black Internationalist organization whose work spanned eighteen years from its founding in 1937 to its disbanding in 1955. Directed by such celebrated Black leaders as Paul and Eslanda Robeson, Alphaeus Hunton, Louise Thompson Patterson and W.E.B. Dubois it is surprising that more research has not been conducted on the Council. The proposed presentation entitled, "Shining a Light on African Freedom Struggles: The Council on African Affairs' Newsletter New Africa, 1942-1955" will explore the evolution of this groups political perspective as evidenced by the opinions expressed in the newsletter. The presentation will be broken up into three specific time periods; the period during World War II (1942-1944), the post war period (1945-1948) and the radical internationalist period (1948-1955). The presentation will demonstrate that the political perspective of the CAA evolved over time from supporting gradual decolonization of Africa to the support of armed struggle in Africa during the last few years of its publication. New Africa is a very useful tool for understanding the evolution of this underappreciated organization.

KEY WORDS: History Internationalism African Diaspora Decolonization

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**Experiences of Children of Clergy: Identity Development and Psychological Well-Being**

Presenter's Name: Brittany Dancy

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Angela Ferguson

Few empirical studies have been conducted focusing on the experiences of children of the clergy. Many stereotypes exist about this group, however there are limited and outdated studies documenting the broad range of experiences of children whose parent(s) belongs to the clergy. The purpose of this study was to explore whether children of clergy experience specific stressors and expectations that are unique to this group. A focus group was conducted using a semi-structured interview as the method of data collection for this exploratory study. A focus group was conducted with 3 female participants aged 18-23 whose parent was either a parent when they were born and continued as a clergy throughout the participant's lifetime or whose parent became part of the clergy when the participant was at a young age. Data analysis consisted of identifying themes, coding and indicating patterns and meaning of the data. This presentation will discuss some of the themes that emerged and issues that may be present when providing psychological services with children of clergy. Issues related to identity development and psychological well-being will also be discussed. The presenter will provide suggestions for future research direction and culturally relevant therapeutic approaches with this population.

KEY WORDS: Religion, spirituality, psychological well-being, identity, focus group

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**African Americans, domestic sex trafficking, pimping, oppression, culture**

Presenter's Name: Amber Davis

Classification: Graduate Student

*Presentation Type: Oral Presentation*

A historical lens will be taken to examine the function of the 1970's culture of pimping, that was highly influenced by the writer Iceberg Slim. Conceptual aspects of critical

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race theory, womanist theory, rational choice theory, and intersectionality will drive the analysis of bridging contemporary times with a broader Sankofa approach of understanding the remnants of the past that have influenced where we are today in understanding domestic sex trafficking that occurs in predominant African American communities. Racial oppression will be dissected as a salient phenomenon of surreptitiously breeding the orchestration of pimping for an economically oppressed ‘underclass’. Additionally, implications for promoting change on from sociopolitical vantage point will be considered.

**KEY WORDS:** African Americans, domestic sex trafficking, pimping, oppression, culture

**Differences in Social Attitudes between African-American Black College Students and Non-African-American Black College Students**

Presenter’s Name: Shaneda Destine

Classification: Professional Student

*Presentation Type: Oral Presentation*

Coauthors: Shaneda Destine

An assessment of differences in attitudes towards abortion, same-sex marriage and marijuana laws illustrates dissimilarities between African-American Black college students and Non-African American Black College students. There is very little research on interethnic differences within the Black community in America, pertaining to social issues. However, it is hypothesized that African-American Blacks are more liberal, than Non-African-American Blacks. The data used in this study are those collected in a survey conducted in 2013 of Howard University students. A non-probability availability sampling was used to target a population of Black and Non-Black students, but the analyses are limited to a cohort of Black students. A total of 1,090 African-Americans Black and 293 Non-African-American Black students participated in the study. Three ordinary least squares (OLS) regression analyses are used to decipher specific liberal/conservative attitudes of Black students by each attitude. The results show ethnicity has no independent effect on attitudes towards abortion or marijuana laws when controlling for gender, socioeconomic

status, social groups and religiosity. This supports the hypothesis pertaining to attitudes towards same-sex marriage, displaying Black African-American’s as more liberal than Non-African-American Blacks, but it is not statistically significant for attitudes towards abortion and marijuana laws. The inconsistency can most likely be due to sampling error and therefore is an indication for future research. The findings are of great importance because it outlines an introduction to the topic of ethnic differences amongst Black students on pressing social issues, and offers implications for future studies and practice when surveying the Black community.

**KEY WORDS:** Interethnic, liberal/conservative attitudes, African-American Black, Non-African-American Black

**Deconstructing Disasters: A Critical Analysis of Hurricane Katrina**

Presenter’s Name: Michelle Dovel

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Dr.Terri Adams-Fuller

This study deconstructs the concept of an extreme weather disaster, by examining the pre-existing conditions of the city of New Orleans before Hurricane Katrina made landfall. An in-depth literature review provides an analysis of the issues of geological, social, and economic vulnerabilities and its direct impact on vulnerable populations. It is believed that if we are to understand disasters we must not only know about hazard risks, we must also be aware of the different levels of vulnerability of different groups of people (Wiser, 2003). This vulnerability is determined by social systems and power, not by natural forces (Wiser, 2003). In examining vulnerability we are able to distinguish what factors were due to the natural hazards and what factors were due to human conditions.

**KEY WORDS:** Disasters, Hurricane Katrina, Social Vulnerabilities, Economic Vulnerabilities, Geological Vulnerabilities, Social Construction

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**Nannies of the H2 Guest Worker Program**

Presenter's Name: Gabrielle Downer

Classification: Graduate Student

*Presentation Type: Oral Presentation*

For years and more, the United States engaged in the importation of seasonal migrant labor from the Caribbean, Mexico, and Central America. A unique feature about seasonal migrant labor is the participation of women. Women played a vital role as H-2B immigrant laborers. Ironically, women were not heavily recruited to participate as agricultural laborers in the H-2A guest worker program. Taking into consideration, historically women dominated as agricultural laborers; however as guest workers they participated mostly as house servants, as factory workers, and in the tourism industry. This study will examine Caribbean women's role as temporary laborers in the H2 guest worker program. This paper will inspect the role of women as laborers in the Caribbean throughout history, the different occupations obtained by women in the H2 guest worker program, and examine why women migrate to the United States to partake in the program.

KEY WORDS: Immigration, Labor, Women, Caribbean, Domestic

**Moral Identity Salience Produces More Positive Evaluations of Targets While Religious Salience Increases Negative Assessment**

Presenter's Name: Amanda ElBassiouny

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Lloyd Sloan, Debbie Van Camp

Religious and moral identities are often confounded, such that they are used synonymously. This study sought to discover differential impacts of religious versus moral identity enhancement by investigating evaluations of diverse religious targets. Female Christian Howard University undergraduates' identity dimension (individual/social) and identity (religious/moral) were manipulated by viewing word primes. Participants examined a religious ingroup or outgroup target's application and evaluated the target on positive, negative, and negative

religious traits. A 2 (individual/social dimension) x 2 (moral/religious identity) x 2 (religious target: ingroup/outgroup) ANOVA was performed. When primed with a moral (versus religious) identity, participants rated both targets more positively. Those with a primed religious (versus moral) identity rated both targets higher on negative religious traits, especially when there was a reported prior non-positive contact with Muslims. This is consistent with theories that moral awareness widens acceptance of others while increased religious awareness increases distance from and rejection of others.

KEY WORDS: religion, morality, identity, ingroup, outgroup

**Knowledge and awareness of food and drug interactions (FDI) among nurses**

Presenter's Name: Nkechi Enwerem

Classification: Senior Faculty

*Presentation Type: Poster Presentation*

Coauthors: Pricilla Okunji, Dana Duncan, Charmaine Mckie, Brenda Lateef, Rosett Beck, Ellen Spratley-Edwards, Sikirat Disu, Magnus Azuine and Samuel Ndubuisi

Food and drug interactions (FDI) contribute to treatment failure, resulting in frequent hospital visits and high cost to the tax payer. Interactions between drugs occur when more than one drug are administered together orally. Interactions between drug and food occur when both are taken concurrently. Drug interaction, occurs at the pharmacokinetic level (absorption, distribution, metabolism and elimination) and pharmacodynamics level. Comorbidity is one of the reasons why drugs are taken concurrently. FDI is more common with the adult population who practice poly-pharmacy. Nurses play a major role in the administration of drugs at the individual, family and community levels. **Objectives:** The goal of this study, is to evaluate the knowledge, attitude and awareness of nurses about some common food and drug interactions. **Materials And Methods:** A modified food and drug interaction questionnaire of Jyoti et al., 2012 was used in this pilot study. The questionnaire comprises 33 questions including dichotomous, multiple choice and open ended questions. The questionnaire was distributed among nurses in the DC/VA/MD metropolitan area. **Results:** The mean scores (mean ± SD) on

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the overall test was  $19.21 \pm 5.31$ , with 33 being a perfect score. Seventy-four percent (74%) of the nurses that participated in the survey, did not know that griseofulvin, ketoconazole and albendazole should be taken with fatty food. Only 31% of the nurses, knew that patients on digoxin, should avoid foods like wheat bran, rolled oats and sunflower seeds. 69% knew that NSAIDs should be taken with food.

**KEY WORDS:** Drug interactions, food and drug interactions, questionnaire, Nurses

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**Breaking the Silence: Women Behind Bars**

Presenter's Name: Tamanika Ferguson

Classification: Graduate Student

*Presentation Type: Poster Presentation*

This research seeks to add to the breadth of knowledge and understanding within the field of communications by offering an analysis of the California Coalition for Women Prisoners (CCWP). CCWP is a grassroots social justice organization and is comprised of former female prisoners, transgender prisoners and supporters. It is devoted to serving as a voice for incarcerated women and bringing about fundamental changes to the prison system. Historically, women in prison have been a disempowered population-voiceless, politically powerless, and invisible to the general population. However, the growing body of literature on women and prisons demonstrates that prisons are also sites of resistance and struggle, and that women are speaking out about their crimes, prison conditions and prison experiences. Contrary to media and public perceptions, incarcerated women are not passively waiting for someone to fight for them. Preliminary research shows that incarcerated women are articulating need for change in the prison system and the criminal justice system. CCWP provides a space for incarcerated women through its quarterly newsletter, *The Fire Inside*. The goal of this research is to explore incarcerated women's voices by critically analyzing *The Fire Inside*. The researcher is concerned with the issues being addressed; who's talking about the issues and if there is an agenda articulating a need for change?

**KEY WORDS:** Women, Incarceration, Silence, Criminal Justice

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**It's Written in Black & White: The Effects of the Rhetoric in Women's Magazines on African American**

Presenter's Name: Taryn Finley

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

There are many magazines that are targeted towards women, and some of these magazines have great reception from their audience. Two magazines that come to mind are ESSENCE and Glamour. Both of these are women's lifestyle magazines that cater to women between the ages of 18 and 49 years old. The difference between the two is that ESSENCE targets Black women with a mostly African-American staff, whereas Glamour takes a more neutral approach with a mostly white staff. Different cultures communicate differently; therefore, a reader could read two articles on the same topic and receive one better than the other based on the rhetorics in which they were written. Applying Africana Critical Theory, this study hypothesizes that the way in which African-American readers interpret the content in these magazines. This study explores how the subjective undertones of magazines can cause a reader to perceive what she reads based on those periodicals they look to for advice and entertainment. This study utilizes mixed methodology. A questionnaire with nine quantitative questions and one qualitative, open-ended questions will be administered to analyze data from the women ages 18 to 23 on Howard University's campus.

**KEY WORDS:** magazine, African-American, women, culture, ESSENCE, Glamour

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**Comparing Adult Recalls Across Televised Narratives**

Presenter's Name: Mudiwa Ford

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Coauthors: Silas Burris, Laura McGhee, Chastity McFarlan, Danielle Brown

Narratives are goal-based stories that include character goals, attempts and outcomes. Comprehending narratives in all presentations (e.g., books, film) requires specific comprehension processes (i.e., causal inference generation, goal structure

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understanding) to organize narrative events and how they relate (Graesser et al., 1994). Causal inference generation “fills in” narrative information that is not explicit (Kendeou et al., 2008) and goal structure understanding improves comprehender interpretations of narrative event sequences (Trabasso, et al., 1992). The degree to which a narrative is causally connected may impact how accurately comprehenders retain information in their mental representations (Trabasso & Sperry, 1985). Limited research identifies benefits from comprehending televised narratives (Anderson & Hanson, 2010) but is unclear how mental representations are influenced by goal structure variations. This study aims to identify whether the causal connectivity of narrative goal structures impact comprehenders’ mental representations.

KEY WORDS: narratives-televised, recall, adult, comprehension, goal-structure

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**Intersection of Race and Gender Identities in the Workplace: The Effects and Coping Behaviors among Professional Black Women**

Presenter’s Name: Donnesha Gibson  
 Classification: Graduate Student  
*Presentation Type: Poster Presentation*

In the United States, the intersection of race and gender identities is important for black women because of the complex political and social context (Reid & Comas Diaz, 1990). Although black women hold multiple identities that affect their daily lives (e.g., social class, age, sexual orientation), they continue to be confronted with racial and gender oppression (Essed, 1991; Greene, 1994; Jones & Shorter-Gooden, 2003; St. Jean & Feagin, 1997, 1998). Evidence shows that racial and gender bias often have a deleterious impact on psychological and physical health (Clark, Anderson, Clark, & Williams, 1999; Krieger, Rowley, Herman, Avery, & Phillips, 1993; Landrine, Klonoff, Gibbs, Manning, & Lund, 1995). There has been minimal research examining the psychosocial aspects of perceptions of gender and race discrimination in the labor market experiences of Black women (Mays, Coleman, & Jackson, 1996). Little is known about the strategies that African American women used in the centuries-long legacy of racial and gender discrimination and how they were able to cope with and handle those ongoing

threats (Shorter-Gooden 2004). This presentation will focus on professional Black women and how they cope with their identities in the workplace. The presentation examines the perceived discrimination of race and gender in the workplace, including the psychological effects and substance use among professional black women. In addition, the presentation will discuss the coping behaviors used by professional Black women. As a result, a conceptual model will be presented to address future research, implications, and interventions in the workplace and for clinicians.

KEY WORDS: workplace, black women, racism, sexism, coping

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**And Miles to Go Before We Sleep: Education Policy in Louisiana, 1979-2013**

Presenter’s Name: Zakyia Goins-McCants  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

Louisiana’s public education system has been at the bottom of national educational rankings for decades. Since 2005, sweeping policy changes were made from the city of New Orleans up to the State Department of Education, bringing the state national media attention and praise from the Education Reform Movement. This research explores the functions of national policy, sentiment change and leadership decisions on the policies implemented in the state of Louisiana. Education historians site the restructuring of New Orleans Public schools after Hurricane Katrina as the catalyst of policy change in the state, however there were numerous pressures for change, many of which were already in early stages before the catastrophic storm. This research looks at the work of contemporary education historians as well as newspapers, government documents and original interviews to trace the evolution of Louisiana’s public schools from some of the worst in the nation to models of reform.

KEY WORDS: Education Policy, Louisiana, Recovery School District, New Orleans, John White



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**Coping Strategies for Stress Among Howard University College Students**

Presenter's Name: Jonathan Guzman

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Gary Saint Fleur, Erin Purcell

College students experience high levels of stress at the beginning and throughout their college career. College students are in a highly competitive environment when they enter college due to the stress of obtaining a good job after college and being successful (Aselton, 2012). Suffering from stress can lead to mental health disorders such as depression and/or can lead to the use of illegal drugs to help the student cope with the stress. Most importantly, stress may lead to decline in academic performance and the student's ability to learn depending on their coping strategies (Sreeramareddy, 2007). The purpose of this research is to examine the coping strategies for stress among college students. The population this study will examine are Howard University students. Students will be provided with surveys that will ask them questions on how they cope with stress, events that cause stress, academic performance and demographic questions. The survey will be given through survey monkey for convenience and will all be anonymous. Flyers will be made and posted throughout campus about the study as well as campus wide emails to obtain as much student participation as possible. The researchers will review surveys and analyze the answers to determine coping strategies among Howard University students.

KEY WORDS: Stress, Coping Strategies, college, students, mental health

**Human Trafficking as a Human Rights Violations: A Case Study of the Role of Mass Media and Technology on Human Trafficking in the Caribbean**

Presenter's Name: Aitza Haddad

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Stella-Monica N. Mpande, Anani Kuevey

According to the International Organization for Migration (IOM), the UN Office on Drugs and Crime (UNODC), and

the International Labor Organization (ILO), trafficking is not only one of the most hideous and irregular forms of migration, but it's also one of the fastest growing international organized crimes. The Commonwealth Human Rights Initiative (CHRI) has expressed that due to the small size and population of the Caribbean, human rights issues and concerns there often go unreported. One of the main Human Rights violations identified by the CHRI in 2009 in the Caribbean was the one concerning Human Trafficking. Due to this fact, Caribbean Commonwealth members were in the 2013 U.S. State Department Trafficking in Persons Report. This case study analyses the international obligations and responses to human trafficking as a human rights violation, with a specific focus in the region of the Caribbean, and in this sense, the reasons why human trafficking has endured as an organized crime in this region. The last but equally important part of our case study explores how mass communications and mass media could be used as both an enabler of human trafficking and a tool against this hideous practice. Ultimately, our case study seeks to provide some general recommendations about current human trafficking practices and clear up the pathway for future research that could eventually provide a framework for more efficient and transparent laws, and for more accountability and more freedom of information that could lead the way to a world free of human trafficking.

KEY WORDS: Human Trafficking, Human Rights, Caribbean, Mass Media, Human Rights Violations

**The Ideals of Feminism in W.E.B Du Bois' Darkwater: Voices from within the Veil**

Presenter's Name: Gabrielle Hall

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Ancient Greek philosopher, Aristotle, is credited with coining the traditional Western thinker's vision of women, as being "of the man." He saw women as not only having physical differences from the man, but mental as well. He proclaimed that women are subject to men because they are more emotional, deceptive, mischievous, and impulsive. The entirety of Aristotle's recorded opinion of women bastardized the female population as being weaker and less than what a man is. Because of this mindset, early Western Civilization

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has been sculpted to perceive a woman as feeble of the two sexes. W. E. B. Du Bois' *Darkwater: Voices From Within The Veil*, discusses his own opposing view of a woman's role in society, specifically that of the African American woman. While he understands and rebukes the way in which women have been improperly recognized, in saying "the future woman must have a life of work and economic independence. She must have knowledge. She must have the right of motherhood at her own discretion" (Du Bois 96), he also emphasizes that the role of the Negro woman has always been in a different and more positive light. He states, "To no modern race does its women mean so much as to the Negro" (100). What is the difference between the role of white women and black women in their respective cultures? Why does Du Bois so fiercely defend the role of women, contrary to the common perception of females during this time in history? This essay will argue that the role of the African American woman has always been unlike those of any other race and defies the widespread views of Aristotle because of the unique progression of the Negro race in comparison to other races. It will argue that because of the struggle of African descent peoples, Negro women have been raised to be stronger, more independent, and not to be "of the man."

KEY WORDS: *Darkwater* Aristotle Feminism Du Bois

### **Effects of Lending Competition and Regulation on Housing Finance in the South-Atlantic Metropolitan Statistical Area**

Presenter's Name: Thomas Hampton

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Controlling for changes in the distribution of applicant borrowers, this research studies the effect of qualified financial institutions' competition and application volume on the denial rates in the mortgage market among different racial groups (e.g., white, black, and other races). This research finds evidence that after the enactment of the Gramm-Leach-Bliley (GLB) Act, dating November 1999, there was a substantial increase in the number of loan applications or credit opportunities and the amount of financial lending institutions making the market has become more significantly competitive. The increase within the industry has affected lenders' behavior, allowing

blacks the opportunity to acquire loans more conventionally. The research finds that an increase in competition in the financial lending market has a significant negative effect on denial rates among blacks and whites. The research also exhibits a significant positive relationship between the number of applications submitted and the denial rate. This may be a result of banks raising their lending standards. Moreover, when compared to whites and the total market applicants, blacks have a higher probability of being denied. This research further sheds light on the underlying causes and characteristics of the current crisis in the mortgage market and possible long-term effects on blacks.

KEY WORDS: mortgages, finance, inequality, competition, MSA

### **Components of Spirituality and Religiosity in Studying the Executive Function of African Americans**

Presenter's Name: Olga Herren

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Shellie-Anne Levy, Mana Ali, Denee Mwendwa, Regina Sims, Clive Callender, Alfonso Campbell

Because African Americans are disproportionately affected by cardiovascular disease (CVD) and other conditions that negatively influence cognitive function, research is necessary to determine potential beneficial effects of spirituality and religiosity on cognitive function in this group. To further investigate specific facets of spirituality and religiosity that may serve as more precise buffers of cognitive decline, principal components analyses were conducted on the Daily Spiritual Experiences Scale and the Religiosity Scale. The current study examined the associations among the newly derived components of the Religiosity Scale, newly derived components of the Daily Spiritual Experiences Scale, and executive function and how these relationships are moderated by age and gender. A sample of 139 African Americans completed the RS and the DSES. Participants on average were not very spiritual, however, they were fairly well-educated with most of them completing some college. In addition, they completed measures of executive function, the Wisconsin

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Card Sorting Test (WCST) and Stroop Color and Word Test (Stroop). Hierarchical regression analyses revealed significant associations between the support component of spirituality and Perseverative Errors on the WCST when moderated by gender and the compassionate component of spirituality and Categories scores on the WCST when moderated by age. Results indicate that gender impacts executive function benefits when utilizing spirituality in a supportive manner to navigate through life, and age influences benefits when harnessing the compassionate facets of spirituality. Future studies should include groups that are more differential in their religious and spiritual experiences to see if a temporal relationships exists.

KEY WORDS: Spirituality Religiosity Psychosomatic Age Gender

**Breaking Invisible Bonds: Anorexia Nervosa and Bulimia Nervosa among African American Women**

Presenter's Name: Ashley Hill

Classification: Undergraduate Student

Presentation Type: Oral Presentation

Coauthors: Kamilah Woodson, Ph.D.

According to the National Eating Disorder Association, women of color who engaged in disordered eating do not receive proper treatment which may be due to cultural bias and stigmas resulting in underreporting and misdiagnosis (National Eating Disorders Association, 2012). A theoretical model will be presented examining how colorism moderates the relationship between eating disorders (e.g. Bulimia Nervosa and Anorexia Nervosa) and sociocultural variables (i.e. acculturation, socioeconomic status and the media portrayal of Black women). The internalization of Eurocentric beauty ideals, socioeconomic status and satisfaction of colorist ideals is hypothesized to impact susceptibility of Anorexia and Bulimia among Black women. This model will also describe how the media's portrayal of African American women in respect to colorist ideals, impacts maladaptive eating behaviors. The purpose of the model is to raise awareness about eating disorders among African American females as well as provide implications for treatment of African American victims.

KEY WORDS: Colorism, Skin-Color, Anorexia, Bulimia, African- American

**Is Anyone Listening? Analyzing Police Response to Domestic Violence Reports in the 21st Century**

Presenter's Name: Candice Hodge

Classification: Graduate Student

Presentation Type: Oral Presentation

**Background:** The subject of domestic violence has been an important topic over the past forty years. Previous research suggests that minorities, particularly African Americans have been subjugated to such abuse. Researchers for this particular project conducted a survey entitled "Intimate Violence within the DMV Area". The purpose of this study was to increase the understanding of domestic violence incidents, police response and police reporting of offenders. **Methods:** It reports on a non-probability availability quantitative analysis on 2,322 telephone calls to the Washington Metropolitan Police department in 2001. The data evaluated the coding of domestic violence behaviors, geographical location of the call, type of incident, time of day, time of year, and day of the week police responded to such incidents, and whether a report was made. **Results:** Results suggested that domestic violence was prominent in Southeast, D.C. High volumes of domestic violence calls occurred typically at 10p.m, during the month of March and on Saturday's. Last, the research illustrated that although 2,322 calls to the police department were reported, only 355 reports were made, in which 138 of those reports were from Northwest, D.C. **Conclusion:** The results eluded that more attention is recommended to be spent on domestic violence incidents, available resources for victims, laws that are established to punish the offenders and programs that address domestic violence within various communities, in order to bring awareness and support to decrease this epidemic.

KEY WORDS: Domestic Violence, Police Response, Social Disorganization, Collective Efficacy, Quadrant

**The Effect of Hair Texture, Skin Tone, and Body Shape on Maladaptive Eating Behaviors among African American Women**

Presenter's Name: Charnel Hollier

Classification: Graduate Student

Presentation Type: Poster Presentation

Coauthors: Dr. Kamilah Woodson, Ph.D.; Lisa Haileab, M.A

Past studies suggest that African American women are more satisfied with their body shape and size, diet less, and they

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report fewer symptoms of eating disorders (Jefferson & Stake; 2009). Major limitations with these studies is that they do not consider specific body ideals that are culturally appropriate to African American women such as body shape, hair texture, and skin complexion. A study conducted by Overstreet et. al. (2010) actually discovers that African American women prefer curvier body shapes, medium breast, and large buttocks. Additionally, body dissatisfaction may be also manifested in phenotypical characteristics such skin complexion, facial features, and hair texture. Positive perceptions of hair texture, body shape, and skin tone can all combine to give African American a sense of power and control. Thus, if African American women feel a sense of powerlessness in terms of these features, they may channel this poor self-image into maladaptive eating behaviors. This study examines how unique physical features collectively work together to moderate unhealthy eating behaviors such as “over eating”, “under eating”, and “binge eating” in African American women. It is predicted that African American women who evaluate these physical features negatively will experience body dissatisfaction leaving these young women feeling a sense of powerlessness. This poster presentation seeks to examine how unique physical features collectively work together to moderate eating disorders within African American women. Ideally, we seek to raise the understanding and assessment of disordered eating in African American women.

**KEY WORDS:** colorism, eating disorders, African American, women, body shape

**Is it Real(Istic); An exploration of beauty standards relating to hair.**

Presenter’s Name: Alison Hollis

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

The black hair-care industry is a \$9 billion dollar business. The bulk of this figure is earned from the purchase of hair straightening agents, extensions, and wigs. Most black women in America either wear their hair relaxed, or purchase artificial hair that they can wear straight or curled in patterns not natural for most black hair. These practices can be both damaging to the hair and costly. Chris Rock’s documentary film ‘Good

Hair’ used a comedic approach to educate viewers about the burden and the importance achieving this look holds for many black women. It fails, however, to examine why. It is apparent that black women are reflecting an ideal of beauty, but what is it and where does it come from? Research that included the systematic sampling of major print publications over three months revealed that, despite the pervasive presence of black figures in the media, there is an overwhelming lack of versatility in the appearances of their hair. The majority of black public figures reflect the adoption of European ideals of beauty. These representations are critical because they set the general standard for what is considered acceptable. The westernized ideal of beauty is not only bad for the hair, it often damages black women’s self esteem and presentations of self. This subtle form of racism that values straight over natural hair is perpetuated by a lack of inner and outer community support and encouragement to try other styles. This research exposes the problem and suggests possible remedies.

**KEY WORDS:** Black hair presentation of self

**Namibian Trials in South African Courts: The Trial of the Namibians and the Cassinga Detainees**

Presenter’s Name: Myra Ann Houser

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Between 1967 and 1994, the Southern Africa Project of the Lawyers’ Committee for Civil Rights Under Law provided funding, solidarity, and other logistical support for advocates and attorneys working within South Africa. Two of the organization’s key cases—the 1967 Trial of the Namibians and the 1978 onward Cassinga Detainees case—contested the legality of South Africa’s occupation of Namibia. Working together, lawyers from South Africa, Namibia, and the United States used these cases to demonstrate in the court of world opinion that gross violations of international human rights norms and the rule of law had occurred—even when South African courts decreed otherwise. This paper will examine the origins, details, and outcomes of both cases. It will also place both cases within the larger context of the Southern Africa Project’s work, as well as the work of lawyers working to demonstrate the illegality of apartheid. Work on the Trial of

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the Namibians and the Cassinga Detainees case provides an interesting set of bookends for an organization that worked for decades to call attention to the gross abuses of the South African state and demonstrates the complexity and chronology of social change driven by legal-profession activists.

KEY WORDS: Namibia, South Africa, lawyers, United States, apartheid

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**A Potential Solution to Barriers in Shared Decision Making: A Proposed Model to Assess Unconscious Bias and Shared Decision Making in Medical School Curriculum**

Presenter's Name: Devlon Jackson

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Research suggests that unconscious bias affects the process of communication within patient-physician interactions. Although physicians may attempt to provide equal and high quality care to all patients, the presence of unconscious bias can influence how the physician interacts with each patient. One particular and significant component of quality patient care in the patient-physician relationship is shared decision making (SDM), which can be affected by unconscious bias. In order to ensure the SDM process is occurring effectively in the healthcare system, medical students (future physicians) must be equipped with the skills necessary to play an active role in SDM and awareness of their unconscious bias. This paper proposes a model for implementation in medical school training/education to assess concordance between unconscious bias and SDM. This model was developed to be statistically tested within an observable research setting. Therefore, it consists of one independent variable (unconscious bias), one dependent variable (shared decision making and limited/unshared decision making), two mediators (unconscious bias reflection exercise participation and non-participation in unconscious bias reflection exercise) and three moderators (medical student post-reflection exercise factors, patient-physician intercultural factors, and medical student/physician selfmonitoring). This type of model can serve as a starting point to addressing health disparities within the increasing multicultural population.

It is imperative that future and current physicians practice awareness regarding unconscious bias, shared decision making and patient-centeredness in order to contribute to the reduction of these disparities.

KEY WORDS: Shared Decision Making; Patient-centered communication; Unconscious bias; Medical School Education; Health Disparities

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**Medical Self-diagnosis and Internet Usage among African American College Student**

Presenter's Name: Devlon Jackson

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Vida Samuel, Ph.D., Tomeka Scales, Ph.D., Carolyn A. Stroman, Ph.D., Denna Kowalek, and Roberta B. Hollander

**Background:** The Internet has greatly increased the public's accessibility to health information with some individuals utilizing it as a key source of obtaining medical information to assist with self-diagnosis. This Internet usage practice could result in several problems, including misdiagnosis or late diagnosis of a condition or disease. An under-researched area is selfdiagnosis among African American college students utilizing the Internet. Consequently, the purpose of this research was to measure Internet usage for medical self-diagnosis among African American college students at a Historically Black University. **Methodology:** A 39-item questionnaire containing behavioral, attitudinal, and demographic items was administered to over 500 African American college students. A self-diagnosis measure was developed for this questionnaire as a result of a pilot study examining Internet usage for health information in the African American community. **Results:** The data revealed that 77% of the sample reported that they were likely to access health information online when they needed to diagnose themselves. Also, respondents reported two major reasons why they were likely to diagnose themselves: they have limited money and they had attended a health presentation/event that encouraged them to seek health information. **Conclusion:** The results of this study indicate that African American college students

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frequently use the Internet for medical self-diagnosis. The study has implications for the African American community as related to rationales for self-diagnosis and Internet usage, patient-physician relationships, and targeted interventions by health care providers and health professionals. The implementation of the Affordable Care Act also has implications for medical self-diagnosis.

**KEY WORDS:** Medical Self-diagnosis; Internet; Health Information Seeking; African Americans; College Students

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**Protective Actions of African Americans During Extreme Heat**

Presenter's Name: Rita Jacobs

Classification: Graduate Student

*Presentation Type: Oral Presentation*

A great deal of attention has been paid to the impact of dramatic events such as hurricanes and tornadoes; however, heat related illnesses and deaths have made heat events a major concern for the nation. In 2013, the National Oceanic and Atmospheric Administration (NOAA) reported that heat was the leading cause of death for natural hazards in 2012. The perceived risks and responses to heat warnings of residents in Phoenix, AZ and comparatively among Dayton, OH, Philadelphia, PA, Phoenix, AZ, and Toronto, Canada have been examined (Kalkstein and Sheridan 2007; Sheridan 2007). However, very little research focusing on the protective actions (i.e. those that reduce risk from extreme events in the natural environment) of African Americans during extreme heat has been conducted (Burton et al. 1993: 328). This study examines the cultural and social factors that influence African Americans to take protective actions during extreme heat. Using a qualitative methodology, data on African Americans' perception of, knowledge of, and reaction to severe weather advisories/warnings and events were collected. This study will enrich the existing body of knowledge regarding protective actions of people during weather related events, with a special focus on African Americans during severe heat.

**KEY WORDS:** protective action, severe weather, African Americans, heat, risk adjustment

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**Oversights and bias: An exploration of assessment norms**

Presenter's Name: Joshua Johnson

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Jules Harrell, PhD

**Background:** The history of psychological assessment dates back to the middle 19th century with the work of Francis Galton whose tests were later adapted by James McKeen Cattell for use with American college students (Boake, 2002). Since their inception, the intent of psychological assessments has been to understand and quantify individual differences in human traits and capacities (Boake, 2002; Gottfredson & Saklofske, 2009). However, proper tracking of individual differences requires adequate sampling of between and within population variability in test performance (Nelson, 1994). Importantly, the sampling biases present in assessment raise concerns with regards to the racial differences that are commonly reported (Pesta & Poznanski, 2008; Williams & Cottle, 2011). **Method:** The norming procedures for the Wechsler Intelligence Scale for Children – Fourth Edition (WISC-IV) as well as the Kauffman Test of Educational Achievement – Second Edition (KTEA-II) were reviewed to identify concerns related to norming, particularly sample size. **Results:** Of the 2,200 children included in the WISC-IV normative sample, approximately 270 of these children were African American/Black; these children were further distributed across 11 age groups. Consequentially, underrepresentation of non-White populations in the WISC-IV and KTEA-II severely limit the generalizability of these assessments for non-White populations. **Conclusion:** Due to the small sample of non-White individuals recruited for norming in some assessments, caution should be used when selecting tests and interpreting results for non-White clients. Furthermore, test developers should strive to include more non-White individuals in their norming samples.

**KEY WORDS:** Assessment, Bias, Diversity, Sampling, Limitations

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**Development of a preliminary database for the Cobb Collection of Human Skeletal Remains**

Presenter's Name: Jasmine Joseph-Morris

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

The W. Montague Cobb Research Laboratory houses 699 individuals of primarily African American origins who lived in Washington DC during the late 19th and early 20<sup>th</sup> centuries. The records of the Cobb Collection of Human Skeletal Remains are in need of inventory standardization and digitization. This research project begins this process by examining and assessing the existing files, comparing the record with actual remains, reformatting when necessary, and merging to create a unified set of observations for subsequent importing into SQL (Structured Query Language), the standard language for relational database management systems. SQL statements will ultimately be used to update the Cobb Collection database data and retrieve data from the database for research purposes. This project will focus on standardizing the Collection's skeletal data with an emphasis on identifying the range of osteological measurements already collected on each individual set of human remains and finding cases of missing data. The final honors thesis will synthesize these results as well as provide a detailed discussion of the anthropological context of the Cobb Collection.

KEY WORDS: database development, osteology, anthropology, biology,

**Violence against female street children in Bangladesh and their survival strategies**

Presenter's Name: Elma Kaiser

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Dr. Fariyal Ross- Sheriff

There are about 400,000 street children in Bangladesh (US State Department, 2005), with a majority living in the capital city, Dhaka. The number continues to increase every day. Researchers in various nations in Africa, Asia, South America and Europe have articulated violence as part of these children's lives on the street. (Boaten, 2008, Conticini and Hulme, 2006, and Rees and Lee, 2005). Among the

street children females face very high risks. The proposed presentation is on a phenomenological qualitative study that examined the experiences of 21 Bangladeshi female street children through in-depth interviews. Nvivo program was used to analyze the data. The findings represented through five themes clearly indicate that these young girls were oppressed, discriminated and victimized because of their age, gender and living conditions. Poverty and familial violence pushed them to the street, but their conditions worsened after moving to the streets. All of the children experienced physical and sexual abuse from street boys and from diverse groups of men including police who are expected to protect them. After being raped, several chose sex work for survival. Their desire for love put some in worse conditions from which they had to escape back to the street. Almost all of them benefitted from the support from the NGOs. All of the respondents dreamed of a beautiful future with jobs and proper shelter. What they wanted most was a place to learn to earn a livelihood, a place to live, love and safety in their lives.

KEY WORDS: Female street children, violence, sexual harassment, resilience, NGO support

**Hurricane Sandy: Applying the CAUSE model in a content analysis of Instagram photos to determine Risk Communication practices.**

Presenter's Name: Denna Kowalek

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

With new emerging technologies, the way we receive our information has changed. Social media is no exception. Communication is more likely to save lives during a disaster than any other form of intervention. Examining Instagram posts during Hurricane Sandy is the fall of 2012 allows risk communicators to determine how the audiences perceived the impending storm and determine the precautionary and preparedness actions taken. Understanding how people viewed Hurricane Sandy through Instagram will help generate more effective risk communication campaigns to be disseminated throughout these forms of social media.

KEY WORDS: Risk Communication, Social Media, CAUSE Model, Content Analysis, Instagram

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**Drumming up Arousal**

Presenter's Name: Michael Leak

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Kelly Banks, JoAnn Alia, Kierra Reed, Gregory Brown, Tamekia-terin Taylor

Rhythm is a musical phenomenon that has proven to be integral to music and reactions to music. Though often studied, rhythm is generally considered within a tonal context lending weight to the melodic and harmonic side. This study investigated the relationship between rhythm and psychophysiology; altering rhythmic accentuation using drums as the target instrument while recording indirect measures of heart rate, parasympathetic and sympathetic indices. Participants included in the study were Forty-Nine (n=49) Howard University introduction to psychology female students. A within-subjects designed was employed where each participant listened to 3 pairs of musical samples (clips) in which the tempo was held constant, within each pair, but the rhythm was altered. Cardiac activity was monitored continuously using an Ambulatory Monitoring System. We found significant effects between the baseline measures and all of the music clips. Specifically, there were increases in Sinus Arrhythmia (LogRSA) and decreases in Toichi's Cardiac Sympathetic Index (CSI). Furthermore, we found significant differences between the two rest periods, a pre music period and a post music period, where the pre music period yielded a larger LogRSA and a smaller CSI. However, we found no significant differences within or between clips. Our findings has many implications for use as in medicine, psychotherapy, education etc.

KEY WORDS: Rhythm, Psychophysiology, Drumming, Music, Arousal

**Strategic Silence, Neo-colonialism, and the Black Experience in the Fresh Prince of Bel-Air**

Presenter's Name: Ashley Lewis

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Ashley Lewis

Before the 1990s, few American sitcoms offered their audiences accurate depictions of diversity within the Black experience. According to Kristal Brent Zook and other African American

scholars, this was achieved with NBC's The Fresh Prince of Bel-Air, which presented realism and a never before seen view of the Black experience to audiences. Though the all-Black cast embodied the traditional mannerisms of a White upper- middle-class family, they were set apart by their moments of cultural reflection. This same opportunity, however, was not extended to their Black British butler, Geoffrey. This research takes a social critique approach to explore the representation of Geoffrey's Black British character, who, the analysis shows, is strategically silenced through constraints placed on his native identity by assimilationist attitudes in post- colonial Britain. A seven episode textual analysis applies the ETHNOS' seven dimensions of Britishness to determine incidents of this silence and to highlight the absence of Black British culture from the character's depiction. Combined with a historical analysis of the Black British plight to maintain their native identities in Britain's traditionally English society, the research reveals that Geoffrey is unable to add to the Black experiences showcased on the Fresh Prince of Bel-Air because White Britishness is privileged above opportunities to establish his connection to Black British identity.

KEY WORDS: television, cultural studies, strategic silence, identity, neo-colonialism

**An Epidemiological Application of Social Context on Child Mortality in Sub-Sahara Africa**

Presenter's Name: Atila Libutsi

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Over the past two decades a significant sum of money and philanthropic health endeavors has been spent to dwarf child mortality in Africa. Because of this notion the developing world has portrayed the myth that child mortality and poverty has either been severely diminished or fails to improve. However this is not the case. For the past decade sub-Saharan Africa has struggled to improve while attempting to ward off child mortality under five years from preventable diseases, malnutrition, and communicable infections. An epidemiological analysis of social context (Diderichsen and Hallqvist;1998) will interpret distal and proximal detriment risk factors within a social system such as political ecology, cultural ideologies, and social inequities to illustrate explicit clusters of demographics that address a relationship toward child mortality. This theoretical relationship



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will seek exhibit child mortality present within a specific social system as conjunctive outcomes from explicit detriment risk factors, and not evaluate the evidence solely as a collection of independent individual cases. With supplemental evidence, social context can offer hindsight into social determinantal risk factors influencing communicable biological agents, infectious diseases, and child mortality within Sub-Saharan Africa.

**KEY WORDS:** Epidemiology; child mortality; Sub-Sahara Africa

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**Why Should I Take A Swimming Class? Changing African American Attitudes Towards Swimming**

Presenter's Name: Monique Major

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Jules P. Harrell, Sotonye Manuel

People of African descent have a rich, yet complex history with water and swimming. Despite the myth that people of African descent do not swim, there is a small body of research that says that prior to, during and after the enslavement period Africans were skilled swimmers and underwater divers. In many regions, swimming was a communal activity for both recreation and work (Dawson, 2006). But during the Transatlantic Slave Trade, swimming and water became associated with fear, trauma, and death. The unfortunate, yet appropriate, association, between water and people of African descent was only made stronger during the enslavement period and the fight for desegregation in America. Today, almost 70% of African-American children either do not know to swim or have poor swimming skills, and drown at rates higher than other children (Irwin, et al., 2010). Interestingly, some Historically Black Colleges and Universities have swimming as a graduation requirement and as early as the 1950s housed swim teams. In this paper, we will trace the less known narrative about African Americans and swimming, the role of Historically Black Colleges and Universities in the narrative and the efforts that should be taken to reconcile African-American's relationship with swimming.

**KEY WORDS:** African Americans, Swimming, Historically Black Colleges and University Swim Teams,

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**The Relationship Between Fear of Recurrence, Optimism and Coping in African-American Breast Cancer Survivors**

Presenter's Name: Chloe Martin

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Dr. Teletia Taylor

**Background:** When compared to Caucasians, African American (AA) women have higher rates of breast cancer (BC) recurrence, which causes a great deal of worry. Fear of recurrence (FOR) is described as a survivor's constant worry that cancer will return. A previous study of FOR among BC survivors showed that FOR was negatively associated with demographic characteristics (i.e. age) and positively associated with psychosocial characteristics (i.e. impaired quality of life) (%74 Caucasian sample). In a recent study of AA BC survivors, FOR was negatively associated with time since diagnosis and positively associated with psychological distress. More research is needed exploring FOR among AA BC survivors, especially as it relates to psychological characteristics. Optimism and coping are two psychological factors that have not been fully explored with regards to FOR and would add to the growing body of literature on this topic. Purpose Statement To examine how FOR is related to optimism and coping in AA BC survivors. **Methods:** Recruitment for this study was conducted via mailings to AA BC survivors identified via the Howard University Cancer Center's registry as well as through flyers describing the study posted throughout the Howard University community. 51 African-American BC survivors with no recurrence completed the questionnaire assessing demographics, FOR, optimism and coping. Pearson r correlations will be used to determine the association between FOR, optimism and coping. Implications: The results of this study will add to the current knowledge of psychological factors associated with FOR in AA BC survivors.

**KEY WORDS:** Breast Cancer, Fear of Recurrence, African-American, Coping, Optimism

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**Music, Identity, Gender Roles, & Facebook: An Investigation of Minority Adolescents' Music Media Posts**

Presenter's Name: DeVoshia Mason

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: DeVoshia Mason, B.S.; Rita Okolo; Jacqueline Nguyen, Ph.D.; Linda Berg-Cross, Ph.D.

Background: Music and social networking have become integral components of the identity formation process for adolescents. Social media sites, such as Facebook, present adolescents with a popular forum for self-expression that combines music and social networking (e.g., music postings). However, there is limited research on the content of the music posted by adolescents and its influences. Study: This study examined the music adolescents posted on Facebook (FB), its lyrical content, and the impact it may have on identity and gender role construction. Method: The FB profiles of 59 adolescents (Mage =19.43; SD=1.73) were reviewed for content posted six months retrospective of the date they joined the study. There were 34 female (57.6%) and 25 male (42.4%) participants: 61% were Asian American (n=36), 22% were Latino American (n=13), and 17% were African American (n=10). The profiles were examined for music postings and video uploads. The song lyrics were assessed using a coding scheme and evaluated for stereotypical gender roles. Artist(s) information was also gathered. Results: Future analyses of the data are intended to: (1) describe the kind of music that minority adolescents are posting on FB; (2) demonstrate if there is an association between gender and music type; (3) reveal whether there are significant differences in music preferences across ethnicities; and (4) indicate if minority adolescents are posting music that endorse stereotypical gender roles. These findings will highlight the extent to which adolescents' music posts support or refute traditional gender roles and accentuate the influence music may have on identity formation.

KEY WORDS: Music, Facebook, identity formation, minority adolescents, gender roles

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**Mindfulness: An Everyday Practice for Everyday Problems**

Presenter's Name: Lauren McGhee

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Vanessa Battiste

Humans maintain the ability to sustain stress, well after an acute trauma (Jacobs et al., 2013). Thus, the termination of a stressful occurrence may not indicate the termination of a physiological and psychological stress response. Hence lingering tension may remain and intensify if not released. This has particular implications for college students who encounter daily waves of academic, social and urban stress. If students do not work to impede the stress response, this collection of anxiety may negatively impact their academic and social functioning. Mindfulness however is both a natural and holistic way to acknowledge present feelings, thoughts and bodily sensations thereby gaining some relief from stress. Furthermore, the practice of mindfulness has been empirically linked to decreases in anxiety and stress (Gould et al., 2012; Greenberg & Harris, 2012; Sibinga et al., 2011). This presentation will analyze the ways in which the occurrence of a stressful event may continue to inhibit college student functioning. Presenters will focus on the solution of mindfulness as a remedy to this problem of residual stress collection. The presentation will expand on the definition of mindfulness and will summarize the evidence in support of this practice with ethnic minority college students specifically. Presenters will then move beyond lecture by offering instruction on various ways to incorporate the practice of mindfulness into daily life. Although, those who know others are learned, those who know themselves are truly wise. Thus, this presentation seeks to impart the wisdom of self-awareness and the benefits of residual stress relief that transpire in the art of mindfulness.

KEY WORDS: mindfulness, acute trauma, residual stress, college students, ethnic minorities

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**The Cognitive Shift of The Oppressed**

Presenter's Name: Juwanza McIntosh

Classification: Graduate Student

*Presentation Type: Oral Presentation*

The concept of striving from feelings of inferiority or a "felt minus" towards superiority or a "plus position" is what Alfred Adler described as the basic dynamic force behind all behavior. Therefore, if one is born into a minus situation where they are constantly bombarded with negative messages directed towards them and are viewed in their society as a inferior, it could be concluded that the individual in this environment experiences a greater "felt minus" than one reared in a society that more readily accepts them. It is theorized that as a result of being constantly exposed to an oppressive environment, African Americans who are more sensitive to the effects of oppression are susceptible to feelings of superiority towards their perceived oppressors. It is suggested that due to the exposure of exceeding amounts of oppression, African Americans are left with a higher susceptibility to The Cognitive Shift of The Oppressed model. The proposed model strives to build upon the evolution Adler suggested the neurotic individual experiences when unconsciously moving from feelings of inferiority to feelings of superiority. The goal of the intended study is to illustrate the effects of the model by examining the cognitions of those who are especially sensitive to feelings of oppression.

KEY WORDS: Oppression Superiority Inferiority Cognitive Shift

**"Acting White": A Transformation of Animosity to Admiration in Black Peer Groups**

Presenter's Name: Angel Mills

Classification: Undergraduate Student

*Presentation Type: Oral Presentation*

Analysis of qualitative and quantitative data reveals that African Americans who are high-academic achievers are often labeled as "acting White" and incur costs to social status in interracial environments. Their high-achieving White counterparts, do not experience these same costs to their social status when achieving academic success. African Americans who do achieve well academically often attribute their success to Black peer academic groups that support and encourage

their success. This paper will answer the question, "Are students who are ostracized for acting white in primary and second school admired by their peers when they matriculate through college?" In addition to this, this paper will discuss the negative impact the "acting White" concept has on Black students and the African American community as a whole.

KEY WORDS: acting white, social behavior, peer groups

**Blurred Lines: The Multiracial World Wide Web**

Presenter's Name: Brandale Mills

Classification: Graduate Student

*Presentation Type: Oral Presentation*

During the 1990s, when the Internet became widely available for everyday consumption, there were many factors that contributed to the accessibility for users. While more people had access to the Internet, there were existing gaps with racial and ethnic minorities and their limited access to the Internet and computers compared to their White counterparts. Jones, Johnson-Yale & Millermaier (2008) describe these inequities as differential access to information and communication technologies (ICTs). They also mention income, education and access to computers as contributing factors to the "digital divide," limiting online interaction among members of society, especially minorities groups – African Americans, Latinos and Asians. According to researchers, as the Internet evolved and became more accessible, minorities became frequent users, but for different reasons compared to Whites. This paper explores literature that has reviewed the content minorities create on social media/social networking sites and whether that content is used to increase social capital, political engagement or social interaction. It examines research that has focused on race specific social media websites and examine research on whether race and gender make a difference in Internet and social networking sites use among college students in America. The goal of this literature review is to understand the social implications of minorities' use of social media, particularly as it relates to the content produced and consumed on social media websites through a review of published research.

KEY WORDS: internet, social media, minority, digital divide, disparity

A B S T R A C T S

**The Truth About Children of Incarcerated Parents**

Presenter's Name: Dr. Bahiyyah M. Muhammad  
Classification: Junior Faculty/ Lecturer/ Instructor  
*Presentation Type: Oral Presentation*

Children of incarcerated parents are a group of young individuals that researchers have failed to capture a coherent context of their lived experiences. The collateral consequences of parental incarceration on children is assumed to be detrimental to their mental, psychological, and emotional health. The current state of knowledge on children of the incarcerated is missing a vital link: child perspectives and experiences. To the contrary, this study contributes the truth by allowing children of incarcerated parents to share their perspectives and describe their own experiences.

KEY WORDS: children of incarcerated parents, children of prisoners, parental incarceration, collateral consequences of incarceration, familial incarceration, black children, mass incarceration

**The Discourse of the Syrian Conflict in US Newspapers**

Presenter's Name: Husain Murad  
Classification: Graduate Student  
*Presentation Type: Poster Presentation*

Coauthors: Noor Hameededdin

Of the changes that took place in the Arab Spring countries, The Syrian unrest has accelerated and continued until today. The government and the opposition did not settle, and the conflict has extended and integrated more violent and militia's parties that have complicated the conflict even more. Earlier in 2013, a U.S. lead operation intended to interfere in the Syrian conflict; however, the intervention did not take place. The researchers critically examined the discourse of the Syrian conflict and the US military operations through 71 images and captions of the front pages of the Wall Street Journal, the USA Today and the Washington Post newspapers that appeared during January and November of 2013. The research investigates the discourse and the shift of the discourse about the Syrian conflict in the American news media. The major findings of the study show that images and

captions were framed to support of the anti-Syrian regime. The discourse of U.S. intervention in Syria was intensified during August and September vigorously toward alternating the discourse into diplomacy.

KEY WORDS: Syria, US politics, American media, captions, image discourse analysis, war.

**War on PTSD: A Determinant Prevalence and Risk Analysis of Military-Related PTSD**

Presenter's Name: Jennifer Myers  
Classification: Graduate Student  
*Presentation Type: Oral Presentation*

Background: Post-traumatic stress disorder (PTSD) affects millions of people including those who serve in the United States military. Many studies have examined the prevalence and incidence of PTSD within the military; but few have drawn practical implications. Objective: The aim of the study is to 1) assess PTSD predictors across the branches of armed services in the U.S military and 2) identify opportunities for prevention and early intervention for this population. Methods: This study will consist of secondary data from the TRICARE, the Department of Defense's (DoD) health care system and Defense Manpower Data Center (DMDC) databases which include demographics of active duty service personnel. Multivariate logistic regression will be used to identify factors associated with PTSD. Significance: Findings will show the need for the United States Department of Veterans Affairs, policy makers, psychologists, and other healthcare service to prioritize high risk PTSD subgroups within the military to combat its significant and lasting impact. Further implications include individualized prevention and treatment protocols to minimize the incidence and management of PTSD.

KEY WORDS: Post-traumatic stress disorder, PTSD, veterans, military, mental illness,

A B S T R A C T S

**Parent Involvement: Parents of children with developmental delays who face unique barriers**

Presenter's Name: Jean-Louis Philemon Ntang Beb

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Nzinga Jones, Morgan Kirby

Research has shown that they are factors that are hindering parenting abilities (Castro et al., 2004). Incidentally, parents of children with developmentally delayed children will encounter more difficulties than others due to several factors. A developmentally delayed child has a triadic affect: affecting the child, the family, and the external environment (Heiman, 2002). Parental involvement is an integral component in the development and growth of a child, furthermore, children with developmental delay require more care and involvement from their parent to reach their full potential. As a result, parents of children with developmental delay would benefit from additional research dedicated to the evaluation of factors with the potential to handicap parents ability to be involved in a child's education. In this study, strategies will be provided for parents of children with developmental delay to help them cope with the situation but more importantly adapt and improve their parenting abilities to better provide for their children. First, the research will look at the parents' involvement in school and how they conceptualize the classroom as part of the education and parenting process. In addition, the research will also compare the same process but from the parents of developmentally delayed children to understand how they approach parenting, conceptualize their role, and their expectation from educators.

**KEY WORDS:** parenting, parental involvement, developmental delayed, after school care, children with disabilities

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**International Migration of Igbo Women to the United States of America 1995-2012, Brain Drain, Brain Gain or Brain Circulation?**

Presenter's Name: Sussie Okoro

Classification: Graduate Student

*Presentation Type: Poster Presentation*

This research examines the international migration of Igbo women from southeastern Nigeria to the United States from 1995 to 2013 within the context of brain drain, brain gain or brain circulation. It has five specific objectives: (1.) to determine the impact of the migration of Igbo women from Southeastern Nigeria; (2.) to identify the reasons for the migration or non-return of the professionals; (3.) to examine the impact of the loss of their skills; (4.) to assess the impact of the compensatory activities of these women at both the individual and group levels; and (5.) to make recommendations based on findings. The research uses triangulative methods of Social Science research-qualitative and quantitative methods-to investigate international migrations of Igbo women. Interviews, survey and examination of relevant literature were employed to collect data for the study. Migration theories by Ravenstein, Tobler, Dorigo and Udunsi provide the framework for analysis. The important findings include 1) Igbo women have been migrating to the United States of America due to the vast opportunities the United States offers; 2.) Igbo women in the Diaspora form and join associations that contribute towards the development of their communities and send remittances to family members on regular basis. 3.) The absence of Igbo women from their communities has not been brain drain. Rather, this study classifies it as brain circulation where they are using the skills and resources from their host community to develop and support family members in Nigeria.

**KEY WORDS:** Migration, Diaspora, Brain Drain, Brain Gain, Brain Circulation, Remittances

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A B S T R A C T S

**Sex Trafficking: Secondary Source Research**

Presenter's Name: Julie Orme

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Coauthors: Fariyal Ross-Sheriff

The proposed presentation is on findings from secondary source research on assessment policies, intervention efforts, and prevention programs that have been implemented to reduce sex trafficking. While anti-trafficking efforts require an interdisciplinary approach from the fields of medicine, mental health, legislation, law enforcement, and social work, this study examined only the social science literature on sex trafficking. Ebsco Host, PsycArticles, PsycInfo, Social Sciences Full Text (H.W. Wilson), Social Work Abstracts, Soc Index with Full Text, CINAHL Plus with Full Text, Family and Society Studies Worldwide were used to identify articles on sex trafficking. The terms "human trafficking" and "sex crimes" yielded 80 articles from 1993-2013. Limits were set to select full text, scholarly articles to include literature review articles and quantitative and qualitative research reports on sex trafficking. Based on these criteria, 20 articles were selected for analysis (See Appendix 1). A conventional content analysis was completed to identify major themes and subthemes in the literature (See Table 1). Inductive methods were used to develop subthemes of the data on sex trafficking. Three major themes that emerged were: prosecution, protection, and prevention. The subthemes discovered under each of the three themes were as follows: 1) Prosecution: Criminalization Legislation of Traffickers, De-Criminalization of sex work, Barriers to Prosecution; 2) Protection: Identification of Victims, Health Consequences, Services for Victims, Implementation of Laws; and 3) Prevention: Awareness, Education, Training, Causal Factors. Quotes from these themes and subthemes will be presented. Implications for future research and practice will be addressed.

KEY WORDS: Human Trafficking, Sex Trafficking, Prevention, Policy, Intervention

**In the Middle: Personality as a Moderator of the Effect of Arousal on Performance**

Presenter's Name: Davynte Pannell

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

The Yerkes-Dodson law proposes an inverted-U relationship between physiological arousal and performance, such that too little or too much arousal is associated with a poorer performance. Thus, there is a moderate level of arousal. In essence, this law reaffirms the idea that moderation is important for everyone. However, Hans Eysenck proposed that extraverts have a lower baseline of arousal than introverts resulting in the former seeking arousal more than the latter. Thus, Yerkes-Dodson's law may be a broad generalization. Where personality is concerned, it is plausible that the inverted-U relationship could actually be the result of combining two distinct relationships between arousal and performance (one based on extraverts and one based on introverts). This study analyzes the Yerkes-Dodson law in relation to Eysenck's personality theory, such that the inverted-U relationship between arousal and performance differs as a function of where a person lies on the extraversion spectrum. Heart rate was monitored as a sample of 200 African American adults performed a neuropsychological test. Extraversion was measured using the NEO-PI prior to task performance. The study utilizes a moderated multiple regression to test the impact of arousal levels on performance, moderated by personality. The intent is to determine higher levels of extraversion are associated with better performance when tasks elicit higher levels of arousal.

KEY WORDS: arousal, performance, extraversion

**Diminished Confidence in Test Performance after Reminder of Racial Differences**

Presenter's Name: Khristiana Parchman

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

Coauthors: Demi Osundeko, Jamie Barden

Stereotype threat (Steele & Aronson, 1995) is the negative impact that thinking about confirming a negative group stereotype has on individual performance when the stereotype is brought to mind

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prior to the performance. This research focuses on the effects of activating black and white group differences after administering a verbal skills test. The design was a 2 (performance evaluation: poor, strong) x 2 (condition: control, race-salient) between-participants design. African-American undergraduates took a challenging verbal reasoning test and afterwards self-evaluated their performance to be either strong or poor. Participants in the control group were given a general statement on performance differences after the study, while participants in the experimental group were given a statement that indicated racial differences on the task. Since it was a difficult test, most participants rated their performance as poor. Of the participants who rated their performance as poor, those in the experimental group were less certain about their poor performance compared to those in the control group. When reminded of race differences between Blacks and Whites on verbal tests, participants lost confidence in their negative assessment of their verbal abilities as indicated by the test. Of the participants who rated their performance as strong, both groups had similarly high certainty in their strong performance. These findings show that being made aware of race differences after testing can protect participants from the negative consequences of poor performance. Participants may have disregarded their original negative perception of their performance because they view race-based differences in testing performance as a test bias indicator.

KEY WORDS: stereotype threat, performance, meta-cognition, race

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**What are the Factors that Contributed to the Increase of Homicides in Puerto Rico from 2007-2012?**

Presenter's Name: John Perez

Classification: Undergraduate Student

Presentation Type: Poster Presentation

For over a decade Puerto Rico has seen a steady increase of violence resulting in murder. With a population less than half the size of New York City, the island experienced more than twice the number of homicides in 2011 compared to New York City that same year. In this study there will be an analysis conducted on murder committed between 2007 and 2012 in Puerto Rico. The increase of drug trafficking, corruption amongst public officials, and lack of resources provided to law enforcement are all factors that will be proven to contribute

to homicide in Puerto Rico in this study, as well as any other factors that may arise in conducting research. Crime statistics and interviews of various local and federal law enforcement, politicians, families of homicide victims, media and newspaper reporters and advocacy groups on the matter will provide a foundation to prove a theory that concludes the cause of the increase in homicidethat occurred in Puerto Rico.

KEY WORDS: Puerto Rico Homicide Crime Factors

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**Bougie Yet Black: A DuBoisian Perspective on Class Consciousness**

Presenter's Name: Keadrick Peters

Classification: Graduate Student

Presentation Type: Oral Presentation

Previous research on Karl Marx's class consciousness theory has not examined at length the relationship to Du Bois double consciousness concept. This paper explores the connection between Karl Marx's concept of class consciousness and W.E.B. DuBois' concept of double consciousness. In particular, this qualitative comparative paper will bridge the gap between Marx's and DuBois' class consciousness theories with focus on the following: alienation, class consciousness, false consciousness, double consciousness, and black class consciousness. The findings indicate Marx's and DuBois' theories have similar and overlapping themes which are useful in understanding the unique humankind class struggle. I hope this contribution will assist, inspire, and avoid exploitation of the working class; especially those people of color.

KEY WORDS: Socioeconomic status, Class, African Americans, Marx, Du Bois

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**Who Contributes to Economic Growth?**

Presenter's Name: Carlsen Philip

Classification: Undergraduate Student

Presentation Type: Oral Presentation

With the rising inequality in the US and many parts of the developed world, many people apart of the middle class ranks of these societies feel ever more pressure to on their ability to provide for themselves and their families. In fact,

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many have come to the conclusion that the political class and business community of their respective countries no longer hold their best interest at hand and do not view them as significant contributors to the economy anymore. Frankly put, they (middle classes) are not seen to be the drivers of growth anymore. This paper seeks to establish who amongst all income groups in the US contributes to the growth rate the most. By looking at quintiles measured against growth, as well as specific industries, educational level and inflation I posit that the middle class of America (middle quintile of income) will be the greatest contributing factor to economic growth in the US. It was found the Third Quintile of income earners had the largest and only effect on the annual GDP growth rate of the US. This proves that amongst all classes of income earners, the middle class of America (Third Quintile) was the greatest contributor to the growth of the American economy.

KEY WORDS: economy, growth, inequality, job-creators, 1-percent

### Effects of Minority Stress on Black College Students

Presenter's Name: Ebony N. Russ, M.A., M.S.

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Charnel Hollier, B.A. , Donnesha Gibson, M.Ed.

Many students find their university years to be a stressful experience (Pierceall & Keim, 2007). However, minority groups have experienced more psychological distress and disorders than the majority population (Mays & Cochran, 2001; Szymanski & Stewart, 2010; U.S. Surgeon General, 2001). Smedley, Myers, & Harrel (1993) describe minority stress as "unique stresses experienced by minority students that interfere with their college adjustment and integration into the university." Minorities may experience additional stressors that come from within the family system by feeling pressure to achieve academically. In addition, minorities may experience other types of stress due to racial discrimination from racist micro-aggressions, feelings of invisibility within social and classroom settings, financial burdens, etc. However, most of these findings address stress among African American Students at predominantly white institutions (PWIs) (Neville, Heppner, Ji & Thye, 2004; Neville

& Heppner, 1997). One goal of this presentation is to reveal the types and sources of stress among students attending historically Black colleges & universities (HBCUs). One study by Greer (2008) suggests that HBCU students have perceived stress experiences of racial discrimination, intergroup conflict involving the same –race peers, along with severe pressures to succeed in college. Overall, this presentation Explores the risk factors associated with intense minority stress, the destructive behaviors due to stress, first generation college status, and implications for optimal health for black college students attending both predominantly white institutions and historically Black Colleges & universities.

KEY WORDS: College Students, Black, Stress-minority, first generation, health

### Demographics and Protective Actions During Severe Weather: Tuscaloosa, AL 2011

Presenter's Name: Shadya Sanders

Classification: Graduate Student

*Presentation Type: Poster Presentation*

The relationship between demographics and resulting actions during severe weather outbreaks is investigated for a tornado track during the 2011 Super Outbreak in Alabama. Increased forecasting accuracy requires costly investments, but it is still unclear if these costs directly translate to a reduction in loss of life and property. Are traditional forecast warnings too contextually limited to convey the differences in the severity and confidence in the severity of storms? Is the public desensitized as a result of these traditional severe weather forecast warnings? Do particular factors related to demographics exist (e.g. age, gender, race) that compromise the perception and protective actions of severe weather warnings? A case study of the forecast analysis and storm was conducted to discern the quality of the forecast and render the geographical path of the storm and its corresponding damage. The levels of mortality that occurred across Tuscaloosa and Jefferson counties in Alabama were observed, analyzed, and mapped using Geographical Information Systems (GIS) mapping. A mixed method approach includes atmospheric research, forecast analysis, focus group response, and individual survey response of Alabama residents. The results



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of this case study may reveal potential gaps in the current warning dissemination method, and clues to better target particular audiences with higher risk.

KEY WORDS: Demographics, Tornado, Tuscaloosa,

**The Efficacy of Private Equity, Venture Capital, and Micro Finance in Stemming Economic Growth in Africa in the Absence of Robust Financial Markets**

Presenter's Name: Olusina Senu-Oke  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

**Introduction:** The lack of robust financial markets (in both the equity and fixed income spaces) in Africa has forced private and institutional investors and borrowers alike to seek innovative alternatives to meet their funding and investing needs. The total market capitalization and liquidity of African stock exchanges lags in comparison to that of their American, European, and Asian counterparts. Increasingly, African savers and lenders have turned to microfinance, venture capital, and private equity as solutions to their financial needs. The efficacy of these entities in providing the fundamental benefits of the financial system (liquidity, risk sharing, diversification) has been debated but the rapid growth of this nascent industry cannot be ignored. This paper strives to show, through the use of empirical evidence and theoretical frameworks, that these three financial alternatives can assume some of the fundamental goals of the financial system and thus drive economic growth forward. **Methods:** The methodology used to estimate the effect of these three financial alternatives in stemming economic growth in Africa is a linear regression framework. Several regressions were performed to measure the effect of these various alternatives on a variety of economic parameters as they relate to specific industries and geographies. **Results:** Analysis of the results is ongoing, and not yet conclusive. **Conclusions:** Preliminary results indicate that these alternative solutions are assuming some of the key functions of the financial system, and thus driving African economic growth forward. For the size of this fledgling industry, it plays an outsize role in increasing growth.

KEY WORDS: private equity, venture capital, finance, africa, micro finance

**The War on Poverty 50 Years Later: Poverty and inequality in the U.S. and a Globalized World**

Presenter's Name: Pearline Tyson  
 Classification: Graduate Student  
*Presentation Type: Oral Presentation*

Research examines contemporary global phenomenon of growing poverty and income inequality in the United States and other nations. The War on Poverty was declared fifty years ago with the goal of addressing the issues of depravation and social justice in the United States. This much celebrated policy initiative was anticipated to not only banish poverty and suffering in the country but was touted as a model for the world. Unfortunately, since the launch of President Johnson's War on Poverty, studies indicate that despite government intervention the poor are getting poorer while the rich are getting richer. Inequality has been identified as a growing problem in the U.S. where half of the population is now considered poor or low-income; and income has been redistributed from the middle class to the very rich. According to a new report from the International Labor Organization, income inequality in the U.S. is much worse than it is in other industrialized countries, where it is also an alarming problem. While Globalization is creating fresh opportunities for hundreds of millions of people, the gap between the richest and poorest countries is widening as inequality within many countries is also continuing to increase. This research focuses on the history and effects of inequality in the U.S., specifically on U.S. urban populations. Specific emphasis will be centered on the impact and influence of U.S. inequality in the developing world. The thesis of the research is that the adoption of governmental intervention to address poverty and inequality in urban areas is associated with limited success as a result of the failure of public policy instruments that had to be integrated in the formulation and implementation process. Qualitative and quantitative methods are employed in analyzing the issues behind the structural and social factors underlying the dynamic. Significance of the study lies in the need for a greater understanding of the role of poverty and inequality for the goals of both alleviating suffering as well as preventing deadly social conflicts.

KEY WORDS: Globalization, Inequality, Poverty, Public Policy, United States

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**Convict Labor Practices in the United States and the Soviet Union: Convict Leasing and the GULAGs**

Presenter's Name: Amber Walden  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

The GULAGs of the Soviet Union and the Convict Lease System in the United States were two very similar occurrences in the history of convict labor. The development of both the convict leasing system and the GULAG system and their implementation can be used to see how the two countries decided to handle classes of people that they wanted to control. The convict leasing system was developed in the late 1860s as a new way to control the newly freed slaves in the Southeastern United States. The GULAG was a system of prisons used to help the Communist party purge the people it considered as politically threatening. Both systems were born out of greed and cruelty but were, at least at first, seen as the best option for their governments to complete public projects and reform wayward citizens. This paper will compare the uses of the GULAG system to the uses convict leasing system.

KEY WORDS: Convict Labor, Convict Leasing, Soviet Union

**Talk to you later vs. TTYL**

Presenter's Name: Kiah Wayman  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

This research seeks to find out people's opinions on phone calls and the importance of them this day in age. In addition, I determine how long people stay on the phone with others and what factors come into play when a person decides who they're going to speak on the phone with and for how long (grammar in this sentence). The problem is that a decreasing amount of people see the point of making phone calls to people they wish to communicate with. Instead they send text messages, tweets, Facebook messages and e-mails – very impersonal methods of communication. I specifically think it's a problem because nothing compares to hearing a person's voice to catch the verbal cues that may be missed through virtual conversation. I know that there's a big difference between the feeling of

talking to my friends on the phone and talking to them through text messages. I have even experienced the discomfort that people often get while on the phone when there is awkward silence and I think the reason behind it needs to be explored. The aim and purpose of my study is to explore the effect of technology on the use of telephones for communication. I want to know whether or not there's a disconnect people feel on the phone and where that disconnect derives from. I also aim to bring attention to this topic so that other people may realize how new methods of communicating may have changed their social skills. I want to get people thinking about the new ways that we communicate and what those new ways say about our social skills.

KEY WORDS: telephone social skills technology communication

**Finding the First Lady: An Application of Black Feminist Thought to the Construction and Negotiation of Michelle Obama's Identity**

Presenter's Name: Leticia Williams  
 Classification: Graduate Student  
*Presentation Type: Oral Presentation*

Dominant media portrayals of the first lady and Black women have increasingly become the guiding parameter for contemporary understandings of women whose identities and characterizations are contingent on prevalent typologies. Though similar in analysis of identity and representation, these two areas of study have developed in separate lines of research. The purpose of this study is to identify and examine the multiple and fluid identities of First Lady Obama and synthesize studies of gender, race, and presidential spouses. Intersectionality provides a conceptual framework for this study. However, it is grounded in the theoretical tenets and major foci of Black Feminism, specifically Black feminist thought. The core principles of Black feminist epistemology offer an alternative methodological approach to place the lived experiences and reality of Black women at the center of research, which is reflective of their social location and historical reality. In addition to Black feminist thought, a qualitative textual analysis will allow a close reading of texts to establish meaning, and inform shared understanding

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of the interplay among communication, identity, and media. A textual analysis of 22 articles published between January 2009 and January 2012 was used to explore the construction of intersectional identities and strategies to negotiate stereotypes, historical representations, or limited characterizations of the first lady and Black women. Findings showed that magazine portrayals of First Lady Obama's identity communicated shared understandings of intersectionality (i.e., race, gender, and class) as a social phenomenon, particularly for women.

KEY WORDS: Black women, first lady, identity, intersectionality, media

**Rainwater Harvesting - Increasing Safe Water Sources in the Rural Communities: Policy Agenda and Water Advocacy in Ghana**

Presenter's Name: Kym Wilson

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Rainwater harvesting is an improved water source recognized to supplement and provide safe water for the rural communities in Ghana. The high annual rainfall in Ghana will allow for rainwater harvesting to complement existing water sources providing more access to safe water in the rural communities. Rainwater harvesting requires government commitment for agency prioritization, community participation and environmental sustainability in building a viable infrastructure for accessibility to safe water. Ghana has met two years in advance the targeted Millennium Development Goals for 2015 correlated to water supply as a low-income African country. However, the lack access for safe water to the rural communities in Ghana continues to propel civil discourse amongst water advocates. The various Ghanaian government pundits, water advocates and actors, both national and international promote opportunities for self-sustaining water supplies utilizing tactical community management with inclusiveness for rainwater harvesting. This research identifies water policy and discourse within the framework of primary Ghanaian agencies with an emphasis on environmental sustainability of rainwater harvesting in the scheme of providing safe water to the rural communities. An interdisciplinary approach with a review of national and international policy reports, developmental statistical data and community information will be integrated

within this research defining the perspective on rainwater harvesting and current program position.

KEY WORDS: Rainwater Harvesting - Water Policy Safe Water - Rural Communities - Ghana

**South-South Cooperation: The Role of Brazilian Investments in Shaping Agricultural Transformation and Development in Mozambique**

Presenter's Name: Wheeler Winstead

Classification: Graduate Student

*Presentation Type: Oral Presentation*

Traditional models of North-South development aid are giving way to new models of South-South Cooperation, led by Brazil, Russia, India, China and South Africa (BRICS). This shifting is due in part to the failure of North-South models to address poverty in developing countries. Goldman Sachs suggests that by 2032, the BRICS economies will account for more than half of the world economies. According to the World Bank, Brazil's global economic position has moved in ranking from fourteenth to seventh in just fourteen years. Brazil is now the world's largest exporter of beef, chicken, sugar cane, coffee and orange juice. Mozambique, once considered the poorest country in the world, is experiencing an improvement in its economic fortunes too. Mozambique now is the host to a new wave of Portuguese immigrants seeking a better economic future. Brazil and Mozambique share a number of things in common: climate, European language, and other inequities common to colonized peoples. Since 2003, Brazil's Ex-president Luiz Inácio Lula da Silva has pursued a strategy of reintroduction to Africa and, by extension, Mozambique. Recently, Brazil is investing heavily in Mozambique in the area of agriculture. The literature suggests that this engagement maybe more beneficial to Africa than former North-South development assistance. However, little research has been conducted to document the impact and benefit of Brazilian investments on Mozambique's agricultural transformation. This study will attempt to understand the role, impact and benefits of Brazil's investment to Mozambique's Agricultural development.

KEY WORDS: Brazil, Mozambique, South South Cooperation, Agriculture

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**Gender differences in African-American and Latino-American substance use: An examination of cultural factors related to minority of substance use**

Presenter's Name: Gerilyn Worthy

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Gerilyn Worthy, Irving Arevalo, Sharon Bahr, and Dominicus So

**Background:** Despite changes in American laws and culture since the 1980s “war on drugs”, an active drug sub-culture still exists. Based on the data from Drug Abuse and Warning Network (DAWN; 2011), illicit drug use resulting in emergency room visits is more prevalent among African-American and Latino-American males than their female counterparts. This study focuses on gender differences in substance misuse in Latino- and African-Americans indicated in DAWN and the social and cultural context of misuse as indicated in contemporary research. **Methods:** Data, specifically substance use data, from DAWN (2011) was used for this study. Chi

square tests of independence indicated a relationship between gender and drug-related emergency room visits. Information on possible social and cultural correlates of minority substance misuse was gathered from the Substance Abuse and Mental Health Service Administration (SAMHSA) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA), as well as other resources. **Results:** revealed that African-American and Latino-American males were more likely to report alcohol ( $\chi^2 (1, n = 47254) = 1457.38, p < .001$ ;  $\chi^2 (1, n = 24771) = 961.01, p < .001$ , respectively) and illicit drug(s) consumption ( $\chi^2 (1, n = 47254) = 4026.45, p < .001$ ;  $\chi^2 (1, n = 24771) = 2908.41, p < .001$ ) during emergency room visits in comparison to their female counterparts. **Conclusions:** Contemporary literature on minority drug and alcohol use points to several factors that influence substance use among these minority groups, including: biological factors (alcohol-metabolizing enzymes), acculturation, socioeconomic factors, and educational attainment.

KEY WORDS: Minority, Substance Use, Culture, DAWN

## Translational and Clinical Sciences

**Recurrent Posterior Reversible Encephalopathy Syndrome in a patient with HIV infection**

Presenter's Name: Mohammed Amine Achhal El Kadmiri

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Mohankumar Kurukumbi, MD, Frehiwot D Temesgen, MD and Mohammed Amine Achhal El Kadmiri, MD

Posterior reversible encephalopathy syndrome (PRES) is a clinicoradiological syndrome in which patients present with an acute or subacute clinical presentation of seizures, visual disturbances, headache, and altered mental status. The pathophysiology of PRES may be explained by endothelial dysfunction that leads to transudation of fluids and protein,

resulting in vasogenic cerebral edema. PRES is typically associated with many conditions such as hypertension, uremia, immunosuppressive drugs, and sepsis. PRES recurrence has been previously described but is a rare entity. This is a case report of a 40-year-old woman with untreated HIV infection and end-stage renal disease (ESRD) who developed a recurrence of PRES with a normal blood pressure and no other known causes of PRES. Untreated HIV is associated with known endothelial dysfunction and we believe that this, in combination with her untreated ESRD, caused her recurrence. To the best of our knowledge, this is the first report of recurrent PRES in a normotensive patient with untreated HIV and ESRD as the only precipitating factors.

KEY WORDS: recurrent, posterior, reversible, encephalopathy, syndrome

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**Mystery in the Bone**

Presenter's Name: Akeem Adebogun  
 Classification: Post Doc/ Resident/ Fellow  
*Presentation Type: Poster Presentation*

Coauthors: Akeem Adebogun, MD, Adeyinka Laiyemo, MD, Michael Windham, MD, Josephine Marshalleck, MD, Sameer Sawhney, MD, Ali Malik, MD

Carcinoid tumors are neuroendocrine tumors which can arise from different parts of the gastrointestinal tract as well as the lungs. We present a 62 year old African American male with a history of hypertension and dyslipidemia who was diagnosed with prostate cancer in 2002. He underwent a radical prostatectomy in 2003 and was placed on leuprolide after that. In 2010, he was diagnosed with low-grade, well-differentiated, jejunal carcinoid tumor with liver metastasis. Treatment was initiated with sunitinib and octreotide. At the time of presentation, he complained of pain involving the mid back, radiating to the sides. He denied any numbness or weakness of the lower limbs. He had decreased appetite and had lost 30 pounds over the past one year. He had episodes of excessive sweating as well as feeling hot and then cold. He also had early morning nausea and loose bowel movements daily. CT and MRI of the spine revealed metastatic blastic lesions in thoracic vertebrae 6 through 12. Immunohistochemistry of subsequent biopsy of one of the lesions on thoracic vertebra 10 revealed metastatic carcinoid. The vertebral metastases were treated with radiation therapy. Though the biopsy proved carcinoid tumor to be the source of the lesion at T10, it did not rule out prostatic cancer metastasis at another focus in the spine. However, it reminds us of the potential for carcinoid tumors to metastasize to bone in a manner that can mimic prostate cancer. It emphasizes the importance of obtaining tissue biopsy whatever the clinical suspicion may be.

**KEY WORDS:** carcinoid, metastatic carcinoid, jejunal carcinoid, blastic metastasis, spinal metastasis

**How Early Should 'Early' Laparoscopic Cholecystectomy be Performed for Acute Cholecystitis?**

Presenter's Name: Babawande Adesibikan  
 Classification: Professional Student  
*Presentation Type: Oral Presentation*

Coauthors: Syed Zafar, Augustine Obirizee, Batul Al-Zubaidy, Edward Cornwell, Terrence Fullum and Daniel Tran

**Background:** There is growing evidence in support of performing early laparoscopic cholecystectomy (LC) for acute cholecystitis. However, the definition of 'early' LC varies from 0 to 10 varies. The optimum time to perform early LC is still unclear. We aimed to determine if outcomes after early LC for acute cholecystitis vary depending on time from presentation to surgery. **Methods:** We analyzed the Nationwide Inpatient Sample (NIS) years 2005 to 2009. We selected all patients who underwent an emergent or urgent LC for acute cholecystitis within 10 days of admission and categorized them in three groups (0-1, 2-5, and 6-10 days) depending on duration from presentation to surgery. Outcomes of interest were; mortality, length of hospital stay, post-operative complications and cost of care. **Results:** A total of 114,835 patients were selected. 75,299 (66%) LC's were performed on day 0-1, 35,909 procedures (31%) were performed between 2 to 5 days and 3,627 (3%) between 6 to 10 days of presentation. After matching, surgery during days 2-5 and 6-10 had worse outcomes when compared with days 0-1. The odds of mortality were 1.26 (95% = 1.00, 1.58) and 1.93 (95% CI = 1.38, 2.68), and of post-operative infections was 0.88 (0.69 – 1.12) and 1.53 (1.05 – 2.23) for the 2-5 days and 6-10 days groups respectively. **Conclusion:** Laparoscopic cholecystectomy for acute cholecystitis performed within 48 hours of presentation yields the best outcomes.

**KEY WORDS:** outcomes, laparoscopic, cholecystectomy, cholecystitis, surgery

## A B S T R A C T S

**Benchmarking of CXC Chemokine Receptors to Assist Ligand Discovery**

Presenter's Name: Jennifer Aka

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Blessing Adodo, Uzo Obi, Jie Xia, Terry-Elinor Reid, Xiang Simon Wang

Virtual screening is becoming a preferred method of identifying hits as proved by the growing successful reports in literature. A major pitfall of VS is there is no generally accepted standard to quantitatively evaluate the numerous approaches. A widely adopted retrospective validation technique known as benchmarking has been adopted to address this issue. Benchmarking datasets comprise a subset of active ligands and a larger subset of inactive but similar compounds called decoys. If the model enriches the actives from among a sea of decoys, the model is considered good and the approach can then be considered the best fit. Of the many decoy databases available none includes datasets for the entire CXC chemokine receptorome. Hence we focused our efforts on creating benchmarking datasets for CXCRs that can be applied to both structure-based virtual screening and ligand-based virtual screening approaches. CXC chemokine receptorome comprise CXCR1-CXCR7, however adequate biological data is available for only CXCR1, CXCR2, CXCR3 and CXCR4 for which we can create benchmarking datasets. We have applied a novel methodology developed by our group for creating the least biased benchmarking datasets. It involves utilizing a series of filtering strategies based on physical properties and topology matching between decoys and ligands followed by Leave-One-Out (LOO) validation. We were able to build decoy datasets for CXCR1 through CXCR4 with good property-matching quality. In addition, LOO validation ROC curves are close to the random distribution with an AUC value close to 0.50, indicating low bias and challenging datasets for CXCRs ligand discovery.

**KEY WORDS:** chemokine, receptors, benchmarking, decoy, in silico

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**Adverse Childhood Experiences and Sleep Disturbance in Trauma Exposed Youth**

Presenter's Name: Ameenat Akeeb

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Tyish S. Hall Brown, Ph.D., MHS, Harolyn M.E. Belcher, M.D., MHS, Jennifer Accardo, M.D., Ripudaman Minhas, M.D., MPH; Ernestine Brigg-King, Ph.D.

**Objective:** Adverse childhood experiences (ACEs) are prevalent and have been associated with a host of mental health and behavioral outcomes. Sleep disturbance is linked to similar adverse outcomes and exposure to ACEs may play a role in the development of sleep disturbance. However the data examining this relationship in youth are limited. The purpose of this study was two fold: 1) to estimate the prevalence of disordered sleep in a national sample of trauma exposed children and teens. 2) To determine the contribution of PTSD symptom severity and specific ACE type to the risk of disturbed sleep. **Methods:** Data were collected from 56 mental health centers that form the National Child Traumatic Stress Network (NCTSN). For the current study, secondary data analysis was conducted using deidentified data from 4,043 youths within the core dataset of the NCTSN who met eligibility criteria. **Results:** Sixteen percent of the sample had a probable or definite sleep disorder. Mixed methods, logistic models revealed that participants meeting full criteria for PTSD were at greatest risk with estimated odds ratios of 1.95 and 3.18 for children and teens respectively. Additionally, exposure to sexual assault as a child or to community violence as a teen was independently associated with disordered sleep receiving estimated odds ratios of 1.76 and 1.61 respectively. **Conclusions:** Sleep disturbance is prevalent in youth exposed to adverse childhood events. Comprehensive treatment strategies should include assessment of disordered sleep in exposed youth, particularly those with elevated PTSD symptoms and exposure to sexual traumas or community violence.

**KEY WORDS:** trauma, adverse childhood experiences, sleep

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## A B S T R A C T S

**Development and testing of a buffered thermo-reversible gel containing Tenofovir-loaded poly (lactic-co-glycolic) acid nanoparticles.**

Presenter's Name: Ann-Marie Ako-Adounvo

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Ramesh Nagarwal PhD, David Awotwi-Otoo PhD, Pradeep Karla PhD

**Background:** Tenofovir is an antiretroviral drug, a class of compounds also known as nucleotide analogue reverse transcriptase inhibitors. They work by blocking reverse transcriptase, which is an important virus enzyme in human immunodeficiency virus 1. This makes tenofovir suitable for its use as pre-exposure prophylaxis by preventing HIV from growing inside human cells of subjects who do not have the virus. This study was designed to develop buffered thermo-reversible gel containing tenofovir loaded PLGA nanoparticles for prolonged protection from sexually transmitted HIV. **Method:** TNF-loaded PLGA nanoparticles were prepared by modified emulsion/solvent evaporation technique employing ethyl acetate, pluronic®F68 and 2% w/v PVA solution. The solvent was later evaporated at room temperature. The nanoparticles were separated by ultracentrifugation, washed and lyophilized at -50°C for 24-48 hours. The thermo-reversible buffered gel was prepared from Poloxamer 407 (20% w/v), pH 4.2 citrate buffer and 2.5% w/v of Pluronic® F-108. The solution was verified for phase transition by gradually increasing the temperature in water bath and documented for gel formation by visual observation. Freeze dried TNF loaded PLGA nanoparticles of predetermined weights were added to this solution to obtain a thermo-reversible nano-gel formulation. The formulation was stored at 2-8°C for further use. **Results:** Encapsulation and drug loading efficiencies were obtained in the ranges of 1.43-10.78 and 0.25-1.18% respectively. Particle sizes ranged from 265-413nm with polydispersity index ranging from 0.131 to 0.217. The thermo-reversible gel demonstrated gel matrix formation at temperatures 28-30°C and converted to a solution when refrigerated. Cytotoxicity study of formulation components (placebo gel, buffered gel, nanoparticles, and complete formulation) was conducted for 2 and 24 hrs. The formulation and components were found to be nontoxic to VK2/E6E7 cells. **Conclusion:** Thermo-reversible solution dispersed with tenofovir-loaded PLGA nanoparticles demonstrated the desired sol-gel transition for vaginal application. Further, the

study demonstrates the development of a promising non-toxic vaginal gel formulation with an extended sustained drug release profiles of tenofovir.

KEY WORDS: tenofovir, thermoreversible, gel, PLGA, nanoparticles

**Xeroderma Pigmentosum Group C in a Patient of Amish Descent**

Presenter's Name: Kunal Angra

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Debby Tamura, Sikandar Khan, John DiGiovanna, Kenneth Kraemer

Amish people often marry others within their own common religious and cultural sphere, a process known as endogamy. Populations with an increased rate of endogamy can demonstrate increases genetic homozygosity and are more likely to exhibit rare autosomal recessive disorders such as Xeroderma Pigmentosum (XP). Xeroderma Pigmentosum (Incidence: one in a million in the United States) is caused by defects in the nucleotide excision repair (NER) pathway<sup>1</sup>, a pathway that functions to identify, remove, and replace DNA damaged by ultraviolet radiation (UV). Many XP patients present with redness, severe blistering, and burning of the skin after minimal sun exposure. Other XP patients do not burn, when exposed to the sun and may tan<sup>2</sup>. Due to the unrepaired DNA damage in the sun exposed skin and eyes, XP patients have a 10,000-fold risk of developing skin and ocular cancers<sup>3</sup>. Other symptoms include photophobia and eye damage; progressive neurological degeneration occurs in about 25% of patients<sup>3</sup>. In this case study of XP468BE, a 1 year 11 month old Amish male with a positive family history of a second cousin once removed with XP, presented with freckling at 1 year of age. He never experienced blistering sunburn or tanned, but his face became red after being outdoors for several hours. PCR based amplification and sequencing of XP468BE genomic DNA from blood revealed novel homozygous XPC intron 6 splice donor site mutations (+1 G>T). Such mutations are expected to cause abnormal XPC gene splicing.

KEY WORDS: xeroderma, pigmentosum, group C, Amish

A B S T R A C T S

**Presentation of a rare parotid gland tumor in an adult male patient**

Presenter's Name: Chibuikwe Anokwute  
Classification: Post Doc/ Resident/ Fellow  
*Presentation Type: Poster Presentation*

Coauthors: Roma Teekamdas, Krishnan Narasimhan

**Background:** Myoepithelial carcinoma is a rare tumor of the salivary gland, with highest incidence involving the parotid and mostly low grade malignancy. **Case presentation:** This is a case of a 55 year-old man who presented to the emergency room with a right jaw mass of seven years, which began draining for the past 3-4 years. He had no significant past medical history. Physical examination showed an unkempt man with a firm non-tender multilobulated mass in the right preauricular area measuring 7x10cm with superficial fistula draining serosanguinous fluid. Maxillofacial CT with contrast showed a 6.7 x 8.7 x 5.2cm inhomogeneous within the superficial portion of the right parotid gland. The deep portions of the right parotid gland and the remainder of the major salivary glands appeared normal and without lymph node involvement. The patient underwent right extensive superficial parotidectomy. Pathology report revealed intermediate grade myoepithelial carcinoma of the parotid gland without lymph node involvement, but with extensive necrosis and paratocutaneous fistula. **Conclusion:** Salivary gland tumors are rare with over 75% involving the parotid gland. Low malignancy is a common feature; however aggressive local infiltration is not uncommon. Although this mass has been present for 7 years, treatment is with total surgical resection which usually leads to complete resolution.

**KEY WORDS:** myoepithelial carcinoma, parotid gland tumor, salivary gland tumor, epithelial-myoepithelial carcinoma, rare tumors

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**Frequency of abdominal aortic aneurysms likely underestimated in US**

Presenter's Name: Miranda Armour-Chelu  
Classification: Junior Faculty/ Lecturer/ Instructor  
*Presentation Type: Poster Presentation*

Coauthors: Joy Nduka, Edem Abotsi

Abdominal aortic aneurysms (AAA) are a significant cause of mortality in the US and are more prevalent in white men compared to other elements of the population. Screening for AAA in men over the age of 65 is now recommended as elective repair has a far lower risk of mortality compared to aortic rupture, and the increasing use of endovascular versus open repair further diminishes perioperative risk. The observed frequency of AAA is lower in women but they have a higher rate of rupture compared to white men and less optimistic outcomes after surgical intervention. The relative frequency of AAA rupture in black men is similar to that reported in women which may indicate a reduced rate of detection in unscreened populations and lower rates of elective repair. **Methods:** We recorded aortic dimensions, the presence of aneurysms and atherosclerosis in 10 cadavers from the Gross Anatomy Laboratory, College of Medicine (5 black, 5 white, 7 males, and 3 females), ranging in age between 60 and 94. **Results:** Two males and one female showed the presence of AAA, one with rupture, giving a frequency of 30% in the sample. A possible thoracic aneurysm/dissecting aneurysm with hemothorax was also identified. **Conclusions:** The prevalence of AAA in women and minority populations is likely underestimated and this could be addressed with more extensive screening programs and autopsy studies.

**KEY WORDS:** abdominal aneurysm, frequency, screening

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A B S T R A C T S

**CT and MR imaging of Coronary Arteries:  
Beyond Atherosclerosis**

Presenter's Name: Barun Aryal

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Hemant Boolani, Ojore Jones, Claude Guerrier, Elliott Jiles, Brittney Williams, Danh Truong, Faezeh Razjouyan, Andrew Villanueva, Bonnie Davis, Andre J. Duerinckx

**Purpose/Aim:** Atherosclerosis is the predominant presentation of coronary artery disease (CAD) in the general population. However, inflammatory coronary artery changes occur early in the presentation of CAD, Diabetes Mellitus Type II (DM2), and HIV as well as in rarer diseases such as Kawasaki, Takayasu, IgG4-related coronary periarteritis, Churg Strauss, and Behçet disease. We will review the world literature on the use of Computed Tomography (CT) and Magnetic Resonance (MR) imaging of the coronary arteries to visualize early inflammatory coronary vessel wall changes not visible during cardiac catheterization. **Content Organization/Learning Objectives:** We will review, describe and discuss the CT and MR findings in the following diseases:

- a. HIV: atherosclerosis, coronary artery luminal narrowing, and calcifications
- b. Kawasaki: coronary dilations, aneurysms, and more rarely, giant aneurysms
- c. Takayasu: inflammatory changes in coronary arterial walls.
- d. IgG4 related periarteritis: giant coronary artery aneurysms.
- e. Churg Strauss: coronary artery ectasias.
- f. Behçet: coronary aneurysms secondary to thrombosis.

**Summary:** The use of MRI and CT of coronary arteries has improved our ability for earlier detection of vessel wall disease, and has helped direct and expedite treatment options. Early detection allows prompt diagnosis, follow up, and management of disease. We present a comprehensive overview of the aforementioned coronary artery diseases.

**KEY WORDS:** Coronary artery disease, HIV, Kawasaki, Computed Tomography, Magnetic Resonance Imaging

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**Identification of novel APC mutations by exome sequencing in African American colorectal cancer patients**

Presenter's Name: Hassan Ashktorab

Classification: Senior Faculty

*Presentation Type: Oral Presentation*

Coauthors: M. Darempouran, H. Rahi, Edward Lee, \*Sudhir Varma, Joe Devaney, Hassan Brim

**Background:** Mutations in cancer driver genes have been discovered in colorectal cancer (CRC) progression including KRAS and BRAF that have practical therapeutic and prognostic implications. Whole Exome Sequencing (WES) is revolutionizing the screening for pathologic Single Nucleotide Variants (SNVs). **Aim:** We aimed to examine SNVs in African Americans (AAs) with CRC. **Methods:** We performed a WES on DNA from 12 normal-tumor pairs of frozen biopsies from AA CRC patients. Data analysis was carried out using GATK (Genome Analysis Tool Kit). Normative population databases (e.g. 1000 Genomes SNP database, dbSNP, and HapMap) provided the capability to filter genetic polymorphisms from putative somatic mutations. Variants were annotated using Annova and validated by Sanger sequencing. We identified somatic mutations in genes that are known targets in CRC including APC, BRAF, KRAS, and PIK3CA. We detected rare and unique alterations in the WNT pathway gene, APC, including frameshift deletions and insertions stopGain which are located in exon 15, the exon where previously observed mutations have been highly associated with CRC. **Conclusion:** This first WES from AA with CRC provides insight into the identification of novel somatic mutations in APC. Our data suggest an association between specific mutations in the WNT signaling pathway and risk of CRC. The analysis of the pathogenicity of these novel variants might help understand the aggressive nature of CRC in African Americans and may identify biomarkers that allow patients' stratification and lead to the development of more effective ways to reduce cancer morbidity and mortality in this population.

**KEY WORDS:** exome sequencing, colon, cancer, novel mutation

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A B S T R A C T S

**Mortality Among Underserved Patients with Cirrhosis Admitted for Upper Gi Bleeding**

Presenter's Name: Dilhana Badurdeen  
 Classification: Post Doc/ Resident/ Fellow  
*Presentation Type: Poster Presentation*

Coauthors: D. Badurdeen, M. Girgis, S. Solomon, M. Windham, A. Sanderson, A. Laiyemo, R. Begum

**Background:** The extent of adherence to the 2009 AASLD guidelines regarding cirrhotic patients admitted for upper GI bleeding (UGIB) is unknown. We evaluated the use of octreotide, antibiotic prophylaxis, beta blockers, proton pump inhibitors (PPI's) and Esophagogastroduodenoscopy (EGD). **Methods:** This retrospective chart review included 108 cirrhotic patients admitted to HUH with UGIB from January 2009-December 2012. **Results:** The mean age of our patients was 53.9 years. The mean length of stay was 9.4 days. A total of 14 (13%) patients died during hospitalization. Early EGD was performed on 60.2% with an associated non significant decrease in mortality (18.6% vs 9.2%; P value=0.156). 35 patients had varices, however the presence of varices was not associated with increased mortality (10.3% vs 8.6%; P value = 0.8). The use of beta blockers and PPI's was associated with a non-statistically significant decreased mortality (5.1% vs 12.3%; P value = 0.23 and 10.3% vs 20%; P value=0.23). Only 60.2% were started on antibiotics. These patients had a significant increased mortality compared to those that did not receive antibiotics 18.5% vs 4.7%; P value = 0.036 reflecting that the more critical patients were more likely to receive antibiotics. 14 (13%) of 108 patients admitted with UGIB were started on a beta blocker, antibiotics and octreotide. These patients had a 52% non-statistically significant decreased mortality when compared to those who did not receive all three OR=0.48 (95%CI: 0.058-3.98). **Conclusion:** There is a need to improve adherence to AASLD guidelines among patients with liver cirrhosis admitted with UGIB.

KEY WORDS: cirrhosis, UGIB, octreotide, antibiotic, beta-blocker

**Improving the nutritional status of patients with dementia and Alzheimer's disease: A dietetic perspective**

Presenter's Name: Jonathan Barthe  
 Classification: Undergraduate Student  
*Presentation Type: Poster Presentation*

Coauthors: Yu Chung Chooi

**Introduction:** Alzheimer's disease/dementia (AD) is the sixth leading cause of death in the United States (US) and the fifth leading cause for people aged 65 years and over. About 75% of Alzheimer's patients (AP) are expected to be admitted in residential facilities by age 80 years old. AD is a progressive disease resulting in the patient's ability to perform instrumental activities of daily life becoming impaired which include physical and mental functions such as using the bathroom, eating and getting dressed. Studies report patients with AD experience decline in dietary intake resulting in poor nutritional status and weight loss. Malnutrition and weight loss are common in patients with AD, especially those in residential care facilities which are found to contribute to malnutrition. The aim of the study was to analyze evidence-based approaches to improving mealtime in AP to prevent malnutrition. **Results/Discussion:** Caregivers and healthcare providers are involved in a dilemma of determining when it is time to transition an AP to enteral nutrition therapy or artificial nutrition and hydration. Ineffective feeding techniques could lead to a premature decision of implementing enteral feeding procedures which have not shown to benefit or improve the quality of life. Studies reported that eating food by mouth promotes patient comfort and dignity. **Conclusion:** An intervention involving the youth and AP during mealtimes could be beneficial in improving their malnutrition and dietary intake. For example, monitoring noise levels and limiting distractions in "meal etiquette" activities with the patients were found to be effective.

KEY WORDS: Alzheimer's disease, nutrition in dementia, malnutrition, feeding, nutritional status

A B S T R A C T S

**Health Disparities in Cardiovascular Disease among African Americans**

Presenter's Name: Naomi Blocton  
 Classification: Undergraduate Student  
*Presentation Type: Oral Presentation*

Coauthors: Dr. Chimene Castor, Dr. Avis Graham

**Background:** Cardiovascular disease (CVD) is widespread among women especially in the African American community. About 7.6% of black women have CAD. Women of African descent continue to suffer from complications of CVD including stroke, PVD and CAD due to disproportionate numbers of obesity, atherosclerosis, HTN and T2DM. This case addresses the health disparities in CVD. Health disparities have spawned from the environment socioeconomically and culturally. African Americans at unawares are victims of the target marketing for food products high in sugar, sodium, and fat. Differences in education (awareness) and income in ethnic-minority groups have enabled poor dietary choices and diet quality. It is important for all healthcare professionals to be aware of these social issues so that healthcare prevention, intervention, and management services can be catered to the individual for a more effective outcome. The objective of this case study is to unveil multidisciplinary approaches for intervention to improve treatment of CVD within the African American community for registered dietitians. **Subject & Methods:** A 70 year old African American woman at the Bernice Fonteneau senior wellness center was reassessed by the RD seeking advice for weight loss. The patient is morbidly obese with a BMI of 49. The nutrition care process is used to assess, plan, and implement nutrition care management for this patient. **Barriers:** Arthritis, Home support system, Taste Palatability Intervention: Nutrition Education/Counselling. **Conclusion:** Education alone does not change behavior. Women are able to best sustain lifestyle/behavioral changes when health information is combined w/ individual and group support mechanisms.

KEY WORDS: health disparity, cardiovascular disease, blacks

**Assessment of Disparities in Open Femoral Fractures**

Presenter's Name: Nisha Branch  
 Classification: Post Doc/ Resident/ Fellow  
*Presentation Type: Oral Presentation*

Coauthors: Augustine Obirieze, Adil Haider, Robert Wilson

**Introduction:** Femoral fracture is a common injury in orthopaedic and trauma surgery, occurring in all age, gender, and racial/ethnic groups. Treatment methods are well established for both open and closed femoral fracture types. However, socioeconomic or surgical comorbidities may affect individual treatment protocol. We aim to assess any racial/ethnic or gender disparities associated with perioperative timing in the treatment of open femoral fractures. **Methods:** Using ICD-9 codes we conducted a retrospective analysis of the National Trauma Data Bank (NTDB) 2007– 2010. Patients  $\geq 18$  years with open femoral fractures who underwent operative management at level I or II trauma centers were identified. Multivariable logistic regression was in the analysis. **Results:** 9,406 cases met inclusion criteria. Most cases were white (61%), males (73%), between 25-44 years old (41%) with a mean age of 29 years, having private insurance (25%), and with motor vehicle collisions (34%) as primary cause of fracture. The odds of having a delayed surgery (OR: 0.96  $p=0.53$ ), or surgical complication (OR: 0.96  $p=0.69$ ) was not associated with race/ethnicity. Males were less likely to have surgery after hospital day (HD) 1 (OR: 0.83; 95% CI: 0.78-0.96  $p<0.000$ ). The likelihood of having any surgical complication(s), was greatly reduced by having immediate surgery (OR: 0.39  $p<0.000$ ) or by HD1 (OR: 0.47  $p<0.000$ ). **Conclusion:** There are no racial/ethnic disparities associated with the timing of operative management of traumatic open femoral fractures. Males are likely to have surgery sooner after their injury than women, however, are also more likely to have a postoperative complication.

KEY WORDS: disparity, trauma, femur, fracture, complications

A B S T R A C T S

**Open versus Laparoscopic Appendectomy in Pregnant Patients: a review of the National Surgical Quality Improvement Program database**

Presenter's Name: Cedrina Calder  
Classification: Post Doc/ Resident/ Fellow  
*Presentation Type: Poster Presentation*

Coauthors: Claude E. Guerrier, MS, David Miranda, BS, Augustine Obirize, MD, MPH, Gezzer Ortega, MD, MPH, Sara A Hyatt, MPH, Daniel D. Tran, MD, Chiledum A. Ahaghotu, MD, Terrence M. Fullum, MD

**Introduction:** The use of an open versus a laparoscopic approach for pregnant patients with appendicitis is still debatable. Objective: To compare the outcomes of open versus laparoscopic appendectomy in the pregnant patient population using a large national database. **Methods:** A retrospective study of post-operative complications and mortality was conducted using data from the ACS-NSQIP for the periods January 2005 through December 2010. The pregnant patient study population (n = 740) was classified into three groups: Acute appendicitis, acute appendicitis with generalized peritonitis, and acute appendicitis with peritoneal abscess. Descriptive analysis comparing laparoscopic to open appendectomy was performed for each of the three patient groups; chi-square test was used for categorical variables and T test was used for continuous variables. **Results:** The overall laparoscopic complication rate was 4.09% and the overall open complication rate was 4.09% (p = 0.016). In addition, when overall infections did occur, 5.18% of the infections were associated with the laparoscopic approach whereas 1.43% were associated with the open approach (p = 0.003). **Conclusion:** This data suggests that the laparoscopic approach is safe when compared to the open approach for the mother in the treatment of acute appendicitis among pregnant patients. There is a need for consensus on the optimal surgical approach to decrease complications and improve outcomes.

KEY WORDS: appendicitis, pregnancy, appendectomy, ACS-NSQIP

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**Fear of falling and community access routines among older adults in Washington D.C.**

Presenter's Name: Shayla Campbell  
Classification: Graduate Student  
*Presentation Type: Poster Presentation*

Coauthors: Melissa Fallabel and Ayala Traub

The purpose of this study is to assess the impact of fear of falling on community access routines of older adults in Washington D.C. This cross-sectional survey design will study 30 older adults, ages 65 and older, recruited from two different sites: a senior living facility and a religious affiliated senior community center. The Occupational Adaptation model offers a way to look at fear of falling and how it affects community access by assessing three elements: the person, occupational environment, and the interaction. The Survey of Activities and Fear of falling in the Elderly (SAFE) will assess the fear of falling, whereas the Community Access Questionnaire will identify adaptations older adults use to continue accessing the community. Qualitative data will be transcribed from audio recordings into written text. Quantitative data will be scored based on the SAFE instruction methods. This study will allow us to see how older adults in Washington, D.C. adapt their community access routines when impacted by the fear of falling.

KEY WORDS: fear of falling, older adults, Washington, D.C., community access

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**Clinical Decision Support and Pharmacogenomic Testing in Ethnically Diverse Major Depressive Disorder Patients**

Presenter's Name: Earl B. Ettienne  
Classification: Junior Faculty/ Lecturer/ Instructor  
*Presentation Type: Poster Presentation*

Coauthors: Adaku Ofoegbu

**Background:** Variations in genes coding for enzymes involved in drug metabolism and receptor targets lead to variability in drug response, including adverse drug events (ADEs) and suboptimal therapeutic outcomes. Pharmacogenomic testing as a standard of care has the potential to reduce ADEs and improve outcomes by providing evidence-based approaches to drug selection and

## A B S T R A C T S

clinical decision support (CDS). Though existing research has demonstrated the utility of incorporating pharmacogenomic testing into CDS, challenges affecting universal implementation include ascertaining pharmacoeconomic feasibility of pharmacogenomic testing as well as ensuring the generalizability of the existing treatment algorithms. This research (1) assesses the generalizability of the GeneSightRx® treatment algorithms in ethnically-diverse major depressive disorder (MDD) patients at Howard University Hospital (HUH) and (2) assesses the pharmacoeconomic impact of pharmacogenetic testing in ethnically-diverse MDD patients. **Methods:** A randomized, open-label, prospective cohort study will be conducted using patients from the HUH outpatient clinics with MDD. Subjects will be screened using inclusion/exclusion criteria, given informed consent, and randomized into two groups: treatment guided by pharmacogenomic testing using the GeneSightRx® algorithm and treatment not guided by pharmacogenomic testing. Two buccal swabs will be collected from each patient to identify genetic polymorphisms in pharmacokinetically-prominent proteins. A pharmacoeconomic analysis will be conducted at the conclusion of the clinical phase. **Anticipated Results:** GeneSightRx®-guided treatment is expected to not be fully generalizable in ethnically diverse patients. **Anticipated Conclusion:** The algorithms used to determine drug selection should include all possible polymorphisms in order to be generalizable.

KEY WORDS: pharmacogenetics, polymorphism, antidepressant, depression, clinical decision support

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### An Evidence Based Review for Ethnic Differences in Baseline HOMA-IR Values

Presenter's Name: Maurice Fluitt

Classification: Graduate Student

Presentation Type: Poster Presentation

Coauthors: Kanwal K. Gambhir, PhD, Zunera Tahir, MD, Rabia Cherqaoui, MD, Gail Nunlee-Bland, MD

The Homeostatic model assessment of insulin resistance (HOMA-IR) has been widely used by researchers as a measure of  $\beta$ -cell function and insulin resistance. It is calculated using the following formula: fasting plasma insulin ( $\mu$ IU/mL) x fasting blood glucose (mMol/L)/22.5. A number of

studies have recently been conducted to identify correlations between HOMA-IR values and diseases, such as metabolic syndrome and cardiovascular disease risks. HOMA-IR values have proven to be a robust clinical and epidemiological tool in understanding and identifying the pathophysiology of diabetes mellitus. However, Baseline HOMA-IR values may vary by ethnicity. These ethnic variations reduce the validity of HOMA-IR in clinical and population applications. This study aimed to evaluate the baseline values of HOMA-IR in different ethnicities. Additionally, this study sought to determine the relationship between blood pressure and HOMA-IR in randomized adult and obese children/adolescent populations. Data was Collected from 14 studies (n=8,739) Utilizing HOMA-IR as a measure of insulin resistance. The baseline HOMA-IR values were compared across eight different ethnic groups. In the adult group, Mexican Americans had the highest baseline HOMA-IR value ( $4.44 \pm .33$  mMol/L), confirming their increased risk of type 2 diabetes. In the children/adolescent group, baseline HOMA-IR was higher in the obese Caucasian group ( $5.8 \pm 2.55$  mMol/L). No significant relationship occurred between HOMA-IR and systolic or diastolic blood pressure. The current findings contrast reports that African Americans are at an increased risk of developing insulin resistance. These findings suggest ethnic variations in baseline HOMA-IR values indicating that the designated HOMA-IR cutoff value should be ethnic specific.

KEY WORDS: type 2 diabetes, insulin resistance, blood pressure, HOMA-IR, genetics

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### Feasibility of 2-D Echocardiography to Assess Right Ventricle in a Morbidly Obese African American Female Cohort

Presenter's Name: Charu Gandotra

Classification: Junior Faculty/ Lecturer/ Instructor

Presentation Type: Poster Presentation

Coauthors: Derek Afflu, Motahar Basam, Bryan Curry MD, Monique Turner, Terrence Fullum MD

**Background:** The relationship between obesity and right ventricle (RV) changes was reported in 2012 by the Multi-Ethnic Study of Atherosclerosis (MESA). MESA utilized cardiac magnetic resonance (CMR) to image the heart.

## A B S T R A C T S

CMR is expensive and utilizes more resources compared to echocardiography. Echocardiography is widely, yet is underutilized in obesity related right heart dysfunction due to technical challenges in image acquisition. In this study we aim to identify the echocardiographic parameters of right heart morphology and function that may be easily obtained in morbidly obese cohort of African American women. **Methods:** A cohort of morbidly obese African American women who underwent bariatric surgery at Howard University Hospital and underwent pre operative echocardiograms were retrospectively identified. Echocardiographic parameters of right ventricle were collected. **Results:** The dimension of right ventricle outflow tract (RVOT) in the parasternal short axis view (PSAX) was measurable in 90% of the patients. RV diameter in long axis and tricuspid annular systolic plane excursion (TAPSE) were measurable in 70% and 100% of the patients respectively. Tricuspid valve inflow Doppler was measurable in 50% patients. **Conclusion:** RVOT in PSAX, RV along long axis in the apical four chamber view and RV systolic function using TAPSE were feasible in most patients. However, tricuspid valve inflow pattern that helps assess right ventricle diastolic function was found to be difficult to measure due to limited image quality.

**KEY WORDS:** obesity, echocardiography, African American, bariatric, parameters

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**Can MACC1 plasma transcripts in colon adenoma patients be used as an early indicator of metastasis potential?**

Presenter's Name: Tahmineh Haidary

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Brim H., U. Stein, M. Nouraie, B. Shokrani, E. Lee, H. Ashktorab

**Introduction:** Several studies have reported the detection of Metastatic Associated Colon Cancer 1 (MACC1) in colon cancer patients' tissues and blood. However the expression of this marker in earlier stages has not been investigated. Here, we conducted a study on MACC1 expression in colonic lesions and blood of African Americans, a population which ore sent aggressive forms of the disease. **Materials & Methods:** Three

tissue microarrays of normal (n=36), adenoma (n=112) and colon cancer (n= 56) tissues from African Americans patients were constructed. Immunohistochemistry (IHC) using an anti-MACC1 antibody was performed. The stained slides were read by two pathologists who were blinded as to the samples diagnosis. Both staining intensity and percentage were established. The IHC results were analyzed in light of the demographic and pathological characteristics of the patients. Plasma samples from normal (n=45), hyperplastic (HPP) (n=15) and tubular adenoma (n=33) patients were tested for MACC1 transcripts. A Mann Whitney Rank Sum Test was used to assess the statistical differences in MACC1 transcripts' detection.

**Results:** The TMA staining revealed MACC1 expression in all three TMAs including the normals. These normal correspond to adjacent tissues to cancer samples which might explain the MACC1 staining. The analysis of MACC1 expression association to demographical and pathological parameters revealed no association, except for gender. The diagnostic ability of MACC1 was good in the adenoma samples when compared to the normal with an AUC of AUC=0.65 (95%CI: 0.55-0.74), C%=100% with the best combination of sensitivity (0.77) and specificity (0.56). These values were less significant in cancer samples comparison to others (AUC=0.51 (95%CI: 0.43-0.58)). MACC1 transcripts were significantly more expressed in colonic lesions samples when compared to normal patients' plasma (Normal vs. (TA+HPP), P=0.014; Normal vs. TA: P=0.011). Normal vs. HPP samples MACC1 transcripts comparison was not statically significant (P=0.239). **Conclusion:** Here we demonstrate that MACC1 is expressed very early in the carcinogenic process since it was detected in adenoma tissue samples in our population. Its correlation with male gender cannot be explained at this time as there are no epidemiological data that support gender associated metastatic phenotype. Our significant MACC1 transcripts reveal that this marker is not only detectable in preneoplastic lesions but also released in patients' plasma. This finding might be capitalized on to determine colonic lesions with potential metastatic characteristics.

**KEY WORDS:** MACC1 transcripts, African Americans, colorectal cancer, colorectal adenomas, plasma

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A B S T R A C T S

**Ulcerative Colitis and risk of Adenoma in African Americans**

Presenter's Name: Sally Hassan

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Heena Panchal, Babak Shokrani, Mansour Paydar, Edward L. Lee, Tahmineh Hydari, Adeyinka O. Laiyemo, Hassan Brim, Mehdi Nouraie Hassan, Ashktorab

**Background:** Ulcerative Colitis (UC) and other forms of inflammations are thought to be risk factors for colonic neoplasia. **Aim:** To determine the incidence of colorectal adenoma in patients with UC and Indeterminate Colitis (IC). **Method:** We evaluated 2505 records of colitis patients between 2004-2012 at Howard University Hospital. Logistic regression analysis was applied estimate the risk of adenoma in patient with UC compared to IC after adjusting for age and gender. A subgroup analysis was performed. **Results:** We identified 955 UC and 1550 IC. The median age was 51 (IQR: 40-59) and 46% were >50 years. The frequency of adenoma is higher in UC patients (20%). UC diagnosis is significantly associated with higher risk of adenoma in all locations and in all subjects regardless of ethnic background (Adjusted OR: 2.0, 95% CI:1.6-2.5). UC effect is higher in left side than right side with adenoma (OR of 2.4 in left side vs. OR of 1.5 in right side). We also established a strong association between the location of the colitis and the adenomas. This finding was true for both UC and IC patients in all sites of the colon (p<0.05). **Conclusion:** Our data shows that adenoma risk is higher in UC patients (20%) compared to IC patients (12%). This effect is higher in the left side of the colon. Regardless of the colitis type, the adenomas tend to develop more on the same location as the colitis. Both UC and IC patients had adenomas developed in the inflammation field effect.

KEY WORDS: IBD, Ulcerative Colitis, Colon Adenoma, African Americans

**Fluid balance and hemodynamic management in a patient with septic shock and massive post obstructive diuresis**

Presenter's Name: Stefan Hemmings

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Oral Presentation*

Coauthors: Janan Gohari, Richard George Adams

**Introduction:** Post obstructive diuresis (POD) is a syndrome of exaggerated excretion of water and electrolytes following the release of urinary tract obstruction. In the setting of septic shock there are no guidelines for POD management. **Case Description:** A 46 year old diabetic Female presented with complaints of fatigue, loss of appetite, fever and altered mental status. She was hypotensive (BP: 76/49mmHg), Tachycardic (Pulse: 107/min), and febrile (Temp: 104.0F), with a urinalysis indicating a urinary tract infection. She was admitted to the intensive care unit (ICU) with a diagnosis of septic shock. The first 4 days of admission were complicated by hypotension and excessive diuresis. Continuous vasopressor support, rapid intermittent boluses and high flow infusion of crystalloids were needed for hemodynamic stability. Fluid balance (fluid input/ urine output): Day 1: 8480/4900mL, Day 2: 9910/9520mL, Day 3: 9165/8860mL, Day 4: 8170/7225 mL; Day 5: 4500/1720 mL and Day 6: 1280/1305mL. Urine and blood cultures done were positive for Escherichia coli. Her urinary fractional excretion of sodium was 16%, which suggested POD. On day 3, we determined that she had a neurogenic bladder, and was intermittently self-catheterizing until she stopped three weeks prior to presentation. **Discussion:** POD is due to Physiologic and pathologic factors including decreased tubular reabsorption of sodium and increased tubular transit flow. In the setting of septic shock, this could be detrimental, as hemodynamic stability and fluid balance are the cornerstones of management. Thus, in the setting of septic shock large volumes of crystalloids and vasopressors are recommended to maintain euvolemia.

KEY WORDS: sepsis, shock, diuresis, fluid balance

## A B S T R A C T S

**Body Mass Index (Bmi) in Blunt Trauma Patients with Hemorrhagic Shock: Opposite Ends of the BMI Spectrum Portend Poor Outcome**

Presenter's Name: John Hwabejire  
 Classification: Post Doc/ Resident/ Fellow  
*Presentation Type: Oral Presentation*

Coauthors: Augustine Obirize, Christine Nembhard, Tolulope Oyetunji, Daniel Tran, Terrence Fullum, Suryanarayana Siram, Edward Cornwell III, Wendy Greene

**Background:** There are sparse, controversial data on the relationship between trauma outcomes and Body Mass Index (BMI), despite their implications on the U.S. population. We investigated the effects of BMI on post-hemorrhagic shock outcomes. **Methods:** The Glue Grant database was analyzed. Patients aged  $\geq 18$  were stratified into 6 groups using the WHO's Adult Weight Classification. Univariate and multivariate analyses were done to determine predictors of in-hospital mortality, complications, and surgical interventions. **Results:** 1976 patients were included, with a mean age of 43, 66% males, and 89% White, with no difference in Injury Severity or comorbidities between any groups. Weight distributions in BMI (kg/m<sup>2</sup>) were: Underweight(UW) BMI < 18.5 (5.2%) Class I Obesity(CIO) BMI  $\geq 30$  & < 35 (17.0%) Normal(NW) BMI  $\geq 18.5$  & < 25 (32.8%) Class II Obesity(CIIO) BMI  $\geq 35$  & < 40 (6.9%) Overweight(OW) BMI  $\geq 25$  & < 30 (32.6%) Class III Obesity(CIIIO) BMI  $\geq 40$  (5.6%) Multiple organ failure score was elevated in OW (5.3 $\pm$ 2.7, p=0.016), CIO (5.8 $\pm$ 2.7, p<0.001), CIIO (5.9 $\pm$ 2.8, p<0.001) and CIIIO (6.3 $\pm$ 3.0, p<0.001) than NW(4.8 $\pm$ 2.6). UW had higher lactate (4.8 $\pm$ 4.2 vs. 3.3 $\pm$ 2.5, p=0.04), larger transfused blood volume (4751 $\pm$ 470mL vs. 3182 $\pm$ 125mL, p<0.001), and were 4 times more likely to die (OR:3.87, CI:2.22-6.72, p<0.001) than NW. CIIIO were more likely to die than NW (OR:1.98, CI:1.003-3.900, p=0.049). CIIIO (OR: 2.38, CI: 1.16-4.86, p=0.018) were more likely to have cardiac arrest than NW. UW were more likely to undergo a thoracotomy (OR:2.10, CI: 1.14-3.85, p=0.017) or laparotomy (OR:2.06, CI: 1.31-3.26, p=0.002) than NW. **Conclusion:** Early BMI assessment and active management of potential morbidities can significantly reduce mortality in blunt trauma patients with severe hemorrhagic shock.

**KEY WORDS:** Hemorrhagic Shock, Body Mass Index, Mortality, Obesity, Outcomes

**Aerobic exercise-induced gene expression changes in aging individuals with mild cognitive impairment**

Presenter's Name: Osi Iyalomhe  
 Classification: Professional Student  
*Presentation Type: Poster Presentation*

Coauthors: Yuanxiu Chen, Joanne Allard, Ralston Yorrick, Stephanie Johnson, Thomas Obisesan

**Background:** Evidence suggesting that aerobic exercise may attenuate cognitive decline in subjects with mild cognitive impairment continues to accrue. However, what remain unknown are the biological mechanisms or adaptations that mediate these effects. As a preliminary step to addressing this question, we enrolled older adults confirmed to have mild-cognitive impairment in a six-month aerobic exercise program. **Methods:** From a sample of 60 volunteers, we carried out microarray analysis before and after the six-month exercise training. To determine changes in the global gene expression profile in order to identify cardiovascular and Alzheimer's disease-related genes with altered expression, volunteers were randomly assigned to an exercise or stretch control group. Functional Analysis to identify the biological functions and/or diseases most significant to training effects were performed. mRNA expression profiles meeting the p-value < 0.01 and absolute fold change > 2.0, and associated with biological functions and/or diseases in the Ingenuity Pathway Knowledge Base library were considered for further analysis. **Results:** The results showed significant down-regulation of genes known to mediate inflammation and Alzheimer's disease, and up-regulation of genes that may act synergistically to modulate the cell cycle by either cell-cycle activation or inhibition (fold change  $\geq 2.0$ , < -2, p < 0.01). These changes were not observed in a stretch control group. **Conclusion:** We conclude there are likely three distinct cellular pathways that may mediate the cognitive benefit provided by aerobic-exercise to patients with mild-cognitive impairment. We plan to correlate these changes with the clinical phenotype.

**KEY WORDS:** Aging, Alzheimer's disease, mild cognitive impairment, microarray, exercise



A B S T R A C T S

**Sleep Fear – A Potentially Modifiable Factor Contributing to Nocturnal ANS Arousal in Urban Minorities**

Presenter's Name: Manjot Jassal

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Ihori Kobayashi, Joseph Lavela,  
Thomas A. Mellman

**Background:** Minorities living in stressful urban environments have disproportionate illness burdens. Stress can lead to compromised sleep and altered autonomic nervous system (ANS) activity both of which have been linked to adverse health outcomes. People living in stressful neighborhoods may feel that their safety is compromised when they sleep. We examined the role of fear of sleep in the association between neighborhood stress and nocturnal ANS activity. **Method:** 64 healthy urban-residing African Americans (age 18-35) completed the City Stress Inventory (CSI) with subscales that assess neighbor disorder and exposure to violence, the Fear of Sleep Index (FOSI) which assesses sleep-fear related thoughts and behaviors, and two 24-hour ambulatory EKG recordings as part of a larger study. Low frequency (LF) and high frequency (HF) components of heart rate variability were derived from the EKG data, and LF-to-HF ratios (LF/HF), an index of sympathetic tone, and normalized HF (nHF), an index of parasympathetic tone, during time in bed were computed. **Results:** Time-in-bed nHF was significantly correlated with neighborhood disorder and FOSI total score ( $r = -.281$ ,  $p = .027$ ;  $r = -.338$ ,  $p = .008$ , respectively). Hierarchical regression analysis indicated that the relationship with neighborhood disorder was accounted for by FOSI ( $\beta = -.103$ ,  $p = .499$  for neighborhood disorder;  $\beta = -.277$ ,  $p = .072$ ,  $\Delta R^2 = .052$  with FOSI). **Conclusion:** Sleep fears may be a modifiable risk factor that impacts long term health among residents of stressful urban environments.

KEY WORDS: sleep fears, health disparities, autonomic activity, urban, African-American

**Evaluating the relationship of BMI and CD4 count in an HIV infected population**

Presenter's Name: Octavia Jordan

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Monika N. Daftary, Pharm. D.;  
Mary K. Maneno, Ph.D; Faria F. Farhat, MD

**Methods:** A cross-sectional study will be conducted on all HIV-positive patients who have been seen at the Center for Infectious Disease Management and Research (CIDMAR) at Howard University Hospital between October 1, 2011 and October 31, 2012. The data will be extracted from the electronic medical record. Height, weight, CD4 count, HIV viral load, co-morbid conditions, and type of antiretroviral therapy will be collected. Additional demographic information including gender, race, ethanol use, tobacco use, illicit drug use, marijuana use, insurance, and time of diagnosis will also be collected. The collected data will be analyzed using SPSS – with descriptive statistics and a conditional logistic regression. **Results:** There are 354 HIV positive patients included in the study. The study population was 54.5% male, 86.5% African American, and 73.8% have public insurance. A chi-square statistical analysis was utilized to determine that there is a statistically significant association between CD4 count and BMI ( $p < 0.05$ ). There is not a statistically significant association between viral load and CD4 count ( $p = 0.464$ ). Other statistically significant associations included smoking, alcohol, marijuana, gender, hypertension, diabetes, and dyslipidemia with BMI. **Conclusion:** There is a statistically significant association between BMI and CD4 count; however, study trends are unable to be determined at this time. Further studies are needed to determine if BMI is the cause of specific changes in BMI.

KEY WORDS: HIV, BMI, CD4, weight, and urban

A B S T R A C T S

**Is there an association between Colonic Neoplasia and AF in AAs?**

Presenter's Name: Vandana Kansal

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Cassius Belfonte, M. Ghazvini, Tahmineh Haidari, Hassan Brim, Mehdi Nouraie, Hassan Ashktorab

**Background:** Epidemiological studies have shown an association between colorectal cancer (CRC) and atrial fibrillation/flutter (AF). Identifying patients at risk for AF is essential for appropriate early detection of this heart rhythm disorder. **Aims:** To determine the association between AF and colorectal neoplasia in an African American urban population. **Methods:** We reviewed records of 527 patients with CRC, 1008 patients with benign colonic lesions and 731 control without colonic lesions from HUH (Jan 2000 to Dec 2012). The presence or absence of AF was based upon ICD 9 code documentation. The prevalence of AF in these three groups was then compared by multivariate logistic regression. **Results:** Out of 527 CRC patients, 53 (10%) were found to have AF. Out of 1008 adenoma patients 73(7.2%) were found to have AF. In the control group, 40 (5.4%) were found to have AF. The odds ratio (OR) was calculated at 1.35 (95% CI: 0.91-2.01, P=0.14) for adenoma and 1.93 (95% CI: 1.26-2.96, P = 0.003) for CRC. There was a significant difference in age and tobacco consumption between these three groups. After adjusting for age and tobacco use, the OR was 0.97 (0.65-1.47, P>0.2) for adenoma and 1.32 (0.85-2.06, P>0.2) for CRC. Heart failure (HF) and hypertension (HTN) were significantly associated with AF (p<.05). **Conclusion:** There was a trend between CRC and AF in African Americans patients. Risk factors in AF, other than, HTN, HF, and CRC, should be investigated.

KEY WORDS: Atrial fibrillation, Flutter, Colorectal cancer, Colorectal adenoma, African Americans

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**Colorectal cancer screening among cancer survivors in the US**

Presenter's Name: Adeyinka Laiyemo

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

Coauthors: Carla D. Williams, PhD, Duane T. Smoot, MD, Elizabeth A. Smoot, ScD, MPH

**Background:** Survivors of cancer from an organ are often at a higher risk for malignancies arising in other organs. It is uncertain if lower screening rates for those other cancers contribute to this finding. **Aim:** To determine adherence to colorectal cancer (CRC) screening guidelines among US adults with a personal history of cancer other than CRC. **Methods:** We used the 2007 Health Information National Trends Survey (HINTS) and identified 4,297 respondents (weighted population size=81,812,374) who were at least 50 years old and did not have a personal history of CRC. There were 3,507 (weighted population size=70,347,024) respondents without any history of cancer and 790 respondents (weighted population size=11,465,351) with a personal history of cancer other than CRC. We defined being current with CRC screening as the use of fecal occult blood testing (FOBT) within 1 year, sigmoidoscopy within 5 years, or colonoscopy within 10 years. We compared cancer survivors to those without any history of cancer in CRC screening adherence and used survey weights in all analyses. Variance estimations were performed using Taylor series linearization to account for the complex survey design. **Results:** When compared with respondents without a history of cancer, cancer survivors were more likely to be current with CRC screening (73.9% versus 60.5%, OR=1.54; 95%CI: 1.21 -1.96). **Conclusion:** Although cancer survivors were more likely to be up-to-date, approximately one out of every four cancer survivors is not compliant with CRC screening guidelines. There is a need to actively promote CRC screening by healthcare providers.

KEY WORDS: Cancer survivors, colorectal cancer, Screening, Colonoscopy

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## A B S T R A C T S

**Hepatitis B and C among Liver Transplant Patients with Hepatocellular Cancer: Characteristics and Outcomes across Racial/Ethnic Groupings**

Presenter's Name: Patrick H Lam

Classification: Professional Student

*Presentation Type: Oral Presentation*

Coauthors: Augustine C Obirieze, Samuel Onyewu, Ifeanyi Nwokeabia, Kristin L Martin, Clive O Callender, Wayne AI Frederick, Lori L Wilson

**Background:** Chronic hepatitis B (HBV) and C (HCV) infections account for most hepatocellular carcinoma (HCC) and subsequent liver transplant cases. There is a paucity of research characterizing this liver transplant patient population; we sought to review their clinical characteristics using a population-based database. **Methods:** We reviewed the Nationwide Inpatient Sample database (2001 to 2010). Adult patients undergoing liver transplantation for HCC were included and grouped as HBV, HCV, or non-HBV or HCV. Bivariate analyses were used to assess clinical characteristics across the 3 groups and among ethnic groups. **Results:** 2,269 liver transplant patients were included: 1,274 (56%) HCV, 145 (6%) HBV, and 850 (37%) non-HBV/HCV (non-HV). HCV patients comprised 52% white, 7% black, and 5% API. HBV patients comprised 57% API, 17% white, and 9% black. Within HBV patients, variation in mean age was seen across ethnicities ( $59 \pm 7$ ,  $49 \pm 15$ , and  $56 \pm 9$  for white, black, and Asian/Pacific Islanders (APIs), respectively,  $p=0.024$ ). Mortality rates among HBV patients were 8%, 4%, and 2% for black, white, and API, respectively, although  $p=0.6$ . Mortality rates were 5.5%, 4%, and 2% for non-HV, HBV, and HCV, respectively,  $p<0.001$ ). **Conclusions:** Most liver transplant patients had chronic HCV. HCV and HBV patients were mostly white and API, respectively. Although black patients comprised the fewest number of HBV patients, they were youngest with the highest mortality rates. Mortality rates in HBV patients were higher than HCV. This suggests a disparity in transplant mortality across ethnic groups, and between HBV and HCV patients.

**KEY WORDS:** Hepatitis B and C, Hepatocellular carcinoma, Liver transplant, Outcomes, Health disparity

**Pharmacotherapy and Management of Asthma among Children and Young adults in an Office-based ambulatory care setting**

Presenter's Name: Amanda Lam

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Thomas Rhiel

The objective of this study was to evaluate the pharmacotherapy and management of asthma among children and young adults in an Office-based ambulatory care setting. A cross sectional study of ambulatory care visits in the National Ambulatory Care Survey from 2000 to 2010 was conducted. Included in this study were patient visits of persons who were  $\leq 17$  years with an associated International Classification of Diseases Ninth Revision diagnosis of asthma. Descriptive statistics including means and frequency distributions were estimated for patient characteristics and types of asthma related therapy. Trends in asthma related therapy and asthma education before and after the 2007 Expert Panel Report 3 were evaluated using the chi square test. All analyses in this study were conducted using SPSS version 19 at an alpha of 0.05. There were 1970 visits from persons  $\leq 17$  included in the study. The majority were male (60.7%), White (76.5%), and managed by pediatricians (71.9%). Overall, short acting beta agonists were the most common asthma related therapy prescribed for those aged 0-4 (67.4%), 5-11 (63.8%) and 12-17 years old (62.8%). Overall, asthma education decreased from 53.3% before 2007 to 41.2% after 2007 guidelines ( $p<0.05$ ). Prescribing differences before 2007 and after 2007 were noted for combination product long acting beta agonists/inhaled glucocorticoids, increases observed among visits of those aged 0-4, 5-11 and 12-17 years ( $P<0.05$ ). Few visits were associated with long acting beta agonist alone across all age groups after 2007 ( $<1\%$ ). This study shows changes in prescription drug asthma related therapy, with fewer long acting beta agonist only regimens showing adherence to guidelines.

**KEY WORDS:** asthma management, asthma, pharmacotherapy, children and young adults, ambulatory care

## A B S T R A C T S

**Cardiovascular Risk Factors related to Blood Pressure in Young Adult African Americans**

Presenter's Name: Joseph Lavela

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Joseph Lavela, Astrid Botty, Melanie A. Bowser Ithori Kobayashi, Otelio S. Randall, Thomas A. Mellman

Adverse cardiovascular events occur disproportionately in African Americans (AAs). The processes that lead to this disparity appear to start relatively early in life. However, conventional blood pressure measures may not be ideal for identifying risk for younger populations. Two Blood Pressure (BP) measures, BP dipping and Pulse Pressure (PP), have been linked to adverse cardiovascular events. The absence of this nocturnal BP dipping, referred to as "nondipping," is a risk factor for hypertension. A PP of greater than 50 mm Hg has been linked to increased risk for adverse cardiovascular events in longitudinal studies. We examined nocturnal BP dipping and PP in a young adult African American sample. Our participants were 133 urban-residing healthy young adult (age 18-35) AAs who completed ambulatory BP monitoring for two 24-hour periods. BP dipping was examined by computing the percentage of reduction of mean arterial pressure (MAP) during the sleep period relative to the average wake time MAP. PP was calculated by subtracting the average diastolic pressure from the average systolic pressure. A third of our sample were non-dippers and that more than half of our population (51%) had a PP of greater than 50 mm Hg and 25% had a PP of 55.5 mm Hg or higher. Elevated PP and BP non-dipping were not associated ( $p = .71$ ). Where BP non-dipping was associated with neighborhood stress we were unable to identify risk factors of elevated PP. Non-dipping and elevated PP appear to be independent risk factors and are common in young adult AAs.

KEY WORDS: Blood Pressure, Pulse Pressure, Cardiovascular

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**New Onset Supraventricular Arrhythmia and Outcomes in African American Patients with Severe Sepsis in the Medical Intensive Care Unit**

Presenter's Name: O'Dene Lewis

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: O'Dene Lewis, Alicia Thomas, Rosanna Setse, Alem Mehari MD

**Background:** We sought to determine the factors associated with new onset supraventricular arrhythmia (SVA) in patients with severe sepsis and if it was associated with worse outcomes in African American patients admitted to the Medical Intensive Care Unit (MICU). **Methods:** A retrospective chart review was performed on patients with a diagnosis of severe sepsis admitted to the MICU between January to December 2012. **Results:** 156 patients were admitted to the MICU with a diagnosis of severe sepsis. 16 patients were excluded from further analysis. 41 (29%) patients with severe sepsis had new onset SVA and 99 (71%) had no arrhythmia. Of those 41 patients, 20 (49%) had AF and 21 (51%) had another form of SVA. When compared to those without arrhythmia, patient with new onset SVA were older  $70 \pm 12.6$  years vs.  $58.8 \pm 4.3$  years (mean  $\pm$  SD,  $p < 0.001$ ) and had lower body mass index  $23.4 \pm 6.8$  Kg/m<sup>2</sup> vs.  $28.4 \pm 9$  Kg/m<sup>2</sup> ( $p < 0.001$ ). Similarly the patient with new onset SVA had a higher severity of critical illness as measured by mortality prediction model two (MPM II) score  $65.8 \pm 24.2$  vs.  $47.8 \pm 25.3$  ( $p < 0.001$ ), lower total protein  $5.2 \pm 1.0$  gm/dl vs.  $5.6 \pm 0.9$  gm/dl ( $p = 0.007$ ) and lower albumin  $1.9 \pm 0.6$  gm/dl vs.  $2.2 \pm 0.7$  ( $p = 0.04$ ). Mortality was also significantly higher in patients with new onset SVA 18(44%) vs. 26(26%) (n (%),  $p = 0.01$ ). **Conclusion:** Patients with severe sepsis and having a higher MPM II score, lower total protein and albumin were more likely to have new onset SVA. New onset SVA with severe sepsis was also associated with a significantly higher mortality as compared to those without arrhythmia.

KEY WORDS: Sepsis, Severe sepsis, arrhythmia, supraventricular arrhythmia, african american

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## A B S T R A C T S

**Structure-Based Lead Optimization of N-Benzylaniline Derived Human Histone Deacetylase 2 Inhibitors**

Presenter's Name: Xionghao Lin

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Terry-Elinor Reid, Jie Xia, X. Simon Wang

**Background:** Histone deacetylase 2 (HDAC2) has been defined as an attractive target for the treatment of many malignant diseases, especially the neurodegeneration. The inhibition of HDAC2 has been proved to be a promising way to improve these treatments. Currently, most HDAC2 inhibitors do not show isoforms selectivity, and many suffer from metabolic instability. Our previous work had identified ST088357 with a N-benzylaniline scaffold as a novel HDAC2 inhibitor through an unique shape-based hybrid query screening, with an IC50 of 16.87  $\mu$ M. Starting from the novel scaffold of ST088357, we carried out the structure-activity relationship (SAR) study of N-benzylaniline derivatives aided by structure-based tools.

**Methods:** The N-benzylaniline derivatives were collected from several commercial databases by the substructure and fingerprints searching. To understand the structural basis of the N-benzylaniline derivatives against HDAC2, we performed molecular docking analysis of them. The inhibitory activity of representative derivatives was evaluated by the fluorogenic HDAC2 assay kit. Finally, the SAR of these derivatives was analyzed. **Results:** The ST088357 was docked well into the active site. Three hydrogen bonds were detected. The electron donating N,N-dimethylamino group at the para-position in ST088357 has been shown to be an important contribution to its inhibition. Moreover, the nitro and amide groups introduced respectively to the ortho- and para-position of phenyl ring in the hydrophobic pocket might further improve its inhibition.

**Conclusion:** A set of N-benzylaniline derivatives have been collected and evaluated to build a body of preliminary SAR based on ST088357, assisted by structure-based tools. We expect these efforts will result in potent and isoform-selective HDAC2 inhibitors.

KEY WORDS: Histone deacetylase 2 inhibitors, N-benzylaniline, Structure activity relationship, Structure-based tools, Isoforms selectivity

**Factors Affecting Quality of Life in Adolescents and Young Adults (AYAs) with Cancer Receiving Treatment**

Presenter's Name: Charmaine McKie

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

**Background:** While the five-year survival rate for pediatric and older adult cancer patients has improved over the past 3 decades, AYAs aged 15-39 years have not seen a similar improvement. AYAs with cancer also experience the poorest outcomes when compared with pediatric and older adult populations. **Purpose:** The purpose of this cross-sectional correlation study is to describe the quality of life and identify the factors influencing quality of life among AYAs with cancer, currently receiving treatment at two urban outpatient cancer treatment centers in Washington, DC. The Revised Wilson and Cleary model for health-related quality of life will be used as the conceptual framework to guide this study. The impact of biological factors (cancer type and comorbidities), symptoms, functional status, general health perception, characteristics of the individual (sex and ethnicity), and characteristics of the environment (living situation and employment status) on quality of life (measured by the Quality of Life Index -Cancer version (QOLI-Cancer) will be evaluated.

**Population/Sample:** AYAs diagnosed with cancer between the ages of 18 and 39 years who are currently receiving treatment will be recruited from the two sites. Power analysis using the G-Power sample size calculator revealed that for a medium effect size and alpha level at 0.05, the sample size needed to attain 80% power would be 114 participants (using 9 predictors). **Data Collection Method:** Consented participants will be asked to complete a self-administered questionnaire which includes socio-demographic variables and other questions related to the study variables. Participants' cancer diagnosis and stage will be confirmed via medical chart review. **Data Analysis Method:** Descriptive statistics will be generated for each variable and the Cronbach alpha for the QOLI-Cancer will be calculated. Average quality of life for the QOLI-Cancer and its subscales will be calculated. Multiple regression will be used to evaluate how the independent variables correlate with total quality of life and the subscales, and to evaluate how well the independent variables correlate with quality of life when controlling for characteristics of the individual and the environment. **Implications for Nursing:** Understanding the quality of life of AYAs receiving treatment is necessary for planning and monitoring the therapeutic process for these patients.

KEY WORDS: Adolescents and Young Adults, quality of life, cancer

## A B S T R A C T S

**Nutritional Therapy for HIV AIDS using the Nutrition Care Process: A Case Study**

Presenter's Name: Ken-Won Miller

Classification: Undergraduate Student

*Presentation Type: Poster Presentation*

The purpose of this nutritional intervention was to alleviate symptoms, improve quality of life and health outcomes, maintain stable weight, and improve nutritional parameters. Primary HIV infection is usually coupled with flu like symptoms and a decreased CD4 immune cell count increasing the risk in opportunistic diseases and macro/micro nutrients deficit. As a result, there is significant changes in nutrient intake, absorption, metabolism, and excretion. HIV patients are more susceptible to dental, gastrointestinal infections, inflammation, and diseases that are associated with nutritional decline. HIV patients have higher metabolic rates and often require higher amounts of protein and calories to meet their needs. This case study utilized the standardized Nutritional Care process (NCP) to implement medical nutritional therapy. Data was collected using patient medical records and interviews of nurses and doctors. The following information was collected: medications, biochemical data, anthropometrics measurements, medical procedures, and patient interview regarding dietary intake. The case addressed an African American male, admitted on 10/31/13, with episodes of nausea, vomiting, syncope, and GI pain associated with acute gastroenteritis, HIV, and substance abuse. Patient was emaciated, presented dental ulcers, decreased muscle mass, and compromised immunity. The patient was nutritionally diagnosed with: altered GI function and predicted suboptimal nutrient intake. The patient's weight was stabilized with no losses. GI pain and other symptoms were minimized and patient was able to be discharged four (4) days after medical care was provided including nutritional therapy. In conclusion the patient experienced favorable results and benefited from medical care including the NCP.

KEY WORDS: Nutrition, HIV, AIDS, Clinical, Medical Nutrition Therapy

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**Nutritional Management Cirrhosis of the Liver Disease: A case Report**

Presenter's Name: Verona Mulgrave

Classification: Graduate Student

*Presentation Type: Poster Presentation*

Coauthors: Chimene Castor, Avis Graham

**Background:** Cirrhosis of the liver is the twelfth leading cause of death in the U.S and it is primarily caused by alcoholic liver disease. Results various studies indicate that the frequency of steatohepatitis and cirrhosis varies significantly by ethnicity: 45% Hispanics, 33% whites and 24% among blacks. **Objective:** The objective of this study is to investigate the importance of specific nutrients in the nutrition management of cirrhosis of the liver. **Method:** This study was a single-subject case report of a 49 year old African American male who was diagnosed with several comorbidities. This patient was chosen at random from the Howard University Hospital. Data was gathered from both primary and secondary sources including; medical records, interview of nurses and patient interview. **Case description:** 49 year old African American male with social history of smoking tobacco was admitted due to abdominal pain and distention for 2 weeks. Physical examination reveals the presence of ascites, jaundice, scratch marks, skin rashes and skin discoloration. **Discussion:** Patient had several nutrition diagnoses including malnutrition, inadequate oral intake, impaired nutrient utilization and increase energy and nutrient requirements. Patient weight was stabilized on a 1000ml-1500ml fluid restriction, 1800 kcal, and 75 g of protein diet. Pt had a fair appetite (consumed 60% of 3 meals per day). **Conclusions:** Nutrition plays a key role in the management of cirrhosis of the liver specifically restricting fluid and sodium, providing adequate carbohydrate, protein and medium chain fatty acid.

KEY WORDS: nutritional management of liver disease

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## A B S T R A C T S

**Integrating Interdisciplinary Buprenorphine Treatment within HIV Primary Care: An action research, implementation study**

Presenter's Name: Nancy Murphy

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Oral Presentation*

**Purpose:** Despite regulatory changes in 2000/2002 which expanded treatment for opioid dependence/addiction to office-based settings, the adoption of buprenorphine within primary care has been slow, leaving most of the 1.5 - 2 million Americans with this condition without access to treatment. This research explored inhibiting and promoting factors related to integrating buprenorphine treatment within HIV primary care and used the knowledge gained to simultaneously develop and implement an interdisciplinary buprenorphine treatment/practice. **Methods:** Action research, implementation science approaches, institutional ethnography informed the study's methodological procedures and study design. Constructivist grounded theory methods also contributed to data collection and directed analysis and interpretation. Data was obtained from key informant interviews, interdisciplinary inside action research team activities and a patient focus group. **Results:** Developing and implementing buprenorphine treatment occurred within the context of key inhibitors: (1) ongoing, multiple negative biases, (2) plaguing and difficult questions, and (3) buprenorphine exceptionalism. These barriers were overcome with countering promoting factors related to identifying, delineating, and determining the coordination of: (1) core dimensions of interdisciplinary buprenorphine treatment, (2) discipline specific practices, and (3) shared/interdisciplinary practices. Implementation was also promoted by (1) an iterative, interdisciplinary, collaborative, capacity building approach, (2) an internal champion, (3) power/knowledge sharing and negotiation, and (4) leadership support, structural components, and resources. **Conclusion:** This study supports the integration of substance use treatment within primary care using an interdisciplinary team for both development and implementation. The approach resulted in an extensive explication and operationalization of comprehensive, evidence-based, and coordinated treatment(s) for people with opioid dependence/addiction.

**KEY WORDS:** opioid dependence/addiction, buprenorphine, interdisciplinary, action research, implementation science

**Infection Complicating Hemorrhagic Shock After Blunt Trauma: Risk Factors and Predictors of Mortality**

Presenter's Name: Christine Nembhard

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Oral Presentation*

Coauthors: Christine E. Nembhard, MD; John O. Hwabejire, MD, MPH; Augustine C. Obirieze, MBBS, MPH; Tolulope A. Oyetunji, MD, MPH; Daniel D. Tran, MD; Terrence M. Fullum, MD; Suryanarayana M. Siram, MD; Edward E. Cornwell III, MD; Wendy R. Greene, MD

**Background:** Hemorrhagic shock (HS) and sepsis are major causes of early and late trauma deaths respectively. Patients who survive the initial insult from HS may develop sepsis as a "second-hit" phenomenon which can increase mortality. We studied risk factors for infection and predictors of mortality.

**Methods:** The Glue Grant Database was retrospectively examined. We included patients aged  $\geq 18$ , who survived  $>24$ hrs after injury and stratified them into two groups: hemorrhagic shock plus subsequent infection (HS+Infec) and hemorrhagic shock with no infection (HS Only). Univariate and multivariate analyses were used to determine predictors of infection and mortality. **Results:** 1924 HS patients with a mean age of 44 years were included, out of which 829 (43%) developed an infection. There were no significant demographic differences between the groups. The commonest cause of death in the entire cohort was sepsis (30%) and the most frequent infections were pneumonia (28.5%), bacteremia (12.0%), and deep incisional surgical site infection (6.5%). Risk factors for infection include history of previous myocardial infarction (OR:2.78, CI:1.05–7.32,  $p=0.039$ ), Marshall score (OR:1.20, CI:1.09–1.32,  $p<0.001$ ), ICU ventilation days (OR:1.10, CI:1.03–1.17,  $p=0.003$ ), ICU length of stay (OR:1.07, CI:1.01–1.13,  $p=0.034$ ) and length of hospital stay LOS (OR:1.02, CI:1.0–1.04,  $p=0.005$ ). When adjusted for LOS  $\leq 10$  days, mortality in the HS+Infec group was 66%, compared to 45% in the HS Only group ( $p<0.05$ ). Independent predictors of mortality are shown below.

Predictors	P value	Odds Ratio	Confidence Interval
Cardiac Arrest	<0.001	8.91	3.42 – 23.19
Cardiac Valvular Disease	0.20	8.68	1.41 – 53.60
Dementia	0.017	8.21	1.46 – 46.26
Marshall Score	<0.001	2.00	1.69 – 2.34
Age	0.001	1.04	1.01 – 1.06
Injury Severity Score	0.009	1.03	1.08 – 1.06

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**Conclusion:** Given the lethality of post-hemorrhagic shock sepsis and the predictability of its development, early identification and aggressive modification of risk factors should be given high priority in the management of the blunt trauma patient with hemorrhagic shock.

KEY WORDS: Infection hemorrhagic trauma mortality risk-factors

### A Rare Case Of Akinetic Mutism Secondary To Bilateral Anterior Cerebral Artery Infarction In A Patient With Thyrotoxicosis

Presenter's Name: Ngozi Nnukwe, M.D.

Classification: Post Doc/ Resident/ Fellow

Presentation Type: Poster Presentation

Coauthors: Shariff Dunlap, M.D., Minas Gebru, M.D., Mohankumar Kurukumbi, M.D., Alice Adams, M.D.

**Objective:** We discuss akinetic mutism secondary to acute bilateral anterior cerebral artery occlusion, in the setting of thyrotoxicosis. **Background:** Acute bilateral anterior cerebral artery infarction is rare, and may result from occlusion of an anomalous vasculature. Less than one third of patients present with akinetic mutism. Thyrotoxicosis presenting with an acute stroke is also uncommon. **Case:** 48 year old woman with hypertension, diabetes mellitus type 2, and hyperthyroidism was admitted with an acute onset of mutism and tachycardia. Volition of movement was absent in all extremities, with eye movement and tracking intact. Magnetic resonance imaging showed large bilateral ACA infarction. Magnetic resonance angiogram was significant for occlusion of bilateral A1 segments. Electrocardiography showed no arrhythmia or ischemic changes. Echocardiogram revealed normal cardiac function, and no emboli. The patient's clinical presentation and abnormal thyroid studies were consistent thyrotoxicosis. The patient was started on anti-thyroid medication. Bromocriptine was initiated for akinetic mutism. The patient gradually improved and was discharged to a rehabilitation facility. At the time of discharge, there was increased purposeful movement of the upper extremities. Language processing was delayed, but the patient engaged in limited conversation, and followed simple commands. **Conclusion:** Akinetic mutism is a severe complication of bilateral anterior cerebral stroke. Recognition

and understanding of the pathophysiology is important for appropriate management, and the development of new treatments. Stroke in thyrotoxicosis is rarely reported, and atrial fibrillation is the commonest cause. Arrhythmia was not found in our patient. Thyrotoxicosis may have contributed to our patient's apathetic affect.

KEY WORDS: akinetic, mutism, akinetic mutism, stroke, anterior cerebral artery

### Sickle cell crisis and systemic disease predict hospital readmission rate in patients with sickle cell disease

Presenter's Name: Seyed Mehdi Nouraei

Classification: Junior Faculty/ Lecturer/ Instructor

Presentation Type: Oral Presentation

Coauthors: Victor R. Gordeuk

**Introduction:** Hospital readmission within 30 days is considered a health quality measure recently. Sickle cell disease (SCD) patients are affected by multiple comorbidities which increase their hospital utilization and readmission rate. In this study we assessed the rate and predictors of 30 days hospital readmission in patients with SCD. **Methods:** The Truven Health MarketScan® Medicaid Databases from 2007-2011 were analyzed. ICD-9 codes were used to define SCD, other comorbidities and also procedures. Outpatient records were used to confirm the drug prescription at hospital admission. Data was analyzed using Generalized Estimating Equations adjusted for repeated admission in each patient. **Results:** During the study period there were 51,348 hospital admissions in 9,051 SCD patients including 55% adult patient. For each admission, the rate of 30 days hospital readmission was 18% in children and 38% in adults. The highest rate of hospital readmission occurred in the ages of 25-35 years. In multivariate analysis and after adjustment for age, sickle cell crisis (OR=1.5), renal (OR=1.4) and cardiopulmonary disease (OR=1.1), hydroxyurea (OR=1.2) and opioid treatment (OR=1.4) were associated with higher risk of readmission while blood transfusion (OR=0.7), splenectomy (OR=0.4) and acute chest syndrome (OR=0.8, all  $P \leq 0.004$ ) predicted lower risk of readmission. **Conclusion:** Risk of hospital readmission is higher in a group of SCD patients who are hospitalized for crisis and but lower in those who receive a blood transfusion.



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Systemic comorbidities increase the readmission rate in patients. Post hospital care should be well scheduled in these patients to prevent from early readmission.

**KEY WORDS:** sickle cell disease, crisis, hospital readmission, systemic disease, treatment

### Spleen Preserving Distal Pancreatectomy: Is it worth it?

Presenter's Name: Brian Nwannunu, MS

Classification: Professional Student

*Presentation Type: Oral Presentation*

Coauthors: Charles Thompson, MD; Ifeanyi D. Nwokeabia, MS, M. Eng; Cedrina L. Calder, MD; Augustine Obirieze MBBS, MPH; Gezzer Ortega, MD, MPH; Edward E. Cornwell, III, MD; Terrence M. Fullum, MD

**Background:** Conventionally, distal pancreatectomy with splenectomy (DPS) is preferred by many surgeons due to technical considerations and the two organs' extensive anastomoses. The technique of spleen-preserving distal pancreatectomies (SPDP) emerged as an alternate surgical approach for surgeons concerned with the complications associated with splenectomy. The purpose of this study is to determine differences in hospital outcomes between the SPDP and DPS using the Nationwide Inpatient Sample (NIS) database. Primary outcomes were mortality and perioperative complications. **Methods:** A retrospective review was performed using the Healthcare Cost and Utilization Project-Nationwide Inpatient Sample (HCUP-NIS) for the years 1998 thru 2010. In this dataset, 3976 patients underwent a distal pancreatectomy. 63% of the patients were female, 56% were white, 12% required transfusion, 32% were between the ages of 50-64, and 71% were elective procedures. **Results:** On bivariate analysis, 2868 patients were in the DPS group, while 1108 patients were in the SPDP group. The DPS group had higher rates of transfusion than the SPDP group (13% vs. 8%), and this difference was statistically significant. On multivariate analysis, when adjusting for both patient and hospital level characteristics, it was found that the risk of mortality is increased in transfused patients (OR 2.76 P=0.010, 95 CI 1.27-6.01) and risk of transfusion is increased in patients undergoing DPS (OR 1.53 P=0.004, 95 CI 1.15-

2.04). **Conclusions:** Based on our results, SPDP is as safe and efficacious as DPS. The data suggests that the SPDP procedure may be associated with less blood loss and lower mortality.

**KEY WORDS:** Clinical outcomes, Distal Pancreatectomy, Splenectomy, Spleen-preserving, post-operative complications

### Characterization of Colonic Adenoma with High Grade Dysplasia among African Americans

Presenter's Name: Ifeanyi Nwokeabia

Classification: Professional Student

*Presentation Type: Oral Presentation*

Coauthors: Ifeanyi D. Nwokeabia MS, MEng; Augustine C. Obirieze MBBS, MPH; Samuel C. Onyewu MBChB; Patrick Lam; Wayne A. I. Frederick, MD., MBA, FACS; Lori L. Wilson MD, FACS

**Background:** African Americans (AA) have higher incidence and mortality of colorectal cancer when compared to other racial/ethnic groups. Studies have reported varying locations of colon adenoma in AA. We aim to characterize dysplastic adenoma/polyps of the colon with high grade dysplasia among AA patients using a large population-based tumor registry. **Methods:** The Surveillance Epidemiology and End Results database from 1973 to 2008 was utilized. We identified patients with a single primary diagnosis of adenoma with high grade dysplasia of the colon using appropriate ICD-O-3 codes. Age and gender-adjusted proportions of proximal vs. distal lesion location were derived for all patients using multivariable regression analysis. **Results:** We reviewed 19,358 patient records, 16,782 (86.6%) White, and 2,576 (13.3%) Black patients. Black patients were younger (mean age of 66 ( $\pm$  12) vs. 69 ( $\pm$ 12)). Black patients did not show any gender predominance (50.0% vs. 49.9%), less likely to undergo any cancer directed surgery (5.1% vs 3.5%, p<0.001) and more likely to receive hemicolectomy (23.6% vs 18.7%, p<0.001) or total colectomy (2.1% vs 1.5%, p<0.001). Both White and Black patients were likely to have distal lesions (age- and gender-adjusted proportions [95% CI]:65.9% [65.1%-66.6%] and 57.3% [55.2%-59.2%], respectively). However,

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Blacks have 32% lower likelihood of distal lesion (odds ratio 0.68; 95% CI: 0.62-0.75). **Conclusion:** Compared to Whites, Blacks show no gender predominance, lower likelihood of distal lesion, and are less likely to undergo cancer-directed surgery. Our findings suggest the need for further research to reduce the disparity of colorectal cancer incidence and mortality in AA.

**KEY WORDS:** Clinical outcomes, oncology, colon, colorectal, small and large bowel neoplasia, health disparity, adenoma, SEER

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### Ethnic and Gender Disparity in Breast Cancer: A Review of African American Men

Presenter's Name: Samuel Onyewu  
Classification: Post Doc/ Resident/ Fellow  
*Presentation Type: Oral Presentation*

Coauthors: Kenya Miles, Augustine Obirize, Helen Swede, Ifeanyi Nwokeabia, Patrick Lam, Kristin Martin, Robert DeWitty, Wayne Frederick, Lesalle Leffall, Sara Horton, Lori Wilson.

**Background:** We expect African American (Black) men and women with breast cancer to have similar outcomes secondary to their similar background. Therefore, we sought to examine potential differences between Black men, Black women and White men with breast cancer by evaluating risk factors. **Methods:** Retrospective review using Surveillance Epidemiology and End Results database (1988–2008). We identified Black men and women, with White men aged 20 years or older with a primary breast cancer diagnosis or in whom the index breast cancer is the first cancer. Bivariate analysis of patient, tumor characteristics and treatment modality was performed using Chi squared test. Survival was estimated and Cox proportional model was used to investigate survival differences among the groups with Black men as a reference, while adjusting for confounders. Subset analyses were done within stage strata. **Results:** We reviewed 62, 758 patient records, comprising, 0.8% Black males, 94.4% Black females and 4.8% White males. Mean age at diagnosis was 59 ( $\pm 11$ ), 55 ( $\pm 12$ ) and 63 ( $\pm 11$ ) years for Black males, Black females and White males, respectively. Black males had more

regional disease (39.5%) compared to Black females (42.6%,  $p < 0.01$ ) and White males (41.5%,  $p = 0.001$ ) with more localized disease. The 5- and 10-year survival rate was lowest among Black men 78% and 66% respectively. Overall, White men were 24% less likely to die from breast cancer compared to Black men (HR 0.76; 95% CI .62-0.94), while the survival difference was not significant when compared to Black women (HR: 0.98; 95% CI: 0.81-1.19). Similarly, among patients with regional disease, White men had significantly better survival (HR: 0.63; 95% CI: 0.46-0.48) compared to Black men. **Conclusion:** Our study demonstrates absence of gender specific difference but a persistent ethnic disparity in breast cancer survival outcomes among Black men, women and White men.

**KEY WORDS:** Breast Cancer, Disparity, Gender, Ethnic.

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### Cheminformatic Tools to anti-screen Peroxisome Proliferator-Activated Receptors-Alpha Agonism Induced Human Liver Toxicity

Presenter's Name: Michael Oyewole  
Classification: Professional Student  
*Presentation Type: Poster Presentation*

Coauthors: Dawit Eguale, Osagiede Uzzi, Terry-Elinor Reid, Xiang Simon Wang

Drug toxicity is a major issue leading to the failure of candidate compounds in the later stages of drug development. 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, and is time consuming and costly. In silico approaches like cheminformatic modeling can accommodate these limitations and can be implemented early in parallel with lead optimization. Extensive analysis of current drugs on the market has identified Peroxisome Proliferator-Activated Receptors alpha (PPAR $\alpha$ ) agonism increases the risk of liver cancers. Although PPAR $\alpha$  agonists are beneficial in reducing heart disease, the risk now outweighs the benefit. Hence we direct our cheminformatic modeling efforts on building screening tools capable of accurately identifying potential PPAR $\alpha$  agonists. We collected datasets of structurally diverse molecules with known agonist activity

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for PPAR $\alpha$ . Externally predictive cheminformatic models were developed using advanced machine learning algorithms such as random forest (RF), genetic algorithm-k Nearest Neighbor (GA-kNN) and support vector machines (SVM). Multiple statistical measures like correct classification rate (CCR), linear fit (R<sup>2</sup>), specificity, sensitivity and predictive accuracy were implemented to evaluate model performance. The most predictive and robust models showed CCR > 0.70 or R<sup>2</sup> > 0.70. Our results suggest a correlation between chemical structure and PPAR $\alpha$  agonism activity exists that can be determined by RF, GA-kNN and SVM. We have developed multiple cheminformatic models capable of early identification of potential liabilities resulting from PPAR $\alpha$  agonism-induced toxicities.

**KEY WORDS:** Cheminformatic, modeling, PPAR, in silico, toxicity

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### Hypertension: A proposed Mechanistic Pathway for Arterial System Remodeling

Presenter's Name: Otelio Randall

Classification: Senior Faculty

*Presentation Type: Poster Presentation*

Coauthors: Getachew Mekasha, John Kwagyan, Tamrat Retta, Dexter L. Lee, Georges Haddard, Muluemebet Ketete, Shichen Xu

Primary hypertension (HTN) is idiopathic and the leading risk factor for cardiovascular disease (CVD) mortality. While a mild increase in blood pressure (BP) does not usually result in symptoms; significant high pressure-flow over time can initiate arterial "pressure-flow-endothelial-stretch", a potential arterial-marker of HTN-CVD. Aims are to demonstrate (1) the acute and chronic effects of increased BP on hemodynamic parameters observed in HTN-CVD, (2) that elevated pressure-magnitude-duration is responsible for potential arterial lesion, (3) that vascular lesions are responsible for altered pressure-flow patterns for developing HTN-CVD. Study was conducted in 16 conscious instrumented dogs for flow and pressure measurements before and after production of renal-artery-HTN. Acute-HTN was induced by infusing phenylephrine before the production of chronic-HTN. Acute and chronic

effects of increased BP on parameters were compared with control. The acute-HTN resulted in a (39.4 $\pm$ 9.6)% increase in mean arterial pressure (MAP) over control (97 $\pm$ 3.4mmHg). Similarly, MAP increased during the development of chronic-HTN. Input impedance increased, as evidenced by increases in total peripheral resistance [2.72 $\pm$ 0.27 (control), 3.34 $\pm$ 0.37 (week3), 3.39  $\pm$  0.51 (week4) (x 10<sup>-3</sup> dyne-sec-cm<sup>-5</sup>)] and decreases in arterial compliance[ -26 $\pm$ 5% (week3), -33 $\pm$  5% (week4) change from control]. Pulse Pressure (PP) and systolic BP (SBP), markers of vascular remodeling, increased during week 2 [53.2 $\pm$ 3.6, 43.7 $\pm$ 2.2 (control PP) mmHg] ; 157 $\pm$ 3.6, 119.1 $\pm$ 3.0 (control SBP) mmHg], and the cardiac workload progressed through week 4. Reliable markers for alterations in intra-arterial pressure, and flow were PP and compliance. These arterial hemodynamic changes, increase heart-load, alter pressure-flow patterns that impair cardiovascular function, resulting in HTN-CVD.

**KEY WORDS:** Arterial remodeling, cardiovascular disease, heart failure, hypertension, input impedance

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### Vitamin D Deficiency in Pregnant Women of Ethnic Minority: Potential Contributor to Preeclampsia

Presenter's Name: Inez Reeves

Classification: Senior Faculty

*Presentation Type: Poster Presentation*

Coauthors: Inez Reeves, Zebalda Bamji, Grace Rosario, Kerry Lewis, Michal Young and Kareem Washington

**Objective:** High risk pregnancy in ethnic minorities is due to a combination of comorbidities; we investigated Vitamin D deficiency lower than 25ng/ml as an added risk for adverse pregnancy outcomes. **Study design:** Umbilical cord vitamin D (25(OH)D) concentration was determined in an urban minority population, 80.9% African-American and 17% Hispanic mothers-baby pairs. To identify high risk comorbidities during pregnancy, a multivariate logistic regression analysis of Vitamin D was used to compare the Institute of Medicine's (IOM) threshold for pregnant women (25 ng/ml, 50% percentile) to an ethnic cohort in this study with median 16 ng/mL (85%, < 25th% of IOM). **Results:** Pregnant cohorts with a threshold median of 16 ng/mL 25(OH)D was associated with

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chronic hypertension (OR=4.842), gestational hypertension (p=0.042) and pregestational diabetes (OR=3.45). Gestational and combined (chronic inclusive) hypertension increased the risk for preeclampsia by 12-fold (p=0.003) and 14.5-fold (p=0.001), respectively. **Conclusion:** We found a high prevalence of Vitamin D deficiency among pregnant women of ethnic minority. Data suggests lower 25(OH)D concentration in pregnant mothers below IOM's 25ng/ml (median 16ng/ml), in conjunction with other morbidities, may contribute a substantial risk for preeclampsia and adverse perinatal effects.

**KEY WORDS:** Vitamin D, Preeclampsia, African Americans, Diabetes, Hypertension

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### Should Thoracic Aortic Aneurysms Be Repaired in the Very Elderly?

Presenter's Name: Danielle Robinson

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Danielle Robinson, Augustine Obirieze, Daniel Tran, David Rose, Thomas Obisesan, Edward Cornwell III, Kakra Hughes

**Introduction:** Endovascular repair of thoracic aortic aneurysms (TEVAR) has become an established method of treatment for patients with descending thoracic aortic aneurysms. Whereas certain single institution studies have shown acceptable outcomes for TEVAR in the very elderly, there is a paucity of data regarding the safety of TEVAR in octogenarians and nonagenarians on a national level. We sought to determine the postoperative outcomes of thoracic aortic aneurysm endografting in octogenarians and older employing a national database. **Methods:** The Nationwide Inpatient Sample (NIS) database was queried to identify all adult patients who underwent repair of a non-ruptured thoracic aortic aneurysm from 2001 to 2010. Multivariable logistic regression was used to investigate the odds of mortality and postoperative complications comparing the groups. **Results:** There were 12,655 patients identified as undergoing repair of a non-ruptured thoracic aortic aneurysm.

**KEY WORDS:** Vascular Surgery, elderly, Outcomes Research

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### Evaluating the Association between Diabetes Patients' Medication Adherence and Glycemic Control

Presenter's Name: Bryan Sackey

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: Wiley, Kenneth; Maneno, Mary

Using the 8 item Morisky Medication Adherence scale (MMAS-8) as a measurement tool, this cross sectional study aims to examine the association between adherence to therapy and glycemic control among diabetes patients at the Diabetes Treatment Center of a metropolitan teaching hospital. The primary outcome measured was glycemic control; adherence was the independent variable of interest, and covariates included socio-demographics and comorbidities. Descriptive statistics and variable analysis using simple and multiple logistic regression were conducted to examine significant factors predictive of glycemic control. A total of 21 patients have been recruited and surveyed for this study thus far. Majority were females (66.7%) between the age of 50-99 (42.9%) and of African American (100%) descent with type 2 diabetes. The mean A1C in the study population was 9.6±2.1% with an average MMAS-8 score of 5.6±1.80. Adherence was defined as a score <6 = low adherence, 6 – 7 = medium adherence, and 8 = high adherence. An inverse correlation may exist between MMAS scores and glycemic control (A1C level) which is consistent with our hypothesis; albeit not statistically significant. With continuous subject recruitment, we anticipate at least 50 subjects to further strengthen the statistical outcome of the study. Our conclusions will help determine the strength of association between the two factors which may invigorate health practitioners to develop better strategies to ensure medication adherence in diabetes patients.

**KEY WORDS:** Diabetes, Adherence, hospital, Diabetics, treatment

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## A B S T R A C T S

**Engineered Antibody Fragments and Immunotoxin for Targeted Imaging and Therapy of Prostate Cancer**

Presenter's Name: Liang Shan

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

Coauthors: Stephen Lin, Ping-Chang Lin, Zhenjiang Zhang, Yuanyi Liu, Paul C. Wang

**Background:** Prostate cancer is the most common malignancy and the second leading cause of cancer-related death among American men. This high mortality is mainly due to the inability to define early lesions and lack of an efficacious therapeutic technique. **Methods:** By capitalizing upon the overexpression of prostate-specific membrane antigen (PSMA) in almost all prostate cancers and the high specificity of J591 antibody against the extracellular domain of PSMA, we engineered three antibody fragments including single-chain variable fragment (scFv), bivalent tandem scFv (biscFv), and bivalent scFv fold-back diabody (scfbDb), and further constructed a recombinant immunotoxin by fusing the diabody with a mutated diphtheria toxin moiety (DT390). The biological properties of the engineered fragments and the anti-tumor efficacy of the immunotoxin were studied in culture cells and animal models of prostate cancer. **Results:** The binding affinity of scfbDb was 7-fold and 2.5-fold higher than that of the scFv and biscFv formats, respectively. In vitro, scfbDb efficiently mediated the entry of toxins into the PSMA-expressing LNCaP cancer cells, inducing cell apoptosis and growth arrest (IC<sub>50</sub>, ~0.57 nM). In animal models, the immunotoxin significantly inhibited the growth of LNCaP tumor xenografts, but not the growth of PSMA-negative PC-3 xenografts (0.27±0.09 vs. 0.67±0.11 g; P < 0.05). Specific tumor targeting was further confirmed with optical imaging. The data has been published in *Adv Healthc Mater* 2(5):736-44, 2013. **Conclusions:** The engineered antibody fragments and immunotoxin could serve as a springboard to develop targeted imaging and therapeutic agents with high sensitivity and specificity against prostate cancers.

KEY WORDS: antibody fragment, immunotoxin, prostate cancer, imaging, therapy

**Conversion of nuclear B-catenin expression with obesity in colorectal neoplasia from African Americans**

Presenter's Name: Babak Shokrani

Classification: Junior Faculty/ Lecturer/ Instructor

*Presentation Type: Poster Presentation*

Coauthors: Tahmineh Hydari, Mehdi Nouraie, Sally Hassan, Vandana Kansal, Edward Lee, Hassan Brim, Hassan Ashktorab

**Background:** Colorectal cancer (CRC) risk increases with obesity, physical inactivity, and the metabolic syndrome. Studies suggested that obesity may be associated with 30-60% greater risk of CRC. Activation of the WNT via  $\beta$ -catenin (CTNNB1) signaling pathway plays a critical role in colorectal carcinogenesis. **Aim:** To determine the association between obesity,  $\beta$ -catenin expression and colorectal neoplasia among African Americans (AA), a population at high risk for both colorectal cancer and obesity. **Methods:** We reviewed the pathology records of 152 colorectal sample during 2010-2012, composed of CRC (n=46), advanced adenoma (n=74) and normal colon (n=32). We prepared Tissue Microarray Array (TMA) from these samples. Immunohistochemistry (IHC) for  $\beta$ -catenin was performed on the constructed TMA and results were evaluated. BMI, sex, age, location of the neoplasia and other demographic data were obtained. **Results:** Positive nuclear staining in normal, advanced adenoma and CRC was 0%, 24% and 41%, respectively (P < 0.001). Nuclear staining percentage showed a good diagnostic ability for CRC (AUC: 0.63, 95%CI=0.55-0.71). Overweight and obese patients (BMI>25) did not show a significant (p=0.3)  $\beta$ -catenin nuclear expression (17% positive in normal weight vs. 27% positive in overweight/obese). **Conclusion:** In our study, advanced adenoma and CRC were associated with activation of  $\beta$ -catenin in physically fit, overweight and obese patients and hence participation of the metabolic and WNT pathways were seen in AA patients. The WNT/ $\beta$ -catenin pathway has a potential to be used as a molecular effector in colon carcinogenesis, whether or not BMI is a modifier of this pathway need to be further investigated.

KEY WORDS: Colorectal cancer, obesity,  $\beta$ -catenin, CTNNB1, Immunohistochemistry

## A B S T R A C T S

**Liver Disease in Sickle Cell Patients and the Risk of Inpatient Mortality.**

Presenter's Name: Danielle Singleton, MD

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Amir Taefi, MD and Zulikhat Segunmaru

**Background:** Hepatic dysfunction in sickle cell disease (SCD) has been known to take place secondary to conditions such as iron overload, viral hepatitis, and cholelithiasis. In this study, we attempt to evaluate the rate of liver involvement in SCD patients admitted to the hospital and the predictors of developing such hepatic dysfunction. **Methods:** The Truven Health MarketScan® Medicaid Databases from 2007-2011 were used. Each year, SCD diagnosis and other comorbidities as well as inpatient procedures were defined based on ICD-9 codes. The data was analyzed using mixed-effect model adjusted for repeated admission in each patient. **Results:** 51,348 hospital admissions among 9051 SCD patients were studied. The median age (interquartile range) of patients was 19 years (7-30) and 57% were female. The frequency of chronic liver disease (CLD), acute liver failure (ALF), and death were 5, 2, and 4 per 1000 admission, respectively. Both CLD (RR=9.1, P<0.001) and ALF (RR=63.1, P<0.001) were associated with higher inpatient mortality. The CLD risk was associated with older age (OR=1.1, P<0.001), chronic renal failure (OR=2.4), blood transfusion (OR=1.6), iron overload (OR=6.5), hepatitis C (OR=50.2), alcohol dependence (OR=4.5) and cholelithiasis (OR=3.2, all P<0.008). Except iron overload, all other significantly predicted ALF. Neither SCD crisis, acute chest syndrome, nor hepatitis B was independently associated with risk of liver disease. **Conclusion:** Screening for hepatitis C is important especially in SCD patients, as it was a major predictor of inpatient mortality. Also, effective management of renal insufficiency and alcohol dependence may decrease the inpatient mortality rate for these patients.

KEY WORDS: sickle cell disease, mortality, liver disease

**Comparison of the indication and colonoscopy findings among blacks of Ethiopia descent versus African Americans**

Presenter's Name: Belen Tesfaye

Classification: Post Doc/ Resident/ Fellow

*Presentation Type: Poster Presentation*

Coauthors: Sanjeev Solomon, Hassan Ashktorab, PhD,

Angeom Kibreab, MD, Victor Scott, MD,

Rehana Begum, MD, Andrew K. Sanderson, MD,

Adeyinka O. Laiyemo, MD, MPH

This study reviewed the records of patients who underwent outpatient colonoscopy at a tertiary care medical center from 2009 to 2010. Colonoscopy indications and findings among Ethiopian patients and age and sex matched African American patients (ratio 1: 4) were abstracted and analyzed. We compared percentages with chi square tests and used logistic regression models to evaluate the prevalence of adenomatous polyps at colonoscopy. There were 115 Ethiopians and 460 African Americans. The mean age of the cohort was 57.5 years and 420 (73%) were females. Ethiopians were more likely to be married (32.4 vs. 16.2%, p< 0.001). Common indications for colonoscopy included age-specific screening (32.0%), gastrointestinal bleeding (GIB) (20.7%), occult GIB (3.7%), change in bowel habit (21.0%), abdominal pain (25.0%) and anemia (4.9%). Ethiopians were more likely to undergo colonoscopy for a change in bowel habit (31.4 vs. 17.0%, p< 0.001) and abdominal pain (28.5 vs. 17.2%, p=0.003). Among Ethiopians, adenoma or colorectal cancer were found among 14 patients (12.2%) when compared to 105 (22.8%) among African Americans. In multivariate analysis, after adjusting for colorectal cancer screening and positive family history of colon cancer, Ethiopians had a 52% reduced odds of adenoma prevalence at colonoscopy (OR = 0.48; 95% CI: 0.26 - 0.88) when compared to African Americans. There was no difference in the prevalence of colorectal cancer in both groups (0.9% versus 2.4%, p value = 0.307). Patients of Ethiopian descent were less likely to have adenoma at colonoscopy when compared to African Americans. Further studies evaluating heterogeneity in the risk of colorectal cancer among blacks are needed.

KEY WORDS: Colon ,cancer, screening, racial, difference

## A B S T R A C T S

**Rates of Immediate Breast Reconstruction Post-Mastectomy: A Trend Analysis Across Race/Ethnicity**

Presenter's Name: Candice Thompson

Classification: Professional Student

*Presentation Type: Oral Presentation*Coauthors: Augustine Obirize, MBBS, MPH, Chiledum  
Aghahotu, MD, MBA, Kelly Bolden, MD

**Introduction:** Despite benefits in body image, self-esteem, sexuality, and quality of life, historically fewer than 25 percent of patients undergo immediate breast reconstruction following mastectomy. The inequality between the incidence of breast cancer among African Americans and the reciprocal reconstructive breast surgery following mastectomy has been documented. Although the rates of breast reconstruction have increased over the past decade, little is known about the rates of increase across race/ethnicity. The purpose of this study is to investigate trends in of breast reconstruction post-mastectomy across race/ethnicity. **Methods:** The investigators conducted a retrospective analysis utilizing the Nationwide Inpatient Sample Database from 2001 to 2010. Appropriate ICD-9-CM codes were used to identify patients who underwent mastectomy for breast cancer or classified as high risk. Patients who underwent immediate reconstruction using appropriate ICD-9-CM Procedure codes. Bivariate analysis was used for descriptive statistics comparing racial/ethnic groups were identified. Multivariable Poisson regression, as well as non-parametric test for trend, was used to investigate trend in reconstruction rates across race/ethnicity, adjusting for other variables. **Results:** The final study cohort included 152,585 patients, comprising 90,287 (59.18%) white and 12,189 (8%) black patients. Blacks were more likely to be younger (31.7% vs. 25% <50 years), have Medicaid or self-pay (22% vs. 6.4%), and undergo autologous reconstruction (42.6% vs. 31.3%) compared to whites (all  $p < 0.001$ ). Overall, reconstruction rates and rates of implant increased (22.9% to 42.1% and 49.8% to 78.3%, respectively;  $p < 0.001$ ). **Conclusion:** Although overall reconstruction rates after mastectomy have increased over time, racial/ethnic differences exist. After taking into account potential confounding factors, blacks however had significant increase in rates of reconstruction over time; however they also had significantly lower rates of implants. Identification of factors contributing to this differential trend in reconstruction

rates are critical in the efforts aimed at closing the disparity gap. factors, blacks however had significant increase in rates of reconstruction over time; however they also had significantly lower rates of implants. Identification of factors contributing to this differential trend in reconstruction rates are critical in the efforts aimed at closing the disparity gap.

KEY WORDS: Breast Reconstruction, Mastectomy, Racial/Ethnic Disparities

**A Case-control Comparison of Gene Expression and Methylation Profiles Associated with Post-traumatic Stress Disorder**

Presenter's Name: Daisy Tsao

Classification: Professional Student

*Presentation Type: Poster Presentation*Coauthors: Yuanxiu Chen, Xin Li, Ihori Kobayashi,  
Thomas A Mellman

The heterogeneous outcomes of trauma-exposure warrant interest in biological predictors of PTSD and its common psychiatric and medical comorbidities. Recent research has suggested that significant life experiences alter gene expression and induce changes in DNA methylation. To date, most PTSD research has been limited to specific pathways, but emerging methods are examining genome-wide expression and methylation patterns to explore mechanisms of stress on biology. A preliminary study was conducted to explore genome-wide gene expression and methylation differences of trauma-exposed individuals with PTSD (cases) vs. resilient controls. DNA and RNA were extracted from blood samples of 24 young-adult African American men and women (i.e., 12 cases, 12 controls) who had been evaluated in a larger study and were analyzed by the Affymetrix GeneChip Exon 1.0 ST expression array and the Illumina Infinium HumanMethylation450 BeadChip methylation array. Whereas 3992 genes were differentially expressed (FDR-adjusted  $p < 0.05$ , fold change  $> 2$ ) in cases vs. controls, no differential methylation patterns were found. The 100 most upregulated genes and the 3 significantly down-regulated genes were selected for network analyses using Ingenuity Pathway Analysis. Twenty-seven genes were associated with 3 gene networks, 2 of which were involved

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in immune response and 1 in cell cycle control. Our results suggest that many genes and gene networks have increased peripheral expression with PTSD, which may be associated with cellular and immunological function, but this does not appear to be the consequence of methylation changes. Future research should elucidate mechanisms of up-regulated gene expression in the development of PTSD.

KEY WORDS: PTSD, stress, epigenetics, gene expression, DNA methylation

**Use of African-American English in the Spontaneous Language of Children with Hearing Loss**

Presenter's Name: Sharlene Wilson Ottley  
 Classification: Graduate Student  
*Presentation Type: Poster Presentation*

Coauthors: Linda Bland-Stewart

There is a dearth of research exploring the use of a dialect such as African-American English (AAE) in children with hearing loss. Therefore, the goal of this proposed study is to determine if African-American (AA) children with hearing loss demonstrate morphosyntactic features of AAE in spontaneous language samples. Samples of children between the ages of 4-6 years old with cochlear implants (CIs) and hearing aids (HAs) will be collected. Performance will be compared to published norms of AA children who use AAE without hearing loss. Each child will participate in a play-based session in order to collect naturalistic data across all parameters of language and to afford opportunities for spontaneous productions. Sessions will be audiorecorded, videotaped, and orthographically transcribed. Each sample will then be analyzed while using a chart of documented AAE morphosyntactic features to determine which features of AAE are present. Provided the challenges and complexities of assessing the language development of AA children without hearing loss that are users of AAE, obtaining preliminary information about the language development of AA children with hearing loss to help determine similarities between groups may be helpful. Additionally, this information may help to determine if morphosyntactic development is impacted by dialectal differences and variations and if patterns are similar to children without hearing loss. It is expected that there will be some similarities as well as some differences

between the children with hearing loss and without hearing loss in the type and frequency of morphosyntactic features of AAE that are demonstrated.

KEY WORDS: African-American English, hearing loss, morphosyntax, children, language development

**Association of Fetal Microchimeric Cells with breast cancer and breast cancer subtypes**

Presenter's Name: Morgan Woods  
 Classification: Graduate Student  
*Presentation Type: Poster Presentation*

**Background:** Pregnancy results in transfer of stem cells from fetus to maternal circulation. This finding of genetically different fetal cells in the mother is known as fetal cell microchimerism (FMC). These cells are able to migrate and differentiate within various damaged maternal tissues. It is well established that pregnancy decreases the risk of breast cancer. Notably, non-cancerous women are known to have more fetal microchimeric cells in the blood than women who have been affected by breast cancer. However preliminary results have shown that FMCs are found in higher frequency in tumor tissue, including triple negative breast tumors. The study proposed herein will determine the prevalence of FMCs in a case-control study of archival breast cancer tissue microarray (TMA). Additionally, it will determine the presence of FMCs in tumor tissue, stratifying by breast cancer molecular subtypes. It is hypothesized that: 1) women without breast cancer will have a higher frequency of circulating FMCs compared to breast cancer cases, and 2) that there will be an increased frequency of FMCs in the triple negative breast cancer subtype compared to the other subtypes and controls. **Method:** For this case-control study, genotyping using quantitative PCR of the biomarker TSPY-1 will be performed on archival TMA breast cancer and control samples. For the tissue analysis, immunohistochemistry staining with the TSPY-1 probe specific for the Y chromosome will be performed on breast tumors and normal tissue. **Results:** Confirm preliminary findings that FMC are found in women without breast cancer and in high grade tumors compared to normal breast tissue of women.

KEY WORDS: cancer, breast, microchimerism, tumor, stem cell



A B S T R A C T S

**Determinants of Lower Limb Salvageability Following Infrapopliteal Arterial Trauma**

Presenter's Name: Weonpo Yarl

Classification: Professional Student

*Presentation Type: Poster Presentation*

Coauthors: John Hwabejire, Augustine Obirize, Wendy Greene, Christine Nembhard, Folake Kofo-Idowu, David Rose, Suryanarayana Siram, Edward Cornwell III, Kakra Hughes

**Introduction:** The salvageability of the lower extremity after leg trauma with vascular compromise is often attributed to pathophysiologic and injury-related variables. We hypothesized that potentially modifiable factors influence salvageability following infrapopliteal arterial injuries.

**Methodology:** The National Trauma Data Bank research data sets, 2007-2010, were retrospectively examined. Specific ICD-9 diagnostic codes were used to identify subjects aged  $\geq 18$  with tibial artery injuries. Demographic, injury-related, comorbid, and other clinical variables were analyzed. The major outcome was lower extremity amputation. Statistical analyses helped determine predictors of amputation.

**Results:** A total of 1921 subjects were included, with a mean age of 38 years in a primarily male population (82%). About 65% of cases were blunt injuries and 35% penetrating injuries. Mortality was low (2.5%), average ICU and hospital stay was 4 and 15 days, respectively. Among insurance statuses, Private Insurance (24%), Self-Pay (20%), and Medicare/Medicaid (17%) were most common. Major lower extremity amputation was performed in 262 patients (13.6%). Independent predictors of lower extremity amputation were Medicare/Medicaid insurance (OR:1.66, CI:1.03-2.66,  $p=0.039$ ), Self-Pay (OR:1.76, CI:1.11-2.79,  $p=0.016$ ), Other Insurance type (OR:1.61, CI:1.01-2.58,  $p=0.047$ ), Not-billed-for-any-reason (OR:1.52, CI:1.01-2.28,  $p=0.043$ ), Male Gender (OR:1.66, CI:1.11-2.34,  $p=0.012$ ), and Injury Severity Score (OR:1.62, CI:1.02-2.38,  $p<0.001$ ). Pre-existing conditions such as diabetes mellitus or peripheral vascular disease were not significant. **Conclusion:** Insurance type is a major determinant of lower extremity amputation following infrapopliteal arterial injury. This study supports a growing body of evidence that trauma care and outcome are influenced by ability to pay and underscores the urgent need to escalate policy efforts to eliminate these inherent disparities.

KEY WORDS: medicine, trauma, surgery, emergency, vascular

## Atlantic Coast Social, Behavioral, Economic Sciences Alliance (SBE)

**GABAergic signaling alterations contribute to impaired working memory in aged F344 rats**

Presenter's Name: Cristina Bañuelos

Classification: Graduate Student, University of Florida

*Presentation Type: Oral Presentation*

Coauthors: B. Sofia Beas, Joseph A. McQuail, Ryan J. Gilbert, Barry Setlow, Jennifer L. Bizon

GABAergic signaling alterations contribute to impaired working memory in aged F344 rats. **Background:** Impairments in working memory functions supported by the prefrontal

cortex (PFC) are a common feature of normal aging. Working memory critically involves GABAergic signaling in PFC; yet, surprisingly little is known about GABAergic alterations in PFC normal aging or whether such changes contribute to age-associated impairments in working memory. **Methods:** To investigate this, young adult (7 mo) and aged (25 mo) male F344 rats were characterized on an operant-based delayed response test of working memory. Rats were required to remember the location of a sample lever over a delay period (0-24 s) to obtain a food reward. Aged rats performed comparably to young at no delay but exhibited deficits relative to young at long delays. Western blotting was used to quantify

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GABAergic signaling protein expression in PFC. Behavioral pharmacology experiments targeted the GABAergic system to test whether working memory in aged rats could be improved. **Results/Conclusion:** Immunoblots of PFC homogenates showed that the GABA synthesizing enzyme GAD67 was increased but the transporter important for reuptake of GABA after synaptic release (GAT-1) was decreased in aged PFC. GABA(B) receptor (GABA(B)R) expression was also reduced in aged PFC and was inversely related to working memory performance among aged rats. Systemic injections of CGP55845 (0.1 mg/kg), a GABA(B)R antagonist, enhanced performance in aged rats and these effects were mimicked by microinjections of CGP55845 into PFC. Together, these data suggest that age-related dysregulation of GABAergic signaling in PFC may play a causal role in impaired working memory and that targeting GABA(B)Rs may provide therapeutic benefit for age-related impairments in executive functions.

### **Young, Opinionated and Fabulous: How Lifestyle and Values Influence Housing and Community Choices of Millennials**

Presenter's Name: Chandra Bowden

Classification: Graduate Student, University of Florida

*Presentation Type: Oral Presentation*

**Background:** Heterogeneous markets, such as the American housing market, are comprised of smaller homogeneous submarkets. It is important to be able to describe all consumers as it leads to more effective communication and marketing to targeted groups. The sheer number of Millennials (100 million), means that their economic choices has significant impact on the American Economy, including the housing market. Popular literature suggests that unlike their parents, Millennials do not want to live in the suburbs, and desire to live in mixed-use communities where cultural, recreational, and industrial amenities are in close proximity to their homes. **Methods:** This hermeneutic phenomenological study will explore the phenomenon Millennials experience living in different mixed-used communities throughout the United States. After signing up for the study via a research website, participants will complete an online consent form and a demographic survey in order to determine their lifestyle and values factors. A broad, phenomenologically based interview question will then be sent

to participants based on their most prevalent lifestyle factor. Subsequent interview questions and concurrent data analysis will occur with each email exchange using the conceptual framework of hermeneutics, and the concepts of the means-end chain where consumers select product attributes "means" in order to realize some goal "end". **Results/Conclusions:** The results of this study will be useful in determining loose typologies of the types of Millennials that choose certain mixed-used communities. This information will be beneficial to developers

### **Decolonizing the Mind: Racial Revalorization & Self-Reconceptualization as Resistance to Epistemic Violence**

Presenter's Name: Nicole DeLoatch

Classification: Graduate Student, University of Maryland

*Presentation Type: Oral Presentation*

Using data collected from YouTube Vloggers (N=167) created during a five year time frame (from 2008 through 2013) of Black women in the process of 'transitioning' or returning to their natural Afro-textured hair, this study conducted a content analysis of the dialogical presentation of self to test a theory of racial revalorization and self-reconceptualization. The YouTube vlogs were created by individual Vloggers to document their "hair journey" which is their transition to natural hair experience- on video. This analysis of the Vlogs allowed for the investigation of the dialogical presentation of self to emerge without the undue influence of the researcher on the subject, and provided the ability to empirically validate or 'see' the manifestation of physical changes to the Vloggers' self-presentation. As predicted, this analysis of the process through which Black women returned to their natural hair texture produced evidence in support of both the racial revalorization and self-reconceptualization hypotheses. These findings suggest that the transitioning/hair journey process was more than cosmetic. Instead the hair journey process became a racial resistance project or an attempt to denature the colonized mind as the Vloggers redefined themselves in opposition to the epistemic violence of Anglo-normative and Eurocentric defined beauty ideals.

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**Banking on Disaster: Charter Schools and the Re-development Apparatus**

Presenter's Name: Justin Hosbey

Classification: Graduate Student, University of Florida

*Presentation Type: Oral Presentation*

**Background:** In the political and economic vacuum caused by Hurricane Katrina's devastation in 2005, the state legislature of Louisiana wrested control of 80 percent of New Orleans public schools from the Orleans Parish School Board, dissolving the collective bargaining agreement between teachers and the city of New Orleans, firing 8,500 educators. Using the damage of most of the city's school buildings as a rationale, the state legislature ordered the conversion of all schools under its purview into privately managed charter schools. This reform created a new educational terrain, on which corporate actors could actively participate in the construction and management of public schools in New Orleans. **Methods:** This project explores how the radical introduction of charter schools to post-Katrina New Orleans came to be articulated as a spatial tactic, used to bring New Orleans into a "modern urbanism" and reproduce specific power relations within cities. Using ethnographic inquiry and spatial analysis, this project interrogates the ways that the apparatus of public education is used to discipline marginalized citizens of New Orleans into a new, rational vision for the city, driven primarily by the concerns of late capital. **Results:** The case of New Orleans presents a nexus in which educational infrastructure, place making and school choice decisions become mutually constitutive, mediated by notions of "educational value". **Conclusion:** This project advances the depth of research on race, space, and power, and brings this body of knowledge into dialogue with studies of neoliberal development and post-disaster reconstruction.

**Living in a cancer cluster: Residential coping response to speculation of environmental contamination**

Presenter's Name: Ginger L. Jacobson

Classification: Graduate Student, University of Florida

*Presentation Type: Oral Presentation*

**Background:** Risk society theory emphasizes that human and environmental health dangers of scientific and industrial development transcend time and space, yet citizens entrust

governmental safety regulations and specialized experts to keep the public safe from technological hazards. Beyond this trust, individuals construct risk frames by anchoring their trust in a specific source of information in a process called "relational anchoring." Relational anchors are activated when ontological security, one's trust in the reliability of the social and material environment, becomes questionable. Thus this project examines the various relational anchors that inspired people to have different coping mechanisms in response to ontological insecurity and how it affected individuals and their community. This presentation focuses on the case of The Acreage, a small, unincorporated, and recently populated South Florida suburb of West Palm Beach, which was labeled a cancer cluster in 2010 due to an abnormal amount of pediatric brain tumors. Residents responded with various perspectives that divided the community. To date, there is still no definitive cause for the area's cancers so that environmental uncertainties and suspicions remain. **Methods:** I took a qualitative approach and conducted sixty in-depth interviews of current and former residents living in the community during the cancer cluster investigation. **Initial interpretations:** Initial interpretations reveal several influential factors affect individual coping strategies when confronted with ontological insecurity, including personal experience with cancer, community relationships, and perceptions about government officials and/or scientific experts. Preliminary findings also suggest a significant tension between emotion, logic, and morality that guided residents in their relational anchoring process as well as a separate but related tension between health and financial priorities.

**The effects of victimization on drug use and delinquency: The impact of self-derogation and depression**

Presenter's Name: Kelesha Annett Nevers, M.A.

Classification: Graduate Student, University of Florida

*Presentation Type: Oral Presentation*

Self-derogation theory is an integrated developmental theory, but most of the research fails to test the theory as such. In fact, very few studies have conceptualized and tested a model that integrates several theoretical concepts while using longitudinal data. Of those studies, a majority focuses on social bond concepts. Seeking to address these shortcomings,

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this study includes measures of victimization and negative feelings. The sample consists of six hundred and twenty youth from the Children At Risk (CAR) secondary dataset, which is a three wave longitudinal design study. Through multivariate regression analyses, the study will evaluate the mediating effects of self-derogation and feelings of sadness and loneliness on the relationship between victimization, drug use and delinquency. The findings of this study are that self-derogation and negative emotion partially mediates the relationship between victimization and delinquency.

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**Challenges of Black Male Student-Athletes in Big-Time Intercollegiate Sports: A Critical Review of the Evidence**

Presenter's Name: Felecia Theune

Classification: Graduate Student, University of Miami

*Presentation Type: Poster Presentation*

Recent evidence indicating lower academic performance of black male student-athletes relative to their white male counterparts who participate in big-time, revenue-generating, intercollegiate sports has sparked renewed interest in the long-standing issue expressed by Edwards, Rhoden and others of the exploitation of the black male athlete. In this paper, we examine this issue in the context of Braddock's (1980) competing hypotheses of whether participation in sports impedes versus enhances social mobility outcomes and Dawkins, Braddock and Celaya's (2008) typology of sports participation and academic engagement. A critical examination of the literature reveals mixed evidence regarding the issue of the current treatment of black male athletes in big-time college sports. We conclude by offering recommendations for strengthening the link between academics and athletics to improve academic outcomes and non-sport career prospects for all student-athletes in their pursuit of goals for educational and career success.

**KEY WORDS:** student-athlete, black, male, education, sports, exploitation, revenue-generating, social mobility

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**Perceptions of Depression and its assessment among Black adults**

Presenter's Name: Anna Wheatley

Classification: Graduate Student, University of Miami

*Presentation Type: Poster Presentation*

Most survey instruments designed to measure depression and depressive symptoms have been evaluated and normed on White, middle class populations then applied to the general population under the supposition that all people react to and express mental health problems and stress in a similar fashion. In particular, researchers suggest that what is known about depression among Black adults is based primarily on the application of measures that have yet to be specifically validated in this population (Zhang & Gary, 2011). Studies have shown, however, that social, cultural, and linguistic differences impact the understanding and response patterns for many mental health disorders (Foley et al, 2001; Kim et al, 2011). Several factors have been suggested as issues with respect to measuring depression among African Americans, including cultural variation in symptom manifestation (Brown, Schulberg, & Madonia, 1996), reporting (Gallo, Cooper-Patrick, & Lesikar, 1998) and cultural insensitivity of measures (Barbee, 1992). In an effort to explore the relevance and cultural validity of current assessments to Black adults, a mixed methods study was conducted. Using findings from three focus groups this study aims to elucidate how selected screening instruments are perceived and completed by Black adults, as well as to understand the cultural significance, expression, and coping responses associated with depressive symptoms. Qualitative data were collected via semi-structured focus groups with the primary purpose of exploring the perceptions of the concept of depression and depressive symptoms. Quantitative data was collected via questionnaires to explore the utility of previously validated depression assessments with Black populations.

**KEY WORDS:** Depression, culture, Blacks, cultural validity, qualitative, screening, assessment

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**Disrespectful Americans and Middle Easterner Extremists:  
The Lingering Effects of Stereotyping in America and the  
Middle East**

Presenter's Name: Jasmine Wheeler

Classification: Graduate Student, University of Maryland

*Presentation Type: Poster Presentation*

Stereotypes and preconceived notions about social groups are inherent in society. While stereotypes are commonly thought to be negative, positive stereotypes may also shape attitudes, behaviors, and cognitions. Even prior to 9/11, years of conflict and unrest have shaped perceptions of Americans and Middle Easterners alike. Both groups may hold inaccurate assumptions based on general knowledge and limited exposure to the

distant culture. These inaccurate perceptions may interfere with the possibility of establishing more productive cross cultural cooperation at both the political and interpersonal level. Therefore, the goal of this study was to examine the stereotypes held by individuals in the United States ( $N=18$ ), Pakistan ( $N=20$ ) and Saudi Arabia ( $N=20$ ) about the cultural out-group. Results suggest that positive and negative stereotypes still shape perceptions of the out-group in subtle and overt ways. Implications for future research on stereotype reversal are discussed.

**KEY WORDS:** stereotypes, out-group, Middle East, cross cultural







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