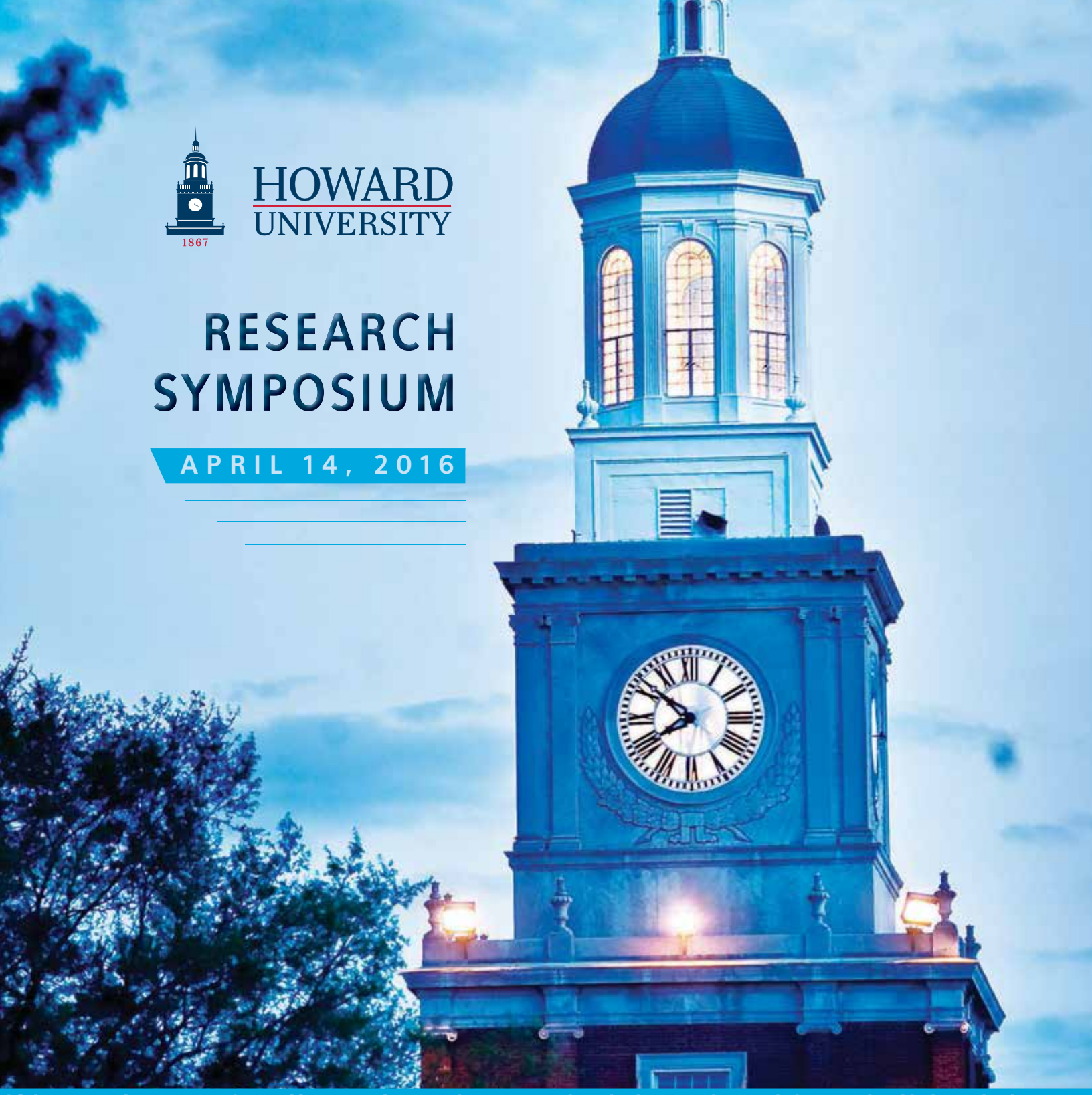

HOWARD UNIVERSITY
1867

RESEARCH SYMPOSIUM

APRIL 14, 2016

ABSTRACT BOOK

HOWARD UNIVERSITY

RESEARCH SYMPOSIUM

Abstract Book

APRIL 14, 2016

TABLE OF CONTENTS

Biological & Biomedical Sciences

Effects of Phenyl-1-pyridin-2yl-ethanone (PPY)-based Iron Chelators on the Formation of Methemoglobin

Presenter's Name: Nowah Afangbedji
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Coauthors: Nowah Afangbedji, Namita Kumari, Dmytro Kowalskyy, Sergei Nekhai

Iron chelators are used in the treatment of iron overload related diseases and are currently receiving a major attention as potential antitumor drugs. In recent studies the antitumor activity of thiosemicarbazones-class of iron chelator, including Di-2-pyridilketone-4,4- dimethyl-3-thiosemicarbazone (Dp44mT) have been investigated in over 20 phase I and II clinical trials. Iron chelators were also considered as anti-HIV-1 agents. In our previous studies, we developed novel phenyl-1-pyridin-2yl-ethanone (PPY)-based iron chelators that we showed to increase IκB-α expression, modulate CDK2 and CDK9 activities and inhibit HIV-1 transcription in vitro. However, the main obstacle of using iron chelators in vivo is the deleterious side effect of methemoglobinemia induced by some iron chelators that are able to scavenge electrons from the heme-bound iron in hemoglobin. Here we tested the effect of the previously described PPYeT iron chelator and its analog, 3-cyclohexyl-3-methyl-1-{[2-phenyl-1-(pyridin-2-yl) ethylidene]amino}urea (SN03-02) for methemoglobin induction. The effect these iron chelators were tested in vitro with purified hemoglobin and isolated red blood cell and compared with several additional iron chelators including Dp44mT and PPY analogues. The novel compound, SN03-02, shows a remarkably low ability to catalyze the formation of methemoglobin in human RBC lysates and also in intact RBCs as compared to Dp44mt and to other PPY based chelators. These findings indicate that SN03-02 may be useful for future in vivo studies as it produces less methemoglobinemia. Further studies will evaluate the effect of SN03-02 as anti-cancer or anti HIV-1 inhibitor.

Acknowledgements: This work was supported by NIH Research Grants (1P50HL118006, 1R01HL125005, U19AI109664 and 5G12MD007597), and District of Columbia Center for AIDS Research grant (P30AI1179701). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Antiretroviral Drugs-Loaded Nanoparticles Fabricated by Dispersion Polymerization for GALT Targetable Drug Delivery System

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

Coauthors: Sergei Nekhai; Winston Anderson

Background: Highly active antiretroviral therapy (HAART) for chronic suppression of HIV replication has revolutionized the treatment of HIV/AIDS. HAART is no panacea; treatments must be maintained for life. Although great progress has been made in antiretroviral therapy, HIV continues to replicate in anatomical and intracellular sites where drugs have restricted access. Our research team is working on nanotechnology platform to circumvent the challenges in HIV/AIDS treatment. Method: Dispersion polymerization was used to fabricate two types of polymeric nanoparticles. Results: Each type of nanoparticles was successfully loaded with ARV drugs (zidovudine, lamivudine, nevirapine, and raltegravir), followed by physicochemical characterization: SEM, particle size, zeta potential, drug-loading and in vitro availability. The nanoparticles efficiently inhibited HIV-1 infection in CEM-T cells and PBMCs. Conclusions: The nanoparticles hold promise for the treatment of HIV/AIDS. The ARV-loaded nanoparticles with PEG on the corona will facilitate tethering ligands for targeting specific receptor(s) expressed on HIV reservoirs.

Serum Vitamin D Deficiency Among African American Women in the United States

Presenter's Name: Ghada Alem
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Mary Maneno, Earl Ettienne, La'Marcus Wingate

OBJECTIVES: To estimate the prevalence of serum vitamin D deficiency and to examine whether diabetes status and BMI were associated with vitamin D deficiency among African American women. **METHODS:** A cross-sectional study using data from the 2001-2006 NHANES cycles was conducted in order to estimate the prevalence of serum

vitamin D deficiency and to evaluate predictors of vitamin D deficiency among African American women. Descriptive statistics for all study variables were estimated. Logistic regression analysis was used to determine whether BMI, diabetes status, and other study variables were predictive factors of serum vitamin D deficiency. All analyses were performed using the Statistical Analysis Software (SAS) version 9.3 at an alpha value of 0.05. **RESULTS:** There were 1,562 African American women aged 20 years and older who were included in the study. The mean age of the women was 46.5±17.8 years old and 46.3% of them had at least a high school. There were 569 out of the 1,562 (36.4%) women who had vitamin D deficiency. Findings from the multivariable analysis showed that BMI was a predictive factor of vitamin D deficiency ($P<0.0002$). More specifically, an increase in BMI increased the odds of vitamin D deficiency. Additionally, those who were on multivitamin/ supplements were less likely to have vitamin D deficiency ($P<0.0001$). Diabetes status was not a significant predictor for this outcome. **CONCLUSIONS:** The study findings showed that BMI and multivitamin/ supplements use were significant predictors of vitamin D deficiency. There was no association found between diabetes status and vitamin D deficiency.

Bio-Historical Analysis of Cardiovascular Disease in the Cobb Collection

Presenter's Name: Jameshisa Alexander
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Cardiovascular disease, commonly known as heart disease, consists of many problems of the cardiovascular system. People with medical conditions like diabetes and obesity and live lifestyles with, poor diet, lack of exercise and high alcohol consumption are at increased risk for cardiovascular disease. The greatest risk factors for cardiovascular disease are high blood pressure, high cholesterol and smoking. The incidence and prevalence of CVD is directly related to the incidence and prevalence of CVD risk factors. Uptodate.com cited that the reports from the National Health and Nutrition Examination Survey (NHANES) showed the increasing prevalence of obesity from 15 to 30 percent between 1960 and 2000 and in that same time the increase of diabetes occurred from 1.8 to 5.0 percent. However, they also stated major risk factors like high cholesterol, hypertension and smoking have decreased. The prevalence statistics show that high cholesterol has decreased from 34 to 17 percent, hypertension from 31 to 15 percent, and smoking from 39 to 26 percent. Even though, the prevalence of some risk factor have increased the prevalence of CVD has decreased. About 610,000 deaths occur in the United States every year is caused by cardiovascular disease (CVD), making it the leading cause of death for both men and women. Cardiovascular Disease is divided into four main categories: heart valve problems (regurgitation and stenosis), arrhythmia, heart attack and stroke. Atherosclerosis is the building of plaque in arteries commonly leading to heart attacks or strokes. Physicians diagnose patients with these ailments based on risk factors identified from medical history, physical exam and a variety of specific tests. These conditions are treated with medications, institution of medical devices such as pacemakers, implantable cardioverter defibrillator (ICD) or Left Ventricular Assist Devices (LVAD), procedures like heart value replacements/repairs, heart transplants, and surgery. In the Cobb Collection (CC), we have multiple cases of cardiovascular disease such as congestive heart failure, atherosclerotic heart disease, value issues and hypertrophy. Using the data collected on the individuals in the Cobb Collection/CC, we can compare the trends and of cardiovascular disease previously and presently. This lets us look at this chronic disease from a unique historical perspective.

Musculoskeletal and Neural Comparison of Normal and Abnormal Development in Humans and Broader Medical Implications

Presenter's Name: Malak Alghamdi
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Christopher Smith, Janine Ziermann, Rui Diogo

Background: Anatomical and medical studies of anatomical birth defects tend to focus mainly on external features, or on hard tissues. As a new, long term project we have been collecting and systematically comparing detailed musculoskeletal and neural information on normal human development and with conditions as diverse as anencephaly and trisomy, including cases of cyclopia and of non-pentadactyly. This comparison is based on careful dissections, analyses of CT and/or MRI scans, and an extensive review of literatures. **Methods:** A 25-29 weeks male fetus with anencephaly was dissected. The specimen was fixed in formaldehyde and stored in 70% ethyl alcohol at room temperature. Macro and micro-dissections were done under a dissection microscope. A Nikon D90 DSLR Camera was used to photograph the muscles, and DICOM Viewer

program OSIRIX was used to create 3D reconstructions of skeletal system, based on a series of 2D scans, for reference during dissection. **Results:** Our dissections and comparisons revealed that certain similar anatomical patterns are frequently found in each of these conditions, supporting the "logic of monsters" hypothesis of Pere Alberch, according to which even in extreme cases of birth defects (e.g. anencephaly, cyclopia) there is still a discernable, marked "order", instead of random, chaotic phenotypes, because of strong internal constraints limiting the amount of possible developmental outcomes. **Conclusion:** We will discuss the broader implications of our results and of the observed patterns by discussing crucial developmental and medical topics such as the links between developmental delay/arrest, 'atavisms', variations, anomalies, polymorphisms and the "logic of monsters".

An Optophysiological Approach to Characterize Endogenous and Recombinant NMDA Receptors

Presenter's Name: Nujud Almuzaini
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Nujud Almuzaini, Kevin S. Jones

Background: Electrophysiological approaches provide exceptional temporal and electrical resolution for characterizing excitable tissues. However, extensive technical expertise and expensive and specialized equipment is often needed. Optophysiology has emerged as an alternative quantitative technique that uses genetically encoded sensors to visualize neuronal activity. Optophysiology requires less technical expertise and less specialized equipment than conventional electrophysiology, and could make neurophysiological experimentation accessible to a broader audience. As a proof of concept, here, we use an optophysiological approach to characterize a ligand-gated, calcium-permeable ion channel, the N-methyl-D-aspartate receptors (NMDARs). **Methods**: SK-N-SH cells were cultured under standard conditions. Subsets of cells were treated with retinoic acid (RA) and/or transfected with plasmids encoding: GCaMP6s, GluN1, and GluN2B. Two days after transfection calcium and confocal imaging was acquired with a Nikon Ti-E-PFS microscope. Bath application of NMDA and D-Serine was used to activate NMDARs. SK-N-SH cells were fixed in PFA and stained with antibodies against neuron-specific class III beta-tubulin (Tuj1), Microtubule-associated protein 2 (MAP2), GluN1 and GluN2B. **Results**: Weak calcium signals were evoked by NMDA activation of SK-N-SH cells. Significantly stronger calcium signals were evoked from SK-N-SH cells that were treated with RA and/or transfected with GluN subunits. Immunohistochemical analyses confirmed that RA treatment dramatically increased staining of GluN1 and GluN2B subunits, as well as Tuj1 and MAP2. **Conclusions**: These data demonstrate that RA induces a neuronal-like morphology in SK-N-SH cells and that transfection of the calcium sensor, GCaMP6s, provides a robust optophysiological alternative for characterizing endogenous and recombinant NMDARs. In addition, RA increases the expression of functional NMDA receptors and transfection of recombinant NMDA receptors enhances the response to neurotransmitters.

The Relationship Between The Intake of Red Meats and The Incidence of Diabetes Mellitus Type 2 Among Pre-diabetic Adults In The United States

Presenter's Name: Abdulrahman Alsayegh
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Abdulrahman Alsayegh, Allan Johnson, Chimene Castor

Introduction: Over twenty million people in the United States are reported to have Type 2Diabetes Mellitus (T2DM), and over 79 million are pre-diabetic. Dietary intake reports suggest that poor dietary intake (including higher consumption of red meats and highly processed foods), and certain amino acids (such as ferritin and glycine) are related to an increased risk of T2DM and heart disease. **Research Aims**: The aim of this study is to examine whether or not there is a link between the intake of red meats and the occurrence of T2DM in pre-diabetic men of various ethnicities. In addition, this study seeks to assess the impact of ferritin and glycine on the incidence of T2DM. **Methods**: In this study, we will randomize pre-diabetic and diabetics participants to examine the causal-relationship between the consumption of red meats and the fluctuations of glycated hemoglobin HbA1C and fasting blood glucose. We will collect blood sample before and after consumption of red meats to specify the examining blood ferritin and glycine in relationship to DM II. The study will then examine whether or not there is a significant differences between the two groups. **Results**: The expectation of the study will be to provide evidence-based data for further nutritional education for the improvement of the quality of diets in diabetics and decrease the incidence rate of diabetes while improving pre-diabetes. Hence, this

study postulates that high consumption of red meats may lead to greater risk of DMII. **Future Research**: the study seeks to apply for research grand to further examine the impact of these specific nutrients to diabetics patients.

Factors Associated with Prescribing Broad-Spectrum Antibiotics for Children with Upper Respiratory Tract Infections in Ambulatory Care Settings

Presenter's Name: Mohammad Alzahrani
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Monika Daftary, La'Marcus Wingate, Earl Ettienne

OBJECTIVES: Inappropriate use of broad-spectrum antibiotics is accompanied with additional cost and leads to the emergence of resistant bacteria. This study aimed to identify factors associated with prescribing broad-spectrum antibiotics for children with upper respiratory tract infections (URI) in outpatient settings. **METHODS**: A cross-sectional analysis of the National Ambulatory Medical Care Survey (NAMCS) and the National Hospital Ambulatory Medical Care Survey-Outpatient Departments (NHAMCS-OPD) between 2006 and 2010 was conducted. Descriptive statistics of visits for patients younger than 18 years were estimated. Logistic regressions were used to identify socio-demographic and clinical characteristics associated with prescribing broad-spectrum antibiotic. A stratified analysis by age (≤2 vs >2) was conducted. All analyses were performed using the Statistical Analysis Software (SAS) version 9.3 at an alpha value of 0.05. **RESULTS**: A total of 4,013 outpatient visits for children with URI were included. Of them, 46% were visits from persons 2 years or younger. Majority of the visits were from persons who were White (85.6%), had private insurance (63.6%), were seen by pediatricians (63.8%), and were diagnosed with acute otitis media (71.5%). Broad-spectrum antibiotics were prescribed in about 40% of the visits, accounting for 6.8 million visits annually. Bivariable analysis showed that age, region, physician specialty, insurance type, and URI-specific diagnosis were associated with broad-spectrum prescribing ($p<0.05$). Multivariable analysis showed that visits in south region compared to the west region [OR=2.376 (1.377 – 4.101)] and acute pharyngitis compared to acute otitis media [OR= 0.525 (0.365 – 0.754)] were associated with broad-spectrum prescribing. Among those older than 2 years, females [OR=0.604 (0.392 – 0.929)] and Black compared to White [OR=0.376 (0.152 – 0.932)] were also associated with broad-spectrum prescribing. **CONCLUSIONS**: Prescribing of broad-spectrum antibiotics is common for children with URI in outpatient settings. Efforts to decrease broad-spectrum antibiotics use should be focused more toward certain conditions, geographic regions, and age groups.

Aging increases Reactive Oxygen Species and Interleukin-17 concentrations in Peroxisome Proliferator Activated Receptor –alpha knockout mice during Angiotensin II Hypertension through a NADPH Oxidase Subunit-2 mechanism

Presenter's Name: Ugoeze Ananaba
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Nia Williams, Joanne Allard

Aging decreases myocardial peroxisome proliferator activated receptor –alpha (PPAR-α) expression. Activation of PPAR-α reduces hypertension, cellular oxidative damage and inflammatory cytokine production. We hypothesize that the absence of PPAR-α would increase mean arterial pressure (MAP) during Angiotensin (Ang II) hypertension in aged mice hearts by increasing the expression of NADPH (NOX) subunit-2, reactive oxygen species and interleukin-17 (IL-17) production. Male (40 weeks old) PPAR-α knockout (KO) mice and wild-type (WT) mice 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 Ang II treated mice were given the PPAR-α agonist, fenofibrate (Fen) (145 mg/kg/day). On day 12 of Ang II, MAP was increased in KO compared to WT, 163 ± 6 and 148 ± 3 mmHg, respectively. Heart expression of NOX-2 was increased in Ang II-treated KO (90 ± 10%) and WT (80 ± 8%) mice, when compared to no treatment controls. WT + Ang II + Fen NOX-2 expression was decreased (27 ± 6%) when compared to WT + Ang II alone. TBARS concentration was increased in KO + Ang II (12.4 ± 1 μM), when compared to WT + Ang II (10 ± 1 μM). IL-17 concentrations were increased in KO + Ang II (1.7 ± 0.5 ng/mL) and WT + Ang II (1.2 ± 0.2 ng/mL), when compared to their respective controls. Our results suggest increased myocardial NOX-2 expression, TBARS and increased IL-17 concentrations in 40 week old PPAR-α KO mice are potential mechanisms for the increased Ang II-induced blood pressure responses.

Case report: Cannabinoid Hyperemesis Syndrome Coinciding with Menstrual Cycle

Presenter's Name: Nii-Kwanchie Ankrah
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Agazi Gebreselassie

Introduction: Cannabinoids have been used to treat nausea and vomiting but with the increasing use of Cannabis especially by young adults , clinicians are beginning to see an increasing number of patients presenting to the emergency care area with a complaint of paroxysms of nausea, vomiting, and abdominal pain. These patients usually have a history of chronic use of cannabis. This condition has been described as cannabinoid hyperemesis syndrome. We describe a patient who presented to emergency care are with symptoms suggestive of Cannabinoid Hyperemesis Syndrome coinciding with her menstrual cycle. **Case presentation:** 26 year old African American female with a no significant past medical history apart for a 3 year history of daily K2 use and previous history of marijuana use presented with a complaint of generalized abdominal pain with associated nausea and vomiting of 4 days duration. These symptoms have been going on for the past 3 years since she started using K2 daily. Symptoms occur with the start of her menses and last for 5 days; relieved by hot bath. Physical examination was positive for diffuse abdominal tenderness. Investigations revealed, Calcium 9.5, sodium 135, potassium 4.0, chloride 104, bicarbonate 24, BUN 7, creatinine 0.7, glucose 108. White blood cells 5.3, hemoglobin 14.9, hematocrit 46, platelets 245, anion gap 7, mean corpuscular volume 98. Albumin 4.1, alkaline phosphatase 47, ALT 21, AST 23, direct bilirubin 0.1, total bilirubin 0.6, amylase 87, lipase 10, beta-HCG less than 10 (negative). Abdominal x ray didn't show signs of obstruction. Pelvic ultrasound was normal. The patient was admitted and managed as a case of cannabinoid hyperemesis syndrome with IV fluids and anti-emetics. Patient discharged home after 2 days on Ativan for nausea and vomiting. She was counseled on cessation of K2 use. **Conclusion:** With the increasing use of cannabis by young adults, Cannabinoid Hyperemesis Syndrome is a condition that should be considered by physicians in patients who present frequently to the emergency care area with nausea, vomiting and abdominal pain. Symptoms may be attributed to menses in a female adult. But careful evaluation for recreational drug use may reveal cannabinoids as the cause for intractable nausea and vomiting.

Electroretinogram responses of receptors from the compound eyes of the brown marmorated stink bug

Presenter's Name: Nicole Arnold
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Vonnie Shields, Abner Lall

The brown marmorated stink bug, Halyomorpha halys, is an invasive species that was introduced to North America twenty years ago. Through the years, it has become a nuisance pest. It is responsible for damage and loss to the percent yield of several crops that it feeds upon. More recent pest control methods have incorporated using pesticides, as well as olfactory and, to a much lesser extent, visual traps to prevent further damage to agricultural crops. As this species is positively phototoxic, our focus was to describe the visual system of this insect, which consists of a pair of compound eyes and two simple ocelli. Electroretinograms (ERGs) were obtained by inserting a glass electrode into the corneal surface of the eye and recorded via a conventional method. Our preliminary results indicate: (i) the electrical response was a cornea monophasic negative wave consisting of an initial phasic wave followed by a maintained component for the duration of the flash and no off-response at the termination of the light stimulus; (ii) Vlog I curves were obtained over six log units of change in stimulus intensity during the photo phase; (iii) the latency of the response shortened as a function of an increase in the intensity of the flash, from ~40 msec in dim light stimuli to ~10 msec for bright stimuli, and (iv) the eye had a flicker fusion frequency above 30 flashes/second. The stink bug is a diurnal insect.

Fluoxetine upregulates immature neurons in fetal alcohol exposed monkeys

Presenter's Name: Onaje Artist
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Coauthors: Mark Burke

Fetal alcohol exposure (FAE) is the leading cause of preventable mental retardation. In fact, from 7-9 years of age, every 0.3 out of 1000 children are found to have fetal alcohol exposure and for each child the lifetime cost is up to $2 million. Fetal alcohol exposed children display neurodevelopmental deficiencies such as memory problems, learning disabilities, and low IQ. We have previously shown that naturalistic and voluntary consumption of alcohol in non-

human primates results in a reduction of neurons in the frontal lobe and in the CA1-3 fields of the hippocampus as well as a reduction in actively proliferating stem cells and immature neurons in the dentate gyrus. Despite the prevalence of FAE in the clinical setting, a pharmacological treatment approach aimed at ameliorating the neurological consequences of FAE are lacking. In this study we aimed at upregulating the immature neuronal population through an oral administration of fluoxetine, a selective serotonin reuptake inhibitor (SSRI). We hypothesize that SSRI treatment at two years of age will upregulate neurogenesis in fetal alcohol exposed animals. Animals were treated with fluoxetine for ten weeks at two years of age (both control and FAE subjects) or non-SSRI animals (control and FAE subjects). We are testing Nestin and Double-cortin (DCX), two putative markers for immature neurons in the hippocampus and the amygdala. In our population of green monkeys, confocal analysis indicates that Nestin and DCX are separate cell populations and that SSRI treatment does upregulate cell proliferation. Our data shows the possibility of using SSRI's to increase neuron population in infants as potential therapeutic approach.

SEA98 Shows Lytic Activity Against Brevillus spp U102

Presenter's Name: Sofiat Atoba
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Lourds Fernando, Adrian Allen, Broderick Eribo, Courtney Robinson

BACKGROUND: Bacteriophages are a class of viruses that infect bacteria by injecting their DNA/RNA into their bacterial cell and replicating itself until the host bacteria lyses. The purpose of this research was to isolate and characterize a new phage specific to Brevibacillus spp strain U102. **METHODS:** In this study, bacteriophage was isolated from a soil sample obtained from the valley 38.92˚N, -77.02˚E, and then purified using the streak protocol to obtain a single phage population. After that, the titer assay was done to determine the concentration of phage particles before the isolation of pure phage stock was done to enable DNA-isolation protocol. The DNA was digested with the restriction enzymes BamHI, ClaI, EcoRI, Hae3 and Hind3 and then the fragments were separated using agarose gel electrophoresis. **RESULTS:** The enrichment culture yielded plaques of different morphologies. However, the seventh streak protocol yielded plaques that had the same morphology. The phage was named SEA98. The SEA98 phage produced clear, lytic, round plaques with diameter of about 3mm. The MTL had a titer of 1.29× ❴10❵ ^6 while the HTL had a higher titer enough to proceed to DNA isolation. The concentration of the DNA was approximately 100.5ng/µl. **CONCLUSION:** The SEA98 DNA has been isolated and digested with restriction enzymes. Further studies will include the comparison of the DNA of SEA98 to that of other phages before sequencing and annotation.

Neuronal Firing Pattern Changes Using Reversible Jump Markov Chain Monte Carlo

Presenter's Name: Paul Austin
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Oral Presentation

Mitral cells are the main type of output neuron from the olfactory bulb. They convey sensory information to higher order olfactory centers in the brain in the form of action potentials that are traveling down their long axons. Mitral cells exhibit two modes of integrative behavior: long-lasting membrane potential depolarization with a burst of action potentials and regular firing of action potentials. We consider and explore structural breaks in a second-by-second time series of action potential firing patterns of mitral cells. A common strategy to determine a change in a cell's firing behavior is to "eyeball" the data and to see changes in the number of action potential firing. However, using Bayesian change-point techniques which are used across disciplines, our objective is to mathematically capture the moment in which a change occurs. Reversible-jump Markov chain Monte Carlo techniques were used to examine data collected with the whole-cell patch-clamp recording technique from individual mitral cells in mouse brain slices that contain the olfactory bulb. Analysis of the firing patterns revealed that the changes in action potential firing reflect the mitral cells' response to membrane potential depolarization. Our results indicate that the method applied in this study captures the firing changes mathematically and allows for a detailed temporal analysis of firing patterns.

PTA was supported through The Advanced Research Training Corps: A Novel Initiative for URM Students, NIH-NIGMS [GM101997]. Support for TH and ZW comes from NIH [MD007597] and NSF [IOS-1355034] grants.

Isolation and Characterization of the Bacteriophage Nicome19 from Howard University Soil

Presenter's Name: Ifeoluwa Bamidele
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Ifeoluwa Bamidele, Lourds Fernando, Adrian Allen, Broderick Eribo, Courtney Robinson.

Background: Bacteriophages (or "Phages") are a class of viruses that are parasitic to bacteria. When phages infect bacteria, they either leave clear spots or cloudy spots called plaques, an indication that the bacterial cells are completely or incompletely lysed. One of the reasons for studying phages is the concept of host-parasite relationships at microbial level. The purpose of this research was to isolate, purify and characterize phages that infect the bacterium Brevibacillus strain U102 previously isolated from the soil. **Methods:** In this study, a soil sample from the Administrative building at Howard University was used to extract the phages using the direct plating and enrichment methods. The enrichment method proved more effective as it yielded several plaques with varying morphologies. One phage morphology that was predominant on the plate was selected for further study. This phage was streaked multiple times to establish purity, followed by titering. The phage morphology was based on size, shape, and length. For molecular characterization, the DNA was extracted. **Result**s: The phage was named Nicome19. The plaques produced were round, small (1mm), and clear, indicating that it is a lytic phage. The phage titer was 1.14 × 108. The concentration of the phage DNA was 285.15 ng/μL, while the 260/280 value was 2.325 as determined by a NanoDrop. **Conclusion:** Further studies will include gel electrophoresis, restriction analysis of phage DNA, for comparison to the DNA of other bacteriophages, sequencing, and annotation.

The Prevalence and Biohistory of Congestive Heart Failure in the Cobb Collection

Presenter's Name: Kayla Bedeau
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Congestive Heart Failure (CHF) is a common cause of death, affecting over 5 million people in the United States in 2013. CHF occurs when the muscle of the heart weakens, failing to provide oxygenated blood throughout the body. In the later stages, blood will pool inside of the heart, leading to complete failure. Among others, hypertension is a major risk factor for CHF. Commonly known as high blood pressure, hypertension is indicated when the systolic blood pressure and diastolic blood pressure are above 140 mmHg and 90 mmHg respectively. Hypertension continues to be a major health risk, especially in the African American (AA) community, where over 40 percent of AA's are affected. Because of this prevalence, the Cobb Collection (CC) is an invaluable source, being the largest collection of AA archeological material in the country. We have identified 36 individuals from the CC who have died from Congestive Heart Failure in order to analyze their medical history and lifestyles. Then, a comparison of incidents and treatments between the 1900s and modernity will create a better understanding of the impact that hypertension has on Congestive Heart Failure, while also contributing to the sparse amount of scientific literature on AA community.

The evaluation of Syncope in a Predominantly Black Population: Focus on Neuroimaging. Agazi Gebreselassie MD 1, Delamo Bekele MBBS 1, Yonette Paul MBBS 1, Julius Ngwa MS PhD 2,Daniel Larbi MD 1. Departments of 1. Internal Medicine and 2 Cardiovascular Ph

Presenter's Name: Delamo Bekele
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Background: Current guidelines do not support the routine use of CT Brain in the diagnostic workup of Syncope. There is a lack of research to support whether these guidelines apply to the Black Population. This study evaluates the yield of CT Scans in the evaluation of Syncope in a predominantly black patient population. **Methods:** A retrospective review of records of 151 patients admitted to the hospital with Syncope from 2011 to 2014 was performed. Data collected includes CT Head, MRI Brain, MRA, EEG and orthostatic vital signs. Demographic data, admitting service and co-morbid conditions were identified. Syncope was classified as Cardiogenic, Orthostatic, Vasovagal, Situational or Undetermined. Statistical analysis was performed to determine which diagnostic tools were useful in determining a cause of Syncope. **Results:** 128 (84.8%) of patients were Black. Average age was 56.62 ± 18.78 SD and 68.2% (103) were female 147. 114 patients (75.5%) had a CT Brain. 5 out of 114 patients had an acute abnormality on CT (4.4%). Only 1 of these 5 patients had and abnormality that was related to Syncope. CT Brain (P Value 0.978) was not found

to be predictive of underlying etiology of Syncope despite high frequency of use. **Conclusion:** CT Brain was not found to be useful in determining the etiology of syncope in a predominantly Black population. This is in keeping with current guidelines and studies conducted in other populations. Implementing hospital policies to ensure adherence to guidelines will promote cost conscious and patient centered care.

Eveloping an In Vitro Model of the Rapid Antidepressant Actions of NMDA Receptor Blockade

Presenter's Name: Tiffany Bell
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Tiffany Bell, Ashley Williams, Kevin S. Jones, PhD.

Background: The anesthetic drug, ketamine, is also an exceptional antidepressant medicine that can improve mood as rapidly as one hour after treatment. Unfortunately, ketamine is also habit-forming, sedating and possibly neurotoxic. Thus, despite its exceptional efficacy it's clinical utility is limited. Ketamine blocks the N-methyl-D-aspartate (NMDA) receptor and perturbs numerous intracellular signaling cascades including the PI3K/AkT/mTOR pathway. How each of these signaling cascades contribute to the rapid antidepressant action is unclear. Our goal is to identify novel molecular targets for the development of rapid acting antidepressants. Towards this goal we have established a neuroblastoma cell culture model to investigate the molecular actions of NMDA receptor blockade. **Methods:** SK-N-SH cells were cultured under standard conditions and treated with retinoic acid (RA) to differentiate them into neuron-like cells. Cells were fixed in PFA and stained with antibodies against Tuj1, AKT; pAKT; MTOR, and pMTOR. Fixed cells were mounted onto coverslips and imaged on confocal microscopes. **Results:** RA differentiates SK-N-SH cells into neuron-like cells that express a number of neuron-enriched proteins including Tuj1. Moreover, RA also increases the expression of several members of the PI3K/AKT/mTOR pathway in SK-N-SH cells. **Conclusions:** Our data suggests differentiation with RA gives SK-N-SH cells a neuron-like morphology and upregulates several critical signaling cascades. Together this suggests neuroblastoma cells may be a viable model to investigate the rapid antidepressant actions of NMDA receptor blockade.

Identifying a new player in germline apoptosis in Caenorhabditis elegans

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

Background: Apoptosis is the process of programmed cell death. In the C. elegans germline, over half of the developing germ cells are eliminated through "physiological" germ cell apoptosis. This elimination is hypothesized to provide the surviving germ cells cytoplasmic nutrients and space for growth. Since the entire mechanism of 'physiological' germ cell apoptosis process is not completely understood, identifying genes that are involved are crucial. We have identified an unknown role for the ELAV-type RNA binding protein ETR-1 in apoptosis. etr-1(RNAi) animals have a reduced brood size which is a result of an increased number of germ cells undergoing apoptosis in these animals. The role of ETR-1 in apoptosis will be further described in this work. **Methods:** RNA interference, Acridine Orange Assay, Immunofluorescence, Transmission electron microscopy. **Results:** Transmission Electron Microscopy (TEM) of etr-1(RNAi) animals confirms the increase in apoptotic cells, and identifies a defect in the gonadal sheath cells encapsulating the germ cells. Additionally, ced-1(e1735) engulfment mutants rescue the etr-1(RNAi) reduced brood size phenotype and co-depletion of ¬ced-1 and etr-1(RNAi) suppresses the increased apoptotic bodies in ETR-1-depleted animals. These data suggest that ETR-1 is involved in apoptosis, potentially the engulfment pathway. **Conclusion:** This implicated role of ETR-1 in engulfment during physiological germ cell apoptosis reveals a novel role for etr-1 and contributes knowledge to the existing apoptotic pathway. Ultimately, these studies will deepen our understanding of the role of ETR-1, and how this protein family can influence an organism's reproductive capability.

Isolation and characterization of bacteriophage Beatrice

Presenter's Name: India Bradley
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: India C. Bradley, Asia Riviere, Ashley Queen, Leon Dickson, Courtney Robinson

Background: Bacteriophages, or phages, are obligate, intracellular, ubiquitous parasites that infect bacteria and are not susceptible to antibiotics. Phages can be used for genetic

and epidemiological studies or therapeutics. Bacteriophages can be exploited as bacteriolytic agents against bacteria or used to develop viral proteins. The purpose of this study was to discover and isolate a phage using host bacterium U102. The results shown here will be used to manipulate, sequence, and characterize a novel phage. **Methods:** A sample of soil was collected at Howard's Administration Building (38.97N, -77.02W) and enriched for production of phage. The phage was purified using spot tests and plaque streaking methods. The titer and medium titer lysate were obtained to determine the concentration of the phage. An empirical test infection was conducted to determine the concentration of phage necessary to produce a high titer lysate (HTL). **Results:** Beatrice was isolated and purified from the soil sample. Beatrice produced plaques that were 1mm in diameter with a titer of 2.2 x 109 pfu/ml. The empirical test determined that 14.5 of a 10-7 dilution, yielded the best max web plate (a bacterial lawn exhibiting about 85% lysis via plaque formation). **Conclusion:** Using phage Beatrice, the HTL will be generated and a new titer will be calculated. The HTL will be used to isolate and characterize DNA using several molecular techniques. These methods will include electron microscopy, restriction digestion, and gel electrophoresis for visualization and analysis of the DNA.

Determining the Genetics and Presence of Phage Species Found at Founder's Library

Presenter's Name: Sayble Bradley
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Broderick Eribo, Leon Dickson,
Winston Anderson, Courtney Robinson, Adrian Allen

Background: Bacteria are small, unicellular microorganisms, usually a few micrometers in length that exist together in millions. Viruses are genetic elements that contain DNA or RNA. They require living host cells for replication and are classified by their host cells. Viruses that infect bacteria are bacteriophages. They are found in all biological environments and contribute immensely to the evolution of bacteria. The bacteria used in this study was U102. There are two main types of bacteriophages: lytic and temperate. The purpose of this experiment was to capture, tame, dissect, and analyze a novel phage that infects Bacterium U102. This is important because phages can be used as tools to move DNA around for cloning, mutation, and other laboratory techniques, they can be used to kill bacteria that are antibiotic resistant, and because they can potentially make some bacteria more dangerous. **Methods:** Putative plaques were tested first by conducting spot assay test and streaking. After those steps were completed a web plate was used to calculate titer and a medium titer lysate was created. **Conclusions:** The experiment has resulted in the production of an isolated phage that is approximately .02mm in diameter and a calculated titer of 5.3x107 pfu/ml. The phage has been named Palp10. There is currently an MTL, which will be used for upcoming empirical assays and to infect larger numbers of bacteria to obtain the HTL, which once obtained, will be used for all consequent procedures, including DNA isolation and electron microscopy.

Iba-1 as an Indicator of HIV-induced Neuronal Loss in the Hippocampus

Presenter's Name: Danielle Brewer
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Erin Walters, Heather Carry, Tiana Bowden,
Davionne Anderson, CeRelia Donald, Koen van Rompay,
Kristina D. Parisa, Mark Burke

Background: Pediatric human immunodeficiency virus (HIV-1) infection remains a leading cause of illness and mortality globally. Neurological complications of the infection are common and children are more susceptible to impairments than adults. Neurological characteristics of the infection suggest dysfunction in the frontal cortex and the hippocampus. Nonhuman primate models reflect similar neuropathological features to pediatric HIV-1 infection and allow an opportunity for the investigation of pathogenesis in humans. This study examines potential mechanisms of neurological damage in pediatric HIV infection through the determination of the inflammatory mechanism of a pediatric SIV Macaque model. **Methods:** Newborn rhesus macaques (Macaca mulatta) received intravenous inoculation with 100 tissue culture infectious doses 50% (TCID50) of SIVmac251 (n=4) or vehicle (control n=4) within 72 hours after birth. Plasma viral loads were quantified by real-time RT-PCR. After a 6-18 week survival time, the animals were sacrificed and the brains prepared for quantitative histopathological analysis. Serial-sections spanning the entire hippocampus were immunostained for Iba-1, a calcium binding protein that is specifically expressed in microglia in the brain. Iba-1 is a putative marker for activated microglia as an indicator of neuroinflammation. **Results:** Here we report morphological differences of Iba-1 positive cells in pediatric SIV infected subjects compared to age-matched controls. **Conclusion:** Loss of neurogenic capacity may contribute

to the neurocognitive decline associated with pediatric HIV infection. Results presented here offer a potential mechanism of neuronal loss. This model presents a platform in which to test therapeutic interventions aimed at ameliorating the negative consequences of HIV-1 in the CNS.

Alternative Nesting Materials for the Environmental Enrichment of C57BL/6 and BALB/c Mice

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

Background: The Guide for the Care and Use of Laboratory Animals recommends that mice are housed in an enriched environment. Nesting material is an acceptable form of enrichment for laboratory mice. However, it is difficult to visualize mice in the nest. In order to provide an enriched environment and the ability to visualize the mice, we hypothesize that transparent materials would be an improvement to traditional opaque materials. **Methods:** At 6 weeks of age, 12 C57BL/6 and 12 BALB/c female mice were separated into pairs, each receiving one of the following materials: shredded bubble wrap, cling wrap, polyester ribbon, nylon ribbon, cellophane shred, tunnel-shaped bubble wrap, a Nestlet™, or no nesting material. Nest quality and mouse body weights were recorded biweekly and weekly, respectively. After two weeks with the nesting material, feces were collected for corticosterone assays and new nest material was placed in the cages. **Results:** In both strains, nests made from nylon ribbon or polyester ribbon scored significantly higher than nests made from Nestlets™. However, neither improved the visibility of the mice. The mice were best seen when using a Nestlet™, bubble wrap, cellophane, or cling wrap as nesting material. No significant differences were found in weight gain or corticosterone levels. **Conclusions:** No material was found to be superior in both visibility and nest quality compared with Nestlets™, however, the high visibility with Nestlets™ may be due to poor nest quality. The materials tested may be substituted for opaque materials with no negative consequences.

A metagenomics Analysis of Colorectal Adenoma Samples Reveals Subdoligranulum Functions as potential Markers of Early carcinogenesis in African Americans

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

Coauthors: Hassan Ashktorab

BACKGROUND: Several studies highlighted the possible implication of the gut microbiota in colon carcinogenesis. However, none so far had established bacterial markers that associate with colon oncogenic transformation. **AIM:** To establish bacterial markers that associate with stool samples of African American colorectal adenoma patients. **MATERIALS & METHODS:** Stool samples from normal and adenomas patients (n=20) were collected from patients undergoing colonoscopy at Howard University Hospital. DNA extracts from the stool samples were used for sequencing on an Illumina MySeq machine at a depth of 15 million reads per sample. The generated data was filtered to remove the host's DNA sequence. The remaining bacterial sequences were assembled and annotated. The generated sequences were categorized into 200 Metagenomic Linkage Groups (MLGs) that assembled sequences with the same prevalence and directionality in the obtained sequencing data. The 200 MLGs were then used to determine those with discriminative power between adenoma and normal stool samples. Those with $p<0.05$ were considered to be significant. **RESULTS:** of the 200 defined MLGs, only 5 displayed a p value <0.05 (MLG100, MLG72, MLG94, MLG70; abundant in Normals and MLG41: abundant in Adenomas). MLG100, 72 and 94 are over-represented by Bacteroides while MLG70 is over-represented by Alistipes. When we consider lower abundance as well, Clostridiales also seem to be over-represented in the first three MLGs and Parabacteroides seem to be abundant in MLG70. A significant over-abundance in the adenoma samples, of the genus Subdoligranulum was noted in MLG41. **CONCLUSION:** We here defined an abundance in Bacteroides and Alistepes functions as associating with normal health colon while an abundance of Subdoligranulum functions in stools might reflect an oncogenic transformation in African American colorectal tissues.

Amoxicillin Drug Delivery by Functionalized SBA-15

Presenter's Name: Briana Brown
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Jahniece Williams, Shruthi Shyalama, Salam Titinchi

Controlled drug delivery systems afford the advantages of prolonging delivery, altering the side effects and optimizing the dosage. Current delivery systems are polymeric and are limited. They are less stable, more susceptible to degradation, and rapidly eliminate the drug. Mesoporous silica is a more effective agent for drug delivery because it is more resistant to organic solvents and microbial attacks. SBA-15 is a form of mesoporous silica with a honeycomb-like appearance and hundreds of empty channels called mesopores. The mesopores of SBA-15 can absorb or encapsulate large quantities of bioactive molecules and they have a tunable pore size that are ideal for controlled release. SBA-15 is also biocompatible due to its low toxicity and has a high affinity for phospholipids which increases its probability for intracellular uptake. For the purpose of this study, SBA-15 is used for controlled drug delivery of amoxicillin. Amoxicillin is a hydrophilic antibiotic used to treat upper respiratory tract infections, bone disorders, lung, skin, and ear infections. Two trials of SBA-15 were produced with P-123 triblock copolymer, tetraethyl orthosilycate and 2M HCl. The amount of 2M HCl differed for each trial with Trial 2 SBA-15 containing more HCl. Due to the inert nature of mesoporous silica, its surface must be functionalized in order to serve as a drug delivery system. Surface functionalization improves surface hydrophobicity, allows the control of surface-drug affinity and allows covalent coupling of protein or other biomolecules, such as antibiotics, to the surface. The two trials of SBA-15 were each functionalized with (3-aminopropyl) triethoxysilane (APTES) and N-[3-(Trimethoxysilyl)propyl]-ethylenediamine (TPED), resulting in four different functionalized SBA-15 nanoparticles. Amoxicillin was purified and loaded onto the functionalized and unfunctionalized SBA-15. Each sample of SBA-15 was dissolved in PBS buffer (pH 7) and incubated at 37°C to simulate bodily conditions to measure the amount of amoxicillin released from the SBA-15 at different time intervals.The SEM and TEM results showed the distinct mesopores of the SBA-15 samples and suggested a promising drug delivery system. The FTIR results confirmed the loaded and functionalized SBA-15. The BET and XRD results are still being processed. The next steps would be to create a standard curve for the amoxicillin release and determine the amount of amoxicillin released under simulated bodily conditions.

Funder Acknowledgment: This material is based upon work supported by the National Science Foundation under Grant No. HRD-1238466. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Muscadine Grape Skin Extract Inhibits Androgen-Independent Prostate Cancer Cell Growth, Inducing Cell Cycle Arrest, and Decereasing Migration By Targeting Heat Shock Protein40

Presenter's Name: Collis Brown
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Ezra Hackett

Previously we demonstrated that muscadine grape skin extract (MSKE), a natural product, significantly inhibited prostate cancer cell growth by inducing apoptosis through the targeting of phosphatidylinositol 3-kinase-Akt and mitogen-activated protein kinase survival pathways in androgen-responsive transformed human prostate cancer epithelial cell lines. However, the preventive effect of MSKE on more aggressive androgen-independent prostate cancer remains unknown. This study examined the effects of MSKE treatment using complementary PC-3 prostate cancer cell culture and xenograft models. MSKE significantly inhibited PC-3 human prostate cancer cell tumor growth in vitro and in vivo. The growth-inhibitory effect of MSKE appeared to be through the induction of cell-cycle arrest. This induction was accompanied by a reduction in the protein expression of Hsp40 protein and cell-cycle regulation proteins, cyclin D1 and NF-kBp65. In addition, MSKE induced p21 expression independent of wild-type p53 induced protein expression. Moreover, we demonstrated that MSKE significantly inhibited cell migration in PC-3 prostate cancer cells which was complimented by siRNA-HSP40 knock-down that also inhibited cell migration and growth. Overall, these results demonstrate that MSKE inhibits prostate tumor growth and migration, and induces cell-cycle arrest by targeting Hsp40 and proteins involved in cell-cycle regulation and proliferation. This suggests that MSKE may also be explored as a novel therapeutic in castration resistant prostate cancer.

Impact of Neuromodulationon Cellular Activity in Brain Cells: Glutamate Receptor System and Endocannabinoid Receptor System Interactions

Presenter's Name: Edward Brown
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Paul Austin, Brian Oliver, Ze-JunWang, Thomas Heinbockel

Metabotropic glutamate receptors (mGluRs) have been implicated in a number of neurological diseases such as stroke, epilepsy, schizophrenia, pain, Parkinson's disease, and Huntington's disease. Learning how to attenuate the effects of the neurotoxic effect of glutamate release in these pathological states is key for helping to identify treatments for the aforementioned diseases. Endocannabinoids have been shown to play a regulatory effect in neuronal cell firing and are prime candidates for a self-defense mechanism because of the known neuroprotective effects of exogenously applied cannabinoids. Here, we used patch-clamp electrophysiology to determine if endocannabinoids can exert a protective effect on brain neurons during contact with glutamate. We exposed mitral cells in the mouse olfactory bulb to the mGluR anatogonist, LY367385, and cannabinoid receptor antagonist, AM251. This resulted in a concentration-dependent increase of action potential firing in mitral cells. We then blocked ionotropic glutamate receptors and/or GABA-A receptors to determine the underlying cellular mechanism of this excitation evoked by blocking these two neuromodulator systems. We found that the increased mitral cell firing in the presence of mGluR antagonists and cannabinoid receptor antagonists was due to a glutamate-induced effect. By better understanding how the mGluR system and endocannabinoid receptor system interact, we will gain insight into how to enhance neuroprotective measures in combating mGluR-related neurodegenerative diseases.

Capturing, Isolating, and Investigating Almighty22 for DNA Isolation Using Host Bacterium U102

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

Coauthors: Courtney Robinson

Background: Bacteriophages, although extremely small and almost never thought of, are key factors in the field of phage genomics, which studies bacteriophages to find new strategies for research in many fields. A bacteriophage is a type of virus that only infects bacterial cells, and conducts its life cycle through these hosts. It can either follow the lytic pathway (in which the viral particles lyse the bacterial cell right after replication) or the lysogenic pathway (in which the phage incorporates its DNA into the bacterial host's DNA and replicates along with the bacteria until it inducts itself into the lytic cycle). The purpose of this Scientists Education Alliance- Phage Hunters Advancing Genomics and Evolutionary Science (SEA-PHAGES) research is to acquire a novel bacteriophage from the environment and eventually isolate the DNA and annotate the genome. Methods: The phage Almighty22 was found in the soil outside of The School of Business at Howard University, 38.92445 N, 77.02167 W. Using the enrichment method, the growth of the bacteria was encouraged allowing the phage to flourish. After streaking for several rounds, a pure phage population was generated. Results/Conclusion: This phage population in particular had three different morphologies and produced turbid plaques, signifying that it was a temperate phage. After DNA extraction, there was a very high concentration of DNA with an average value of 251.8 ng/μL. Research is still ongoing with Almighty22, and using restriction digest, it will be determined whether this phage is viable for sequencing and bioinformatics analysis.

The Idiosyncrasy of Bacteriophage

Presenter's Name: Devon Byrd
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Devon Byrd, Imazul Qadir, Ashley N. Queen, Leon Dickso, Courtney Robinson

Background: Bacteriophages are viruses that bind to the cell surface of their host bacteria, and initiate infection resulting in the amplification of phage DNA and production of new phage particles[1]. Phages are highly specific, only attaching to certain bacteria because of the specific receptors present on the cell walls of the bacteria. Phages are important because they can kill harmful bacteria from lysis through a process called phage therapy. Phage study can be applied in the medical field to cure bacterial diseases. In this particular study, "Bertha" will be characterized in order to ultimately determine if this particular phage can be used as a candidate for a model to treat medical ailments.**Methods:** A soil sample was collected from a location beside the Howard

University football field [38.92484N, 77.021194]. The phage was isolated after enrichment through the methods of spot testing and plaque streaking assays. From the plaque streak assay, a single phage population of was isolated. **Results:** The bacteriophage was titered in order to obtain a single phage population. It is still being titered. The agar plates demonstrate multiple plaque morphologies. **Discussion:** The Bacteriophage is still being characterized. The results show that the bacteriophage is getting closer to being isolated as the phage plaques continue to become more uniform.

The Interactions of Cyclooxygenases and Peroxisome Proliferator Activated Receptor - Alpha in the Brain during Angiotensin II Hypertension

Presenter's Name: Laura Campbell
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Previous results from our laboratory demonstrate that Peroxisome Proliferator Activated Receptor - alpha activation attenuates a slow pressor dose of Angiotensin II (Ang II). Within the CNS, Ang II promotes a hypertensive state by enhancing sympathetic neural outflow, altering the release of hormones involved in volume, salt, vascular, renal, and cardiac regulation, and modulating inflammatory processes. A wealth of evidence has emerged implicating Ang-II–induced reactive oxygen species (ROS) generation in the pathogenesis of hypertension. NAD(P)H (nicotinamide adenine dinucleotide phosphate) oxidase is currently viewed as the predominant source of Ang-II–derived ROS production in the brain. Our previous results suggest that superoxide dismutase-2 is decreased by Ang II while there was no change in superoxide disputes-1. Cycylooxygenase (COX)-derived prostanoids have been implicated in the development of hypertension, although the source and site of action remain incompletely defined. Tumor necrosis factor (TNF) - alpha has also been implicated in the development of hypertension. The goal of this project was to determine the role of COX-1, COX-2 and TNF-alpha in the brain of PPAR-alpha knockout and their wild-type controls during a slow pressor dose of Angiotensin II. We hypothesize that inhibition of COX-1 would attenuate mean arterial pressure in wild-type mice and not in PPAR-alpha knockout mice and that COX-2 will not attenuate blood pressure in PPAR-alpha knockout or wild-type mice. We also hypothesize that TNF-alpha levels will be higher in PPAR-alpha KO mice during Ang II treatment. Male (10 - 12 weeks old) PPAR-alpha KO mice and their wild-type (WT) controls will be implanted with biotelemetry devices and infused with a slow pressor dose of Ang II (400 ng/kg/min) for 12 days. We predict that our results will show PPAR-alpha activation is needed in order for a COX-1 inhibitor to reduce mean arterial pressure and that TNF-alpha levels are significantly elevated in PPAR-alpha KO mice during Ang II hypertension.

Disruption of Nrf2 Alters Brain Amyloid Beta Plaque Load in a APP+/PS1+ Mouse Model of Alzheimer's Disease

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

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

Core-Shell PCL/Silk-fibroin Nanofiber for Tissue Engineering: Combination of Biocompatibility and High Strength

Presenter's Name: Jianfei Che
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Tongxin Wang, Gary Harris, Laurence Chow

Background: Nanofibrous construction is the most promising tissue engineering platform because of its inherent and adequate simulation of the native extracellular matrix geometry. Poly(e-caprolactone) (PCL) is the common used material for nanofiber due to its biocompatible and biodegradable properties with excellent mechanical properties. However, as a synthetic biomaterial, PCL possesses hydrophobic surface and lacks functional groups, leading to difficulty for cell attachment and proliferation. Therefore, the research of core-shell nanofibers based on PCL has become an important direction. The core-shell nanofibers not only have the virtues of monolithic nanofibers, but also possess a choice of multifunctionalization for more efficient bio-application. **Methods:** PCL/Silk-fibroin (PCL/SF) core-shell nanofibers were prepared by coaxial electrospinning, resulting in the encapsulation of PCL nanofibers with SF sheath. Electrospinning was performed by a coaxial-tube spinneret, shown in the figure. A 10 kV voltage was applied to the needle from the high electric field. The distance from the needle tip to the aluminum foil collector was 9 cm. The spun coaxial PCL/SF fiber mats were immersed in methanol for 1 h to induce an amorphous to β-sheet transition of SF and dried in a vacuum chamber for 3 days to remove the solvent. **Results:** (1) SEM, TEM, EDAX, and XPS analysis indicated that an ideal core-sheath structure was obtained. The PCL core was conserved with no destruction at the presence of SF shell; (2) The contact angle of PCL/SF nanofibers decreased to 53°from 130°of PCL nanofibers due to the hydrophilicity of the SF shells. The PCL core provided good mechanical properties which is sufficient for practical applications in tissue engineering and (3) in-vitro release study indicated that the PCL/SF core-shell structured nanofibers are capable of releasing anti-inflammation drug of dexamethasone continuously over a period of more than 450 h. Compared to the monolithic PCL nanofibers, PCL/SF core-shell nanofibers exhibited a better sustained drug release behavior. **Conclusions:** The PCL/SF core-shell nanofibers ingeniously combined the virtues of PCL and SF fibers. The novel design has broad potential for application in tissue engineering. The core-shell nanofibers exhibited more hydrophilic property compared with monolithic PCL nanofibers. More important, the excellent mechanical property of PCL core can be preserved. It plays a crucial role in enhancing the mechanical performance of the composite fiber and broadens its bio-application.

Expression and Methylation in Posttraumatic Stress Disorder and Resilience; Evidence of a role for Odorant Receptors

Presenter's Name: Yuanxiu Chen
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Poster Presentation

Coauthors: Xin Li, Ihori Kobayashi, Daisy Tsao, Thomas Mellman

Post-traumatic stress disorder (PTSD) is a common and potentially disabling disorder that develops in 1/5 to 1/3 of people exposed to severe trauma. Twin studies indicate that genetic factors account for at least one third of the variance in the risk for developing PTSD, however, the specific role for genetic factors in the pathogenesis of PTSD is not well understood. We studied genome-wide gene expression and DNA methylation profiles in 12 participants with PTSD and 12 participants who were resilient to similar severity trauma exposure. Close to 4,000 genes were differentially expressed with adjusted $p < 0.05$, fold-change > 2, with all but 3 up-regulated with PTSD. Eight odorant/olfactory receptor related genes were up-regulated with PTSD as well as genes related to immune activation, the Gamma-Aminobutyric Acid A (GABAA) receptor, and vitamin D synthesis. No differences with adjusted significance for DNA methylation were found. We conclude that increased gene expression may play an important role in PTSD and this expression may not be a consequence of DNA methylation. The role of odorant receptor expression warrants further study.

Prevalence of Cerebrovascular Accident within African Americans of the Cobb Collection

Presenter's Name: Natalia Christian
Classification: Undergraduate Student
Presentation Type: Poster Presentation

In the African American community, cerebral vascular accident (or stroke) is one of the leading causes of death. Hypertension causes approximately 50% of ischemic strokes, which are caused by a development of atherosclerosis.

Studies show that African-Americans have the highest rate of hypertension in the United States. Stress can significantly contribute to the development of hypertension through recurrent blood pressure elevation and stimulation of the nervous system to produce large amounts of vasoconstriction hormones that eventually lead to elevated blood pressure. Socio-economical, sociological and psychological factors coupled with familial history in the African American community contribute to the development of this fluctuation in blood pressure and nervous response. From the clinical materials available on the Cobb Collection, I identify the individuals who reportedly died from ischemic stroke. I use additional resources to reconstruct the biological histories of a subset of individuals with stroke and relating ailments. By performing case studies on the affected individuals in the Cobb Collection and delving into their personal lives, the causes of hypertension and eventual stroke will be identified and placed in historical context. This information will provide insight into the progression of modern day environmental circumstances and treatments that have contributed to the clinical expression of cerebrovascular accident.

Population Status and Behavioral Ecology of Grivet Monkeys (Chlorocebus aethiops) in the Main Campus of Bahir Dar University, Bahir Dar, Ethiopia

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

Population structure and behavioral ecology surveys were conducted of the grivet monkey (Chlorocebus aethiops) at the main campus of Bahir Dar University. The monkeys have been a consistent pestilence upon the local community and university residents, but their unique behavioral patterns and beneficent ecological impact necessitates their preservation and study. Research was conducted in order to determine if interventions are necessary to reduce conflict between the residents of Bahir Dar University and the grivet monkeys. Structured questionnaires were also created and distributed to local residents to determine their assessment of the grivet monkey's overall ecological impact on the flora and fauna of Bahir Dar University. The study was then compared to the 2008/2009 assessments of the grivet's population status and behavioral ecology, to determine if there were any significant trends in the species' population or behavioral ecology (Ejigu 2010). The study found that the monkey population dramatically increased to approximately 80 members, and the proportions of each type of individual have changed drastically. In addition, the study found the monkeys fed on malarial-vector mosquitoes, and invasive plant species, helping to control their population. However, the feeding habits of the monkeys have also changed since 2009 to increased dependence on human foods and garbage. In conclusion, while the monkeys have been determined to have a potential net positive impact on the ecology of the floral and faunal diversity of the main campus of Bahir Dar University, action needs to be taken in order to educate the population of the ecological benefits of the monkeys. In addition, further research is necessary in order to determine the degree of impact of the monkeys on the prevalence of mosquito and insect populations, and the spread of invasive plant species. This researcher would like to acknowledge the National Science Foundation, Howard University, Bahir Dar University, Dr. Dessalegn Ejigu, and Tilahun Keflayew for making this research possible.

Central Nervous System De-myelination in Pediatric SIV Infection

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

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, axons in the frontal and motor cortices as well as the hippocampus. 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. Matched sections from the frontal cortex, motor cortex and hippocampus were stained with gold chloride, a putative marker for myelin, SMI-32 and neurofilament light chain immunoreactivity to examine fiber integrity. Preliminary data suggest significant reductions in myelination and myelinated fibers

in the frontal cortex, motor cortex, and hippocampus. 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. Neuronal loss maybe exacerbated by loss of central nervous system myelination. These data will provide a neuroanatomical substrate for reduced radial diffusivity as well as reported multiple sclerosis-like signs in HIV-1 infected children.

Support: District of Columbia Developmental Center for AIDS Research (P30AI087714) and LathamFoundation Grant; and 1R01DE019064 (NIH/NIDCR) and 2P30 AI050410.

Analysis of Grave Soil Samples found in the New York African Burial Ground

Presenter's Name: Keely Clinton
Classification: Graduate Student
Presentation Type: Poster Presentation

The New York African Burial Ground is the location of the greatest number of free and enslaved African burials in a common place during the 17th and 18th centuries. It is speculated that the burial ground was more than likely established by Negro frontier residents initially being called the "Negroes Burial Ground". The burial ground was specifically found on a lot in lower Manhattan (Block 154) surrounded by Broadway to the west, Duane St. to the north, Reade St. to the south and Elm St. to the east, with important landmarks such as Crolius pottery to the northeast and Collect Pond to the east, as early maps indicate. Location must be taken into account because it determines the composition and condition of the grave soil samples. In this study we are able to observe the origin of each grave sample, their orientation in relation to each other, the depth at which the grave soil was obtained (between 6ft. and 25 ft.) and whether or not there was an individual/ partial remains/ artifacts associated with each sample. We are also able to observe the stratigraphic analysis based on differences in color and type of the soil and archaeological records. Most of the 49 grave samples are derived from the Middle Group of the African Burial Ground. The Middle Group is documented as the collection of burials located throughout the excavated site except north of the fence line during the time the burial ground was extensively used.

Chinks in the armor: Is heavy metal uptake an effective defense for plants?

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

Coauthors: Mary McKenna

Background: Plants display a variety of defenses against herbivores. Alyssum corsicum and Alyssum murale (Brassicaceae) possess trichomes (hairs), which serve as a physical defense and glucosinolates that provide chemical defense against herbivores. But these species also evolved the ability to accumulate a toxic heavy metal (Ni) from the soil to aid in defense. This Honors Thesis investigates the impacts of feeding choice and behavior of a specialist insect herbivore, Murgantia histrionica, on Alyssum plants grown with and without Ni. **Methods:** Two long-term exposure trials explored behavioral responses of Murgantia, and investigated whether the presence of Ni in Alyssum reduces herbivore damage. In each trial, multiple cages were set up for daily observations of 4 M. histrionica with 2 Alyssum plants (with and without Ni). **Results:** The size of plants did not differ in treatments with and without Ni at the start of each trial. After exposure to the herbivore, A. corsicum plants with Ni had greater biomass remaining than plants without Ni, suggesting that Ni provided an effective defense for this species. In A. murale, plant biomass after herbivory was similar in plants with and without Ni. **Conclusions:** These results illustrate the complexity of plant-herbivore interactions and the ecological importance of varied plant defense strategies.

KEY WORDS: herbivory, Ni-hyperaccumulator, Murgantia histrionica, Alyssum murale, Alyssum corsicum

---

Determining the Microbiota Composition and Presence of Plasmodium Species in Ethiopian Anopheles Mosquitoes

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

Around 1 million people worldwide die yearly from malaria, which results from infections by Plasmodium, a protozoan pathogen transferred through the bite of the female Anopheles mosquito. It is known that the microbial communities of insects impact the ability of foreign microorganisms to colonize their gastrointestinal tract, however, it remains unclear

what makes one mosquito more conducive to Plasmodium colonization than another. In this study, we hypothesize that mosquito midguts that contain Plasmodium have different microbiota than non-carriers and that microbiota structure may impact susceptibility to colonization and therefore the capacity to transmit the pathogen. DNA was extracted from the abdomens and salivary glands of over 200 Ethiopian Anopheles mosquitoes and was subjected to amplification and sequencing of the 16S rRNA gene in order to establish microbiota structure. Nested polymerase chain reaction (PCR) was used to screen for the presence of Plasmodium. PCR products from samples that were positive for Plasmodium underwent additional rounds of PCR in order to detect the presence of DNA from Plasmodium species that specifically infect humans. Presence of the Plasmodium species in the DNA samples was indicated by bands of a specific size in the agarose gels. Initial PCR screening indicated the presence of Plasmodium DNA in several samples. Future directions will include confirming these data, organizing the microbiota based on carrier status and the analyzing added mosquito samples.

Immune molecules can regulate motivation for binge drinking in alcohol-preferring rats

Presenter's Name: Philippe Darius
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Philippe J. Darius, Irina Balan, Laure Aurelian, Marjorie C. Gondré-Lewis

Uncontrolled, excessive alcohol drinking remains a significant problem among certain individuals, and nationwide. The precise molecular mechanisms that mediate the propensity to compulsively seek alcohol remain elusive. Recently, immune molecules such as toll-like receptor 4 (TLR4), and monocyte chemotactic protein 1 (MCP-1) have been implicated in neurobehavioral pathways of reward and addiction, and possibly alcoholism. The purpose of this study was to examine how the chemokine, CX3CL1 (fractalkine), which acts downstream of TLR4 and MCP-1, might regulate alcohol drinking, and if this occurs in a sex-dependent manner. Methods: Alcohol-preferring (P) and non-preferring (NP) rats were trained in an operant chamber to lever press for 10% ethanol on an FR4 schedule for 90 minutes, i.e., 4 lever presses required for alcohol delivery. When stabilized on an FR4 schedule, P rats underwent stereotaxic surgery to infuse an HSV vector coding for small inhibitory RNA against TLR4, fractalkine or a scrambled sequence into the nucleus accumbens (NAc), and were re-exposed to the FR4 operant paradigm. Results: Compared to male rats, females pressed significantly less for 10% alcohol/kg. P rat intake of 10% EtOH was significantly reduced following TLR4 infusion, but was unchanged or greater than scrambled control following siFrk, in a sex independent manner. Conclusion: These data show that whereas siTLR4 may act directly to inhibit alcohol drinking, siFrk enhances this behavior, implicating that normal fraktalkine may function in the brain serves downstream of TLR4 to inhibit drinking.

Small compounds regulating Arabidopsis RACK1A protein modulates growth hormone Gibberellin signaling pathways

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

Background: RACK1 is a WD repeated scaffolding protein that is highly conserved in eukaryotes. In plants, it has been shown to regulate environmental stress and growth hormonal responses. There are three isoforms of this protein: RACK1A, RACK1B, and RACK1C. Genetic knockout of Arabidopsis RACK1A resulted in drought resistance in the model plant. It is hypothesized that chemical knock-out of the RACK1A protein would help in conferring drought resistance in crops. The crystal structure of the RACK1A protein revealed the Y248 tyrosine phosphorylation site is key for its function. Through in silico studies, small compounds SD29 and SD29-12 were isolated that can potentially bind to the Y248 pocket to prevent stress based phosphorylations. RACK1A plays a crucial role in numerous signal transduction pathways in Arabidopsis, including that of gibberellin (Ullah et. al, 2008). Gibberellin, or gibberellic acid, is a plant hormone that induces seed germination and stalk and stem lengthening. The purpose of this investigation is to elucidate the mechanism of RACK1A in gibberellin signaling in Arabidopsis thaliana using these small compounds. **Methods:** After sterilization, seeds were treated with the endogenous gibberellin synthesis inhibitor paclobutrazole. Seeds were then planted in either liquid MS media or solid MS media plates, containing various combinations of SD29, SD29-12, and gibberellin. Seedlings were monitored for onset of germination, as well as stalk lengths, cotyledon coloring, and root lengths. **Results:** Preliminary studies suggest that SD29-12 upregulates gibberellin signaling through RACK1A, while SD29 appears to downregulate GA signaling. **Conclusions:** We

hypothesize that SD29-12 stabilizes RACK1A, allowing it to achieve a lower energy conformation that is advantageous for interactions with other signaling proteins; similarly, we believe that SD29 destabilizes the RACK1A protein, and thus, hampers GA signaling through this protein.

Collection, Isolation, and Purification of a Phage, Specific to U102, From the Environment

Presenter's Name: Gabrielle Davis
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Background: A bacteriophage is a virus that infects bacteria and can be found wherever bacteria are present. Studying bacteriophage helps aid in phage therapy, understand basic molecular biology, and harness bacteriophage to function as an antibiotic to combat specific diseases. The purpose of this research is to understand bacteriophage and how they respond to different environments. The isolated DNA can be used to advance research in molecular and microbiology. **Method:** The purpose of this lab is to isolate and characterize a bacteriophage from the environment using molecular and microbiological techniques. This is done through a series of streaking and plating until an ideal titer plate of 20-200 plaques is reached. Once the titer is successful, a medium-titer lysate (MTL) is completed to receive perfect webbed plates. Once receiving an MTL, a high-titer lysate (HTL) will be completed in order to advance onto isolating the DNA and sequencing the genome. **Results:** The previous 5-plate infections using the MTL did not produce the ideal webbed plates. Because of that, the titer and empirical test was completed for a second time to produce new calculations that would result in five webbed plates. **Conclusions:** The MTL is being used in the 5-plate infection of the bacteriophage and U102 to get the ideal webbed plates that will be flooded for the HTL. The HTL will be used for the rest of the experiments carried out in the laboratory.

The Isolation and Purification of Bacteriophage LundynGrace from a Soil Sample Outside of Blackburn Center Using Bacterium U102

Presenter's Name: Lundyn Davis
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Lundyn Davis, Awa Ndiaye, Amoge Ezike, Nichelle Jackson, Ayele Gugssa, Winston Anderson

Background: Bacteriophages, or phages, are viruses that infect bacteria. For replication, phages undergo a lytic or lysogenic life cycle, and respectively produce a clear or turbid area of lysis, plaque. A novel bacteriophage was isolated from the environment using Bacterium U102, purified, and its DNA was characterized using electron microscopy. **Methods:** A soil sample was collected from outside of Blackburn Center, cultured with Bacterium U102 for 48 hours, and plated. To isolate a single phage population, 15 rounds of streaking technique was performed: the plaque was touched with a sterile wooden stick used to create grooves in three separate sections, decreasing in concentration. Phage titer assay, performed by increasingly diluting the phage population, resulted in a web plate of 85-90% lysis which was flooded to create the Medium Titer Lysate, MTL. The MTL is used to create a plate that is 100% lysed to form the High Titer Lysate, HTL. From the HTL, DNA is extracted and analyzed. **Results:** Complete lysis often caused the false appearance of a pure population. The phage LundynGrace displayed a consistent morphology of small plaques, less than a centimeter in diameter, circular, and clear. **Conclusion:** The presence of clear plaques indicates that LundynGrace replicates through the lytic life cycle. This replication process appears to be particularly aggressive because the phage completely lysed a bacterial lawn within 24-48 hours. Electron microscopy will result in the structural information of the phage. Analysis of genomic DNA with restriction enzymes will further characterize the phage and subsequently be used for bioinformatic analysis.

SEA-Phages Research

Presenter's Name: Emanuel Demissie
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Adrian Allen, Broderick Eribo, Winston Anderson

Background: PHAGES research pertains to in depth analysis of bacteriophages, which are viruses that solely infect bacteria. Results from experimentation has potential to benefit the world because they pertain to the specific properties of bacteriophages including how they pass on genetic information which can be used to advance medicine and gene therapy. The goal of this research was to ultimately gather more knowledge on the characteristics of bacteriophages through DNA analysis. **Methodology:** Bacteriophages were isolated from soil found on Howard University's campus.

The isolation steps included mixing the soil with phage buffer and filter sterilizing it to make a single solution. The mixed population was then subjected to purification procedures such as streaking and titering with the ultimate goal of isolating a single phage population. The phage population was then stored in a medium titer lysate, which was used in the generation of a high titer lysate. **Results/Conclusion:** The isolated phage, Lyser97, has multiple morphologies and is a particularly aggressive strain in terms of its lysing ability creating 0.5 cm diameter plaques in less than 24 hours' incubation time. The next step of the research is to isolate DNA from the phage and conduct molecular biology analyses. By doing so, more knowledge on the specific properties of this bacteriophage will be discovered.

Profile and initial elemental determination of soil samples collected from the New York African Burial Ground Remains Invasive

Presenter's Name: Candice Duncan
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Soil analysis is an important tool to understand the bioanthropology of human habitation and grave locations. Analysis of metals, phosphorus and other molecules can built a portrait of the environmental conditions in which populations of interest existed. The New York African Burial round and the W. Montague Cobb Research Laboratory each contain numerous grave soil samples that can enhance current understandings of the daily lives of these 17th and 18th century populations. The initial determinations on the grave soil samples includes:

1. Determination of total soil mass collected. The one bag soil sample will be weighed, soil transferred into a sealed glass container and cloth bag weighed. The cloth bag will also be transferred into a sealed glass container for future chemical analysis.

2. A grab sample of X grams will be collected, and set aside in a sealed glass container, for future chemical and microbiological analysis.

3. A sieving process will be used to determine the particle size of soil composition to classify soil material (i.e. sand, silt, etc.).

4. A pictorial classification will be created to identify and separate all soil and non-soil (i.e. hair or bone) materials with the remaining sample.

An EPA Method 3052 will be used for the acid digestion of the soil followed by atomic absorption (AA) spectroscopy to determine the iron, lead, copper, magnesium, zinc, calcium and silver compositions of the grave soil. These data will permit complex analytical chemistry assessments upon which we can construct a rich portrait of the environmental toxins to which these individuals were exposed and identify possible gene X environment interactions at this site.

The Isolation, Purification and Characterization of Arah, a Bacteriophage, Isolated from a Howard University Soil Sample

Presenter's Name: Ngozi Elobuike
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Background: The term bacteriophages and is used to describe obligate intracellular parasites which are the most prevalent biological entities on earth. Students in Phage Hunters Advancing Genomics and Evolutionary Science Program work to isolate, and characterize phages to explore their biodiversity on Howard University's campus. The manner in which these are observed are as through plague clearing on a lawn of bacteria which can either indicate a lysogenic or lytic life cycle. Depending on the results yielded from the series of experimental procedures, they can be successfully, isolated and characterized. **Methods:** A 15 mL soil sample was collected from underneath the Howard University sign on Georgia Avenue at 20.768493 N/ 19.3653651W. Afterwards the sample aseptically underwent enrichment to encourage infection and growth of the bacteriophages from the environment. Then from the sample a single population of bacteriophages is isolated through spot assay, plaque streaking and titer assay to identify a purified sample of the bacteriophage. **Results:** Initial isolation of the bacteriophage Arah from the environment yielded plaques, 3 mm in diameter with clear, circular uniform morphologies on the agar plate following titering. This indicate the presence of viable bacteriophages from which a medium titer lysate was derived. The soil sample obtained from the Howard University sign was successfully titered, resulting in the identification of a potentially lytic bacteriophage, now named Arah. **Conclusion:** The subsequent titer assay will yield a high titer lysate to isolate genomic DNA which can then be used to characterize the phage through electron microscopy and DNA sequencing.

The Isolation, Purification and Characterization of 'UE1298' Bacteriophage

Presenter's Name: Ugonna Ezeanya
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Louurds Fernando, Adrian Allen, Boderick Eribo, Courtney Robinson,

Background: Bacteriophages are bacterial viruses. There is a great diversity of phages that have been discovered while many have not. Research on phages is important because it could lead to new medical breakthroughs in fighting pathogenic bacteria that have become resistant to antibiotics. In the HU PHAGES program, the goal of each student is to isolate, purify and characterize a phage. **Methods and Materials:** The 'UE1298' bacteriophage was isolated from 15g of soil that was collected from Cook Hall, 38˚55'31"N 77˚1'17"W at 250ft Elevation. The phage was isolated through enrichment procedure which produced various phage populations with different morphologies of plaques. The plaques were streaked until a single phage population; the 'UE1298' phage was isolated. A titer was done to determine the plaque forming units of the phage and further purify it. A Medium Titer Lysate(MTL) with a titer of 1.95 x 10^8pfu/mL was obtained by flooding a web plate from the titer, and a High Titer Lysate(HTL) was harvested from the MTL. The phage DNA was extracted from the HTL and characterized through restriction enzyme digestion and gel electrophoresis. **Results:** 'UE1298' is specific to Brevibacillus strain U102 and exhibits a dominantly lytic lifestyle. It forms 195 clear plaques with a diameter ranging from 2mm to 4mm. The phage is virulent as the large plaques resulted in complete plate lysis upon further incubation. It has a DNA concentration of 204.3ng/µl and a purity of 1.73. **Conclusion:** In order to further understand and eventually database 'UE1298', further characterization will be done.

The Role of ABCG2 in Prostate Cancer

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

Coauthors: Wendy Huss, Neha Sabnis

The cancer stem cell concept suggests that there is a small population of stem cells that is responsible for the growth and progression of cancer. It is hoped that targeting and killing this small fraction of cancer cells might reduce tumor burden, or, at least, improve survival. ABCG2, an ATP binding cassette transporter, effluxes xenobiotics, steroids, hormones, and chemotherapeutic drugs out of cells. This protects calls from the cytotoxic effect of a wide range of toxic insults and has been proposed to play a central role in tumorigenesis and metastasis. In the prostate, ABCG2 expressing cells constitute ~1% of the basal cell population. ABCG2-expressing cells survive androgen deprivation therapy. Additionally, castration resistant prostate cancer (CRPC) is associated with elevated ABCG2 expression. **HYPOTHESIS:** The hypothesis of this study is that ABCG2-expressing prostate stem cells maintain their undifferentiated state by effluxing androgens. We propose that inhibiting the ABCG2 transporters increases the intracellular androgen levels. This increase causes the increased nuclear translocation of the androgen receptor (AR), and an eventual reduction in the cell growth response mediated by AR. **METHODS:** ABCG2-expressing cells were separated by magnetic separation and intracellular androgen levels were analyzed by thin layer chromatography (TLC). Nuclear translocation of AR was studied by immunofluorescent staining and ABCG2 mediated reduction of cell growth response was studied by sphere forming assay. Real time PCR was done to determine the m-RNA levels of differentiation markers (CK8, CK18 and PSA). **RESULTS:** TLC analysis revealed that androsterone, a DHT metabolite, and DHT are ABCG2 substrates. Pharmacological inhibition of ABCG2 causes increased levels of intracellular androgens followed by increased nuclear translocation of AR. Furthermore, the sphere forming assay revealed that ABCG2-expressing cells treated with DHT formed more and bigger spheres compared to cells treated with both DHT and KO143 (ABCG2 inhibitor) and ABCG2-non expressing cells. mRNA levels of CK8 and CK18 were slightly elevated in ABCG2 expressing cells treated with both DHT and KO143 compared to cells treated with DHT alone. **CONCLUSION:** This data suggests that inhibition of ABCG2 mediated androgen efflux causes prostate cell differentiation mediated by AR. The successful completion of the study may lead to the incorporation of ABCG2 inhibitors in prostate cancer therapy.

Potential non-canonical roles of the 26S ubiquitin proteasome system in C. elegans reproduction

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

Coauthors: Anna Allen

Background: The 26S ubiquitin proteasome system (UPS) functions as the major proteolytic machinery that maintains proteostasis in living systems by degrading misfolded or damaged proteins and regulatory proteins. Failure of the UPS to properly execute its function can lead to diseases such as neurodegenerative diseases and cancer. There is evidence that the 19S regulatory particle (RP) of the 26S proteasome engages in non-proteolytic functions. A study conducted in Caenorhabditis elegans by Allen et al. (2014) showed that specific proteasome components when co-depleted with the inhibitory kinase WEE-1.3 via RNAi suppress the infertility phenotype caused by wee-1.3(RNAi). We hypothesize that the 26S proteasome may act in a non-canonical manner in C. elegans reproduction potentially via direct or indirect interactions with WEE-1.3. **Methods:** RNA interference, proteasome inhibition, standard brood size analysis, immunohistochemistry and confocal fluorescence microscopy. **Results:** We find that 8 out of 16 of the C. elegans 19S RP components suppress the wee-1.3(RNAi) infertility. Live imaging data shows knockdown of certain proteasome component genes results in alteration of WEE-1.3 subcellular localization in oocytes and embryos, and in aberrant localization of maternal proteins involved in the oocyte-to-embryo transition. **Conclusions:** If proteasome inhibition in animals treated with wee-1.3(RNAi) fails to suppress the WEE-1.3 depletion infertility, this, combined with our presented results, will strongly suggest that the general proteolytic function of the proteasome has no effect on the rescue of wee-1.3(RNAi) infertility. We have potentially identified a non-canonical, non-proteolytic role for the proteasome during C. elegans reproduction.

Identifying the domain of PTPN14 responsible for LATS1 Activation

Presenter's Name: Derek Fitzgerald
Classification: Undergraduate Student
Presentation Type: Poster Presentation

The Hippo signaling pathway regulates cellular proliferation and survival, therefore playing a significant role in normal cell progression and tumorigenesis. Important variables in this pathway are YAP/TAZ, transcriptional co-activators whose dysfunction induces epithelial-to-mesenchymal transition (EMT) and malignant transformation. Thus, it is pivotal to translate the mechanisms that play a role in the regulations of YAP/TAZ at various levels. It was previously reported that YAP/TAZ are regulated by upstream kinases LATS1/2, which prevents YAP/TAZ from entering the nucleus. Zhang lab recently identified a novel YAP interaction protein, non-receptor tyrosine phosphatase 14 (PTPN14) and demonstrated that PTPN14 is able to activate LATS1, thus inhibit YAP oncogenic functions. However, when the PTPN14 phosphatase domain (C-terminus) is deleted, the activation of LATS1 is diminished. This suggests that the PTPN14 phosphatase activity may important for LATS1 activation. This summer, we attempted to decipher whether the PTPN14 phosphatase activity is critical for LAST1 activation. To generate the PTPN14 phosphatase-dead mutant, we performed site mutagenesis experiment and successfully generated the PTPN14-D1079A phosphatase-dead mutant. To test the effects of PTPN14-D1079A on LATS1 activation, we have co-transfected LATS1 with either PTPN14-Wt or PTPN14-D1079A mutant into HEK293T cells. Western Blot result showed the LATS1 phosphorylation (LATS1 activation) increased in either PTPN14-Wt or PTPN14-D1079A transfected cells and indicated that LATS1 activation is independent from PTPN14 phosphatase activity. Further studies will be needed to narrow down the exact portion of the C-Terminus that is responsible for LATS1 activation in the Hippo Signaling Pathway.

Multiple paternity within Pomacea canaliculata (Caenogastropoda: Ampullariidae)

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

Coauthors: Zahra Mansur, Kenneth Hayes

Background: Polyandry, females mating with more than one male, often results in multiple paternity, which is characterized by multiple sires in a single brood of offspring. Multiple paternity occurs in a wide variety of taxa and has been shown to increase genetic variation within a population and help contribute to the maintenance of long term genetic diversity, an important component of evolutionary and invasive success. Some species of Ampullariidae, freshwater snails, are polyandrous, but the frequency of multiple paternity and its significance in population success remains unknown. One species of ampullariid in particular, Pomacea canaliculata, is known as one of the world's worst invasive species. Its success as an invasive may be, in part, facilitated by their reproductive strategies. To investigate this hypothesis we are examining the frequency of multiple paternity in an invasive population of Pomacea canaliculata. **Methods:** In July 2015, 615 hatchlings from 5 egg clutches were collected

from Kawai Nui Marsh on the Island of Oahu. Species identities of egg clutches were confirmed using mtDNA COI gene sequenced from four individuals per clutch. The occurrence and frequency of multiple paternity within each clutch was determined by genotyping hatchlings using five microsatellite loci. **Results:** Phylogenetic analyses identified all five egg clutches as P. canaliculata. Amplification of optimized microsatellite loci reveal high levels of allelic diversity in preliminary analyses. C**onclusion:** Continued analyses will determine the frequency of multiple paternity within P. canaliculata and provide insights into the invasive success of this species.

Case report: Unusual presentation of sarcoidosis: Encephalopathy and pancreatitis

Presenter's Name: Agazi Gebreselassie
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Rachel Dagne, Babak Shokrani, Alem Mehari

Introduction: The usual presentations of sarcoidosis are bilateral hilar adenopathy, pulmonary reticular opacities, skin, joint or eye lesions. There are quite few case reports describing sarcoidosis presenting with severe hypercalcemia and pancreatitis. We describe a case of sarcoidosis presenting for the first time with metabolic encephalopathy and severe pancreatitis. **Case presentation:** 53-year-old female with past medical history of hypertension, recently diagnosed type 2 diabetes mellitus and dyslipidemia presented with a 3-day history of generalized body weakness and 1-day history of vomiting, diffuse abdominal pain and altered metal status. Investigations on admission revealed BUN 48, serum creatinine 3.7, calcium 16.7, Amylase 678, lipase 912. Intact PTH levels of 23 (normal), PTH related protein 49 (normal value 14-27), Vitamin D 1,25 89 (normal value 18-72), serum angiotensin converting enzyme level 175 (normal value 9-67). CT Chest without contrast showed Diffuse mediastinal/ subcarinal/hilar. CT Abdomen revealed enlarged pancreatic head suggestive of pancreatitis . CT of the brain was within normal limits. The patient was admitted to medical ICU with the impression of acute metabolic encephalopathy, severe pancreatitis and acute kidney injury all ascribed to severe hypercalcemia. Patient was started on aggressive intra venous fluid hydration and intravenous calcitonin after which the altered mental state resolved and hypercalcemia improved. Further work up for hyper calcemia with bronchoscopy guided FNA cytology from hilar lymphnodes revealed non caseating granuloma, suggestive of sarcoidosis. Patient was started on predenson 20 mg po daily. **Conclusion:** Sarcoidosis might rarely present with severe hypercalcemia resulting in altered mental status, acute kidney failure and pancreatitis. It is prudent to consider the diagnosis of sarcoidosis in a patient presenting with hypercalcemia. Bisphosphonates or calcitonin is used to acutely treat hypercalcemia. Long term management is steroid.

Future Possibilities of Cancer Incidences in PCBs-exposed Children of Slovakia: An assessment from experimental and epidemiological gene expression studies

Presenter's Name: Somiranjan Ghosh
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Poster Presentation

Coauthors: Christopher Loffredo, Partha Mitra, Tomas Trnovec, Lubica Murinova, Eva Sovcikova, Eric Hoffman, Sisir Dutta

Background & Aim: The risk of cancer due to PCBs exposure in humans is highly controversial. In Slovakia, whose population is the worst exposed to Organochlorines (viz. PCBs here), we have evaluated a cohort for disease and disorder development. The main aim of this work is the develop early disease cancer biomarkers that could shed new light on possible mechanisms for the genesis of cancers under such chemical exposures, and identify potential avenues for prevention. **Methods:** Microarray studies of global gene expression were conducted on the Affymetrix platform using Human Genome U133 Plus 2.0 Array along with Ingenuity Pathway Analysis (IPA) to associate the affected genes with their mechanistic pathways. High-throughput qRT-PCR Taqman Low Density Array (TLDA) was done to further validate the selected genes on the peripheral-blood mononuclear blood mononuclear cells of exposed children from the study cohort in Slovakia (n=71), as well as in vitro exposure studies. **Results & Discussion:** Despite its controversies, the epidemiological and experimental results were weighted towards a strong correlation between tumor promotion, shown by the connectivity of PCB exposure with common differentially expressed genes (TP53, MYC, BCL) from both in vitro and Population studies, in the important signaling pathways, (e.g.; Molecular mechanism of Cancers, Prostate Cancer Signaling, Ovarian Cancer Signaling, P53 signaling, Oncostatin M signaling) and their respective functions (Fx), (viz., Prostate Cancer, Mammary tumor,

progression of tumor, growth of tumor, non-Hodgkin's disease). This puts the weight of evidence towards the possibility of cancer causation, and has been corroborated with other epidemiological findings.

Isolation of Bacteriophage S23 from Soil

Presenter's Name: Shinelle Gilbert
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Background: Although much is yet to be understood about the variation and the possible factors contributing to this process, the process of bacterial infection with bacteriophages is well elucidated.This study was designed with the purpose of isolating a specific phage that will in soil. This study was designed with the purpose of harvesting a plethora of phages from soil, isolating a single and uniform phage that will be used to infect a host (Rodococcus spp strain U102) and characterizing it. **Methods:** A soil sample was collected from the valley at the exact location of (N 38.922033º E -77.019848º). The soil underwent an enrichment procedure in order to enhance the chances of finding phages that will infect U102. Spot testing was used for initial plaque assay to distinguish the putative plaques. The occurrence of clear zones of inhibition on the bacterial lawn confirmed whether or not phages were present, and in this case they were. The streak test was later conducted when the plaques were later streaked onto agar plates four times to establish purity. This was followed by titter-assay. Medium Titer Lysate (MTL) and High Titer Lysate (HTL) were determined in order to obtain the optimum titer lysate for DNA extraction protocol. **Results/Conclusion:** Phage S23 produced a morphology of tiny, round, and clear plaques due to the phage's ability to undergo the lytic life cycle. The plaques were approximately 3.2 mm in diameter. After the extraction process, S23 was noted to have a DNA concentration of 30.8ng/uL. Restriction Enzyme digestion with EcorI, BamhI, HindIII, ClaI, and HaeIII revealed multiple bands. Effort to sequence the phage S23's DNA and annotate it is underway.

The Isolation and Purification of Kyrionna-97, a novel phage, specific to U102 Bacterium

Presenter's Name: Kyrionna Golliday
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Kyrionna Golliday, Aaliyah Meade, Amoge Ezike, Nichelle Jackson, Ayele Gugssa, Winston Anderson

Background: Bacteriophages are viruses that are host-specific to bacteria. They infect specific strains of bacteria by attaching to the cell surface of the host bacteria and injecting their DNA into the bacteria. Upon infection, the phage can carry out one of two replication lifestyles, either lytic or lysogenic. During the lytic replication process, phage DNA enters the bacteria host, replicates, assembles new copies of itself, and leaves after the host cell lysis. The lysogenic replication process involves injection of DNA, and either inserts into the host cell's chromosome or replicates inside of the host cell. These two processes create a plaque, an area of lysis on a bacterial lawn culture produced by a phage. Phages that replicate through the lytic process yield clear plaques, while those that multiply through the lysogenic replication leave turbid plaques. **Methods:** This study was performed by collecting a soil sample from the Howard University Hospital and using this soil sample to isolate one, single pure phage population through rounds of streaking. **Results:** The phages were yielding different sized plaques, ranging from small to big. However, after successive rounds of streaking the purified phage population yielded clear, medium sized plaques with circular halos. **Conclusions:** As shown by the results, Kyrionna-97 is lytic. This phage is a fast growing, aggressive phage, which is proven by its ability to lyse U102 bacterial lawns at such a rapid rate. In future experiments, electron microscopy will be used to examine the phage, and the phage's DNA will be isolated and purified for restriction analysis to decide whether it is a viable candidate for bioinformatic analysis. Bacteriophage research could show promising results in the field of Therapeutics, where bacteriophages can be used together with other antibiotics to treat or control bacterial infections. These promising results are what make bacteriophage research so important.

Miconia dulcis: A New Species of Melastomataceae found in Bolivia

Presenter's Name: Kristie Grant
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Janelle Burke

Miconia is a genus in the Melastomataceae family. Genera that comprise this family can exist as shrub, tree, and herb habits. A description featuring a new species of Miconia found in Bolivia; Miconia dulcis, is presented. Miconia dulcis is a shrub named for the sweet scent of its inflorescences (flowers). Specimens used for the characterization of new species M. dulcis are derived from the collections of five collectors that have managed to capture M. dulcis in four defining stages in its lifetime. Documented data in these collections confirm that M. dulcis occurs mostly at high altitudes. These collections also exhibited the two most recognized diagnostic characteristics of M. dulcis: large stigma size and tan colored, paired glands at the base of petioles on the stem. The latter characteristic suggests the close relation of M. dulcis to two known species of Miconia: Miconia latifolia and Miconia mandonii, both found also found in Bolivia.

Overview of the Interface of the Cobb Research Laboratory and the Robert Wood Johnson Summer Medical and Dental Education Program (SMDEP) at Howard University

Presenter's Name: Donna Grant-Mills
Classification: Senior Faculty
Presentation Type: Poster Presentation

Coauthors: Andrea I. Clarke, Lori Fenner

The Summer Medical Dental Medical Education Program, SMDEP funded by Robert Wood Johnson and hosted by Howard University Colleges of Dentistry and Medicine provides 80 academically talented pre-medical and pre-dental students from under-represented groups with STEM based academic enrichment, mentoring, clinical shadowing opportunities and cultural enrichment. The scholars conduct hands-on interdisciplinary bio-anthropological and biomedical research on the 19th and 20th century human skeletal and dental remains, artifacts, and publish in The Backbone, the official online journal of the Cobb Research Laboratory. Scholars are trained, paired with, and work closely with peer mentors, and senior scientists to reconstruct and present a case studies on the culture, health, lives and deaths of the individuals in the Cobb Collection. The scholars that complete their research objectives, and case studies are presented with a certificate of meritorious research at the SMDEP Closing ceremony. The value the collaboration is multifaceted. First, for the majority of the 2015 cohort (82.5%), it was their first formal research experience. Second, it connected the scholars to mentors in STEM and other disciplines thus providing them with team based inter-professional experience which is the new gold standard for healthcare delivery. Third, they gain more confidence in their ability to pursue future STEM based opportunities, and fourth they gained a firm understanding of importance of approaching research with cultural sensitivity and respect, by taking into account the socio- economics, history, racial climate, inequalities, and other factors faced by the individuals of the Cobb Collection. As people of color, primarily African Americans, the scholars gained a sense of ownership over and respect of their cultural legacy, and a sense of responsibility with regard to how their ancestors are treated, studied, and documented for future generations.

The Correlations between African-American Life Experiences and Type 2 Diabetes

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

The increasing prevalence of diabetes is considered problematic, as it is the seventh leading cause of death in the United States. The CDC's 2014 National Diabetes Statistics Report states that in the US, 29.1 million people are living with diabetes out of which 13.2% (3,841,200) are African-Americans. Interestingly, this number is approximately 1.7 times more than the number of diabetic whites in the US. Diabetes is a disease that involves abnormal levels of blood glucose resulting from problems in how insulin is produced or works. There are two types of diabetes, Type 1, which is caused by the destruction of the insulin-producing cells in the pancreas and Type 2, which is a result of insulin resistance among cells. Type 2 diabetes is described as a lifestyle disease as it develops due to specific risk factors in one's life. This research intends to show that the prevalence of Type 2 diabetes among African Americans is not due to personal life choices but that it results from the stresses society places on African Americans such as residential, economic, and educational segregation. The Cobb Collection offers a special resource of the study of African Americans from the 19th and 20th century. It is highly suited

for this research as it contains African Americans who were living in a time of Jim Crow Laws. Thus, individuals in the Cobb Collection that were diagnosed with Type 2 diabetes can be identified and their lifestyles analyzed in an attempt to indicate the environmentally- caused emotional, physical and nutritional stressors that contributed to their development of Type 2 Diabetes.

Investigation of the Cobb Collection, A Statistical Approach

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

Health disparities for African Americans (AA) include differences in rates of cardiovascular diseases, diabetes, periodontitis and life expectancy. In addition, populations living in poverty also exhibit health issues including asthma attacks, obesity, and because a greater percent of Afro-descendant people continue to live below the poverty line, a duality of risk factors exist for this population. (Gomez, 2015) The Cobb Collection (CC) is an invaluable snapshot of AA medical history in the late 19th and early 20th centuries, being the largest skeletal archive for AA's in the United States. Archiving numerous points of medical data in a randomized fashion, the CC is a perfect candidate collection to compare pathology incident rates over the last 150 years. The data points of the CC include cause of death, place of death with a corresponding morgue number, death certificate number, age, sex, race, birthplace, maternal and paternal birthplace, address, and duration dwelling in Washington DC. This study aims to present the patterns of these AA's from the Washington DC Area, including migration patterns and pathology incident rates. Once completed, this data will be compared to patterns in the modern day to provide a historical background and make inferences on medical progress and health disparities over the past 150 years.

Investigating the Activity of Antimicrobial Chemical Compounds against Vibrio Cholerae

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

Coauthors: Kalah Ozimba, Mahtab Waseem, Emmanuel Ike

Vibrio cholerae is a comma shaped gram-negative bacteria. Pathogenic strains of V. cholera cause Cholera, an acute diarrheal disease that can kill within hours if left untreated. V. cholera bacterium can grow as either planktonic cells or biofilm cells. Biofilms are the cells that adhere to surfaces as slimy, glue-like substances. The free floating bacteria in suspension during growth are the planktonic cells. Our research elucidates the impact of organic compounds' effect on bacterial growth.The growth of V. cholerae is monitored by measuring the optical densities and the fluorescence of biofilm and planktonic cells.Our data suggest that several of the chemical compounds that we tested have properties that limit the planktonic and biofilm growth of V.Cholerae, and further assays are currently underway to characterize their mechanisms of action. Elucidating the effects of organic compounds on bacterial growth may have significant relevance in the design of novel antimicrobial therapies against environmental and human pathologies.

Funder Acknowledgement(s): This study was supported by a grant from NSF (Research Initiation Award #1505301) awarded to Patrick Ymele-Leki PhD, Assistant Professor of Chemical Engineering, Howard University, Washington, DC 20059.

Arm Gesture Recognition through Surface Electromyography

Presenter's Name: Sidney Hall
Classification: Undergraduate Student
Presentation Type: Oral Presentation

The purpose of this project was to determine the best practice for reading and processing myoelectrical signals to be interfaced with a robotic system. Myoelectric technologies provide better intuitive interactions than body-powered prosthetics; they address the increasing need in the United States and other countries to provide sophisticated prostheses to individuals with limb loss. The system of study features four (4) EMG sensors interfaced to an Arduino microprocessor that collects data to construct a graphical representation through a GUI. Gestures are employed as a control for the movements of the 3D-printed arm. Data is gathered from the circuits, saved into a text file and plotted in Excel. Processing IDE displays the data in real time. The methodology in this study was approached in two phases: (1) The training threshold phase, (2) Testing phase. In the training phase, maximum contraction values (MVC) are established and used to determine the standard threshold values. In the testing phase, the system responds when the threshold is

exceeded. The results showed that when the sensors were attached directly to the muscles and bones, then the signals were more accurate. Future research should concentrate on further limiting noise between myoelectrical signals.

Extracting and determining the unique genome of bacteriophage Noyance from its DNA.

Presenter's Name: Kristian Harris
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Background: Bacteriophages are viruses that infect and lyse bacterial hosts specifically, and are found in any environment where a potential host may reside. They can exist as either lytic phages or temperate phages. Lytic phages destroy their host almost immediately after infection and replication as the new phage particles are released. Temperate phages, however, can incorporate its genetic material into the host's genome, now being called a prophage and can stay dormant for several generations before being stimulated to enter the lytic cycle. **Methods:** The bacterium U102 was used as a target host for the novel phage and an initial enrichment process was used to create an environment in which the phage will readily infect U102. The phage sample was collected from the soil in front of the Howard University School of Business. Several streaking protocols were then utilized to isolate a potential phage and then a phage titer assay was performed to determine the concentration of plaque forming units. A 'medium titer lysate' was obtained and empirical testing was performed in order to eventually obtain a 'high titer lysate.' **Results and Conclusion:** The isolated bacteriophage produced turbid plaques which were roughly 3mm in diameter, showing that it is a temperate phage. After the MTL is empirically tested and HTL is obtained, the lysate will be tested for viable DNA which will be extracted and analyzed to characterize the phage.

Worldwide Genetic Variation in Serotonin Pathway Genes Associated with Bipolar Disorder

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

Coauthors: Michael Campbell

Bipolar disorder (BPD) is a brain illness characterized by dramatic shifts in mood and activity levels, and ~60 million people worldwide suffer from this neurological condition. Despite the severity of these symptoms, management of BDP can be successful if diagnosis and treatment are initiated early. Consequently, research has focused on identifying genetic variants that facilitate early detection and/or treatment of this chronic illness. In particular, genes in the serotonin pathway have been under investigation in BPD studies given their association with other behavior-related disorders. However, little is still known about patterns of genetic variation in the human serotonin system in natural populations, which can impact treatment. To address this large gap in knowledge, we examined 19 genes involved in the synthesis and transport of serotonin, in ~1400 individuals (or 2800 chromosomes) originating from 14 distinct human populations. Our analyses revealed an excess of high-frequency mutations, consistent with a scenario of positive selection or adaptation, in the coding regions of two serotonin-transporter genes (SLC6A4 and SLC18A2) exclusively in West African populations. We also identified novel amino acid-altering mutations in these genes that are likely the targets of positive selection. Although the precise function of these variants is currently unknown, we suggest these protein-altering mutations are or have been selectively advantageous during evolutionary history leading to their increased frequency in modern-day populations. Because serotonin transport inhibitors are first-line treatments for BPD and other behavioral disorders, these results are informative for the development of novel drug therapies based on more detailed genetic information.

Cannabinoid-Mediated Neural Plasticity in Central Olfactory Neurons

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

Coauthors: Ze-Jun Wang

We study the function of the endogenous cannabinoid (endocannabinoid) system in regulating neural activity at mitral cell synapses in the olfactory bulb, the first central relay station in the brain for the processing of olfactory information coming from the nose. The endocannabinoid system involves CB1 receptors and endocannabinoids. Olfactory bulb neurons express high levels of CB1R. Endocannabinoids mediate retrograde signaling at synapses in several brain regions through a form of short-term neural plasticity. Endocannabinoids are released from depolarized principal neurons and rapidly diffuse to presynaptic

inhibitory interneurons to transiently reduce presynaptic firing and neurotransmitter (GABA) release. Output neurons such as mitral cells in the olfactory bulb are computational elements in brain circuits that integrate incoming signals with membrane properties to generate behaviorally relevant synaptic output. In mouse brain slices, we used whole-cell patch-clamp recordings to study how cannabinoid receptors regulate the activity of mitral cells, key olfactory bulb output neurons. We applied depolarizing voltage steps to mitral cells and measured if cannabinoid-mediated retrograde signaling is present in mitral cells as a change in the amplitude and frequency of spontaneous inhibitory currents. Our data support the notion that retrograde signaling is present in neural circuits involving mitral cells. Mitral cells release endocannabinoids and, through retrograde signaling, inhibit presynaptic periglomerular cells which controls the GABA release of these presynaptic neurons. This, in turn, allows mitral cells to temporarily regulate their synaptic input and relieve them from synaptic inhibition. Endocannabinoids function as retrograde messengers to mediate plasticity at synapses in the olfactory bulb.

An Analysis of the Collection, Isolation, and Purification of Joseph, A Bacteriophage Taken from the Environment

Presenter's Name: Austin Henderson
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Leon Funchess, Adrian Allen, Broderick Eribo, Leon Dickson, Winston Anderson, Courtney Robinson

Background: A bacteriophage is a virus that infects bacteria. Bacteriophages do this by attaching to the cell surface of host bacteria and injecting their DNA into said hosts, which results in the continued development of phage DNA and the assembly of new phages. The goal of the current study was to isolate a single bacteriophage from the environment using Bacterium U102 as a host and then use molecular biology in order to learn more about it. **Methods:** A soil sample was collected in a 15mL conical tube on September 16, 2015 from the flowerbed in front of the Howard University Hospital (77.020183 W, 38.917530 N). The phage was isolated by using a sequence of filter sterilizations, followed by streaking and serial dilutions (titer assay). **Results:** After completing the streaking protocol, it was determined that a single phage, which was named Joseph, had two different morphologies and were clear. Then after completing serial dilutions, the titer of the medium titer lysate was determined to be 5.3 x 108pfu/mL. **Conclusions:** The experiments have confirmed that a single phage population was present. Based on the fact that plaques it was determined that the phage is lytic. Future directions include empirical testing of the MTL, generation of high titer lysate, electron microscopy and DNA extraction followed by restriction digests and other molecular characterization.

Palatable Food Intake May Correlate with Renal Orexin Receptor-1 Expression in a Rodent Model of Binge Eating

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

Coauthors: Dexter Lee, Tamaro Hudson, Kimberlei Richardson

Obesity is one of the most frequently encountered medical problems and is responsible for various health complications, including hypertension and kidney disease. Obesity contributes to the morphological and functional alterations encountered in kidney disease, therefore, it is critical to identify neurochemical systems that may contribute to these alterations. One of the neuropeptide systems involved in increased feeding and activated during the consumption of high fat and high sugar intake is the orexin system. The orexins are a family of neuropeptides synthesized in the brain that are widely distributed throughout the brain and their receptors are located centrally and peripherally. Recent evidence has shown that these peptides can affect renal nerve activity and blood pressure. We hypothesize that chronic high caloric intake causes a greater increase in both renal orexin receptor 1 expression and that this increased expression contributes to factors that increase susceptibility to kidney disease. Female Sprague Dawley rats (n=6/group) were given intermittent feeding tests to measure their consumption of high fat, high sugar (45%fat /35%carb/20% protein) pellets for at least 5 weeks. Based on their consumption of palatable food, the rats were divided into binge eating prone, binge eating neutral, or binge eating resistant rats. Kidneys were obtained from the rats and Western blot hybridization is being done in order to characterize orexin receptor-1 expression from kidney homogenates for each group of animals. The expression is plotted as a ratio to Beta Actin. Preliminary data reveal an increase in orexin 1 receptor expression in binge resistant versus binge prone or neutral rats. It appears that as the amount of high fat, high sugar intake increases, the expression of orexin receptor-1 also increases in the kidney. Studies are still underway to quantify receptor

expression in the samples. These data suggest a possible role for the orexin system in pathophysiological processes that mediate obesity-related factors that contribute to kidney disease.

The Development of a Mass Spectrometry Method to Assess Two Neurosteroids: Allopregnanolone and DHEA in a Cohort of Fatigued Patients

Presenter's Name: Geralynn Hinton
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Laura Campbell

The downregulation of allopregnanolone and DHEA are involved in the onset of depressive and mood disorders such as major depression, premenstrual dysphoric disorder (PMDD), epilepsy, and schizophrenia. One of the most common residual symptoms of depressive disorders is fatigue. Treatment with SSRI's causes the neurosteroids to restore normal levels in the body. The objective of this study is to develop an effective mass spectrometry method to measure neurosteroids and correlate their concentrations to a cohort of prostate cancer patients with various levels of fatigue. Thirty-two, male patients with early stages of prostate cancer entered the present study. Each patient was treated with androgen deprivation therapy and external beam radiation therapy (ERBT). Serum samples were drawn for measurements of allopregnanolone and DHEA. The samples were measured using an Agilent 6490 Triple Quadrupole mass spectrometer equipped with an atmospheric pressure photoionization (APPI) source. Thirty-four percent of patients experienced persistent fatigue. Serum allopregnanolone and DHEA levels were decreased in men with symptoms of high fatigue, though not considered statistically significant.

Two Polypyrimidine Tracts in Intron 4 of the Major Immediate-Early (MIE) Gene Are Critical for the Gene Expression Switching from IE1 to IE2 and for Replication of Human Cytomegalovirus

Presenter's Name: Wangheng Hou
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Qiyi Tang, Ruth Cruz

The human cytomegalovirus (HCMV) major immediate-early (MIE) gene is essential for viral replication. The most abundant products encoded by the MIE gene include IE1 and IE2. Genes of IE1 and IE2 share the MIE promoter (MIEP), first 3 exons and first 2 introns. IE1 is expressed earlier than IE2 after CMV infection or MIE gene transfection. In this study, we identified 2 polypyrimidine (Py) tracts in intron 4 (between exons 4 and 5) that are responsible for transcriptional switching from IE1 to IE2. The first Py is important and the second one essential for the splicing and expression of IE2. In searching for the mechanisms of MIE gene switching from IE1 to IE2, we found that the second Py was required for the IE2's 4th intron to bind to a splicing factor such as U2AF65, as determined by an RNA electrophoretic mobility shift assay and a ChIP assay, while the first Py enhanced the binding of U2AF65 with the intron. An HCMV BACmid with the second Py mutated failed to produce any virus, while the HCMV with the first Py mutated replicated with a defective phenotype. Furthermore, we designed a small RNA (scRNA) that is complementary to the intron RNA covering the two Pys. The scRNA interfered with the interaction of U2AF65 with the intron and repressed the IE2 expression. Therefore, our studies implied that IE2 gene splicing might be an anti-CMV target.

Getting to know Unique: Purifying and characterizing a novel phage.

Presenter's Name: Kyliah Hughes
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Tamara Sullivan, Ashley Queen, Leon Dickson, Courtney Robinson

Background: A phage is a virus that parasitizes a bacterium by infecting it and replicating inside the organism. Phages are significant because they are ubiquitous. The study of phages can lead to various applications in the medical field. It is with intentions that the findings from characterizing the biology of phage Unique may serve as a beneficial contribution to the medical industry. **Methods:** Unique was found in a sample of soil that was collected by the Howard University football field (38.92484N, 77.02036W). To isolate Unique, there were several assays performed including: enrichment, plating of unknown phage, spot test, and plaque steak assays. After the final plaque purification a phage titer assay was performed where the titer was calculated. **Results:** Isolation of the phage based upon plaque morphology required many trials of streaking followed by titering. The titer of the phage is 3x10^7pfu/mL.

Isolating, Purifying, and Characterizing a Novel Phage from the Environment

Presenter's Name: Melodie Hunter
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Melodie Hunter, Aaliyah Pleasant, Ashley Queen, Leon Dickson, Courtney Robinson

BACKGROUND: Bacteriophages are a class of viruses that are specific to bacteria. Phages are important because they are used in studies involving genetics, epidemiology, and therapeutics. The purpose of this study is to isolate a novel phage from the environment, purify it, and characterize it. **METHODS:** The phage was isolated from soil samples, found behind the Johnson Administration building of Howard University (38.92278N), using enrichment cultures. Host bacteria and bacteria media were added to the environmental sample, and the phages that were specific to the host bacteria infected them and were replicated to higher concentrations. The plaques that were generated were validated using a spot assay. Then, the process to isolate and characterize a novel phage began; these methods included the Plaque Streak Protocol, The Phage-Titer Assay, and harvesting stock of the phage lysate. After the phage stocks were made, the second phase of purification began. These methods included: Empirical Testing of Phage Lysates and The 10-Plate Phage Infection and Harvest. **RESULTS:** The plaques found from the enrichment culture were used for the spot assay. The clearings from the spot assay were then used for the plaque streak protocol. After the 9th test, one of the plates had plaques with the same morphology. After harvesting a phage lysate (MTL), the titer of that MTL was found to be $1.2x10^6$pfu/mL. Pfumaxweb was calculated and found to be 798.8pfu → 799 pfu. Volume needed = 799 pfu/$1.2x10^6$ pfu/mL= 0.7µl. After empirical testing and the 10-plate infection and harvest, the HTL was obtained. **DISCUSSION:** The next step is characterizing the phage. The first step to characterizing the phage will be isolating and purifying phage genomic DNA for restriction analysis and sequencing protocols.

The Effect of 1-deoxysphinganine on Vitamin D Production in MDA-MB-468 Breast Cancer Cells

Presenter's Name: Marsha-Kay Hutchinson
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Marion Sewer

Breast cancer is the most common type of cancer in women worldwide. Studies have shown an increase incidence of breast cancer in patients with low levels of vitamin D. Sphingolipids a diverse class of lipids that regulate a wide variety of cellular processes, including cell proliferation, apoptosis, and autophagy. While the roles of sphingosine-1-phosphate and ceramide are well established, the cellular functions of novel sphingolipid species are not well characterized. 1-Deoxysphinganine (1dSa) is one such sphingolipid that was originally isolated from clams and investigated for its anti-cancer properties. Given published data showing that vitamin D promotes cancer cell death and the effect of 1dSa on cancer cells, the objective of this study was to determine the effect of 1dSa on vitamin D production in breast cancer cells. We hypothesize that 1dSa increases the expression of genes that are responsible for vitamin D production which plays a role in regulating cell growth and apoptosis. To test this hypothesis we will assess the effect of 1dSa on CYP27B1 expression and on the expression of genes involved in apoptosis and cell proliferation. We will assess the expression of these genes after treatment using techniques such as Western blot and qRT-PCR. We predict that 1dSA be found to increase vitamin D production and signaling, thereby promoting breast cancer cell death.

Detection and Typing of Human Papilloma Virus in Premalignant and Malignant Anal Lesions using Type-Specific PCR

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

Coauthors: Muneer Abbas, Luisel Ricks-Santi, Tammey Naab

Background: Anal carcinoma incidence is on the increase with approximately 30,400 new cases per year worldwide. 90% of these cases are pathogenetically linked to Human Papillomavirus (HPV) associated condylomas. There are more than 200 types of HPV and approximately 40 different HPVs that can infect humans. Despite the evidence showing increased incidence of HPV infection¸ it remains unknown which HPV type causes benign lesions that progress to squamous cell carcinoma (SCC). The purpose of this study is to identify HPV genotypes and their distribution in benign, premalignant and malignant anal lesions. This will help to better understand the progression of anal carcinomas as related to specific HPV genotypes. **Methods:** DNA was

isolated from a total of 24 anal FFPE tissues that were benign (4), pre-malignant (10) and malignant (10). HPV genotypes were identified using HPV "early" gene 6 (E6) in these samples through primer-type-specific PCR. The products were visualized on an ethidium bromide stained agarose gel following electrophoresis. **Results:** 22 different HPV types (6, 11, 16, 18, 26, 31, 33, 34, 35, 39, 45, 51, 52, 53, 56, 58, 59, 61, 68, 73, 82) were tested and 90% (19) of these were positively identified in all samples. HPV 16 and 11 were the most prevalent and were noted in 92% (22/24) of the samples. HPV-16 was identified in 48% (6/14) of benign and premalignant lesions and in 80% (8/10) of malignant lesions. Two or more HPV types (which ones) were identified in 54% (13/24) of the samples. **Conclusion:** HPV genotyping is an important step in understanding disease progression in anal squamous cell carcinoma which can help identify patients with higher risk of developing SCC and contributing to development of type-specific vaccines. The in-house designed PCR experiment turned out to be a sensitive and specific method for detection of various HPV types.

Design and Synthesis of New 1, 4-Benzodioxane-6-Carboxylic Acid Derivatives as Potential Anti-Cancer Agents

Presenter's Name: Nabil Idris
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Nabil Idris, Oladapo Bakare

Prostate cancer remains the most common type of cancer and the second highest cause of cancer-related death among men in the USA, and was projected to account for 21% (180,890) of newly-diagnosed cases and 8% (26,120) of deaths due to cancer in the USA in 2016. Conventional treatments such as surgery, radiation, and androgen suppression are effective if prostate cancer is confined to the prostate. Unfortunately, many patients with advanced metastatic cancer treated with androgen ablation experience recurrence of androgen-independent cancer, with limited or transient response to other systemic chemotherapies. For this reason, there is an urgent need for new specific and targeted agents to treat the castration-resistant prostate cancer. Part of our approach is to develop novel analogs/derivatives of bioactive natural products into clinically useful anticancer agents. The 1,4-benzodioxane scaffold is an important scaffold in some biologically useful natural products including some lignin and neolignan natural products such as silybin, purpurenol, and 3,4-dihydroxystyrene dimmers. It is a core pharmacophore in doxazosin, a drug used in the treatment of hypertension and benign prostatic hyperplasia (BPH). It was also reported that various derivatives of 1,4-benzodioxane show anticancer and anti-inflammatory activities. In our attempt to develop new 1,4-benzodioxane derivatives for studies in castration-resistant prostate cancer, we found the antioxidant natural product, gallic acid, as an attractive scaffold for chemical transformation to unique 1,4-benzodioxane derivatives. As a result, a new library of 1,4-benzodioxane derivatives has been designed and synthesized in this study as potential anticancer agents to target prostate cancer. All these compounds were characterized using FTIR, ESIMS, 1H-NMR and 13C-NMR to confirm the structure of the newly synthesized compounds.

Assessment on the Resurgence of Rickets and Scoliosis on African Americans

Presenter's Name: Khristian Ifill
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

The purpose of this study is to identify and comprehensively assess the effects of scoliosis and rickets on the African American community. Prior studies have shown that African Americans are at greater risk of being diagnosed with scoliosis and are more susceptible to rickets as well. This increased risk factor for African Americans stems from the decreased levels of vitamin D from the sun taken in by people of darker complexions. By using the laboratory materials in the Cobb Research Lab, I will examine and analyze subjects reported to have passed away from rickets and scoliosis. I will also use a multitude of various resources such as scientific evidence, medical journals and the reports made by the Cobb research lab to reform the biological history of specific groups of affected people. By analyzing these diseases in detail, I will in turn develop a better overall level of understanding of the historical causes and treatments of scoliosis and rickets and how they matriculated over time.

Enhancing Public Access to Recent Research on the African Burial Ground Materials: Grave Soil and Oral Microbiome Analyses

Presenter's Name: Fatimah Jackson
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Poster Presentation

The 17th and 18th century samples in the Cobb Research Laboratory are derived from the New York African Burial Ground remains currently housed at Howard University

and on loan from the National Park Service. The NYABG is the nation's earliest and largest African burial ground. These previously buried samples reflect African/African American biological diversity from the late 17th to late 18th centuries in New Amsterdam/New York City. While there are an estimated 15,000 burials, we have well-documented, archived biological remnants from approximately 250 individuals. Research on these 17th and 18th century samples hold the key to providing evidence for important processes in human evolutionary biology and biological history. For example, the grave soil studies will reveal the biological relationship between individuals in various grave sites, the molecular sex of juveniles, the extent to which deceased individuals were exposed to specific environmental toxins and certain pathogens, and their ancestry genetics. The oral microbiome studies will yield insights into the dietary patterns of individuals, their exposure to certain infectious diseases, and their contact with ingested toxins in the form of medications and drugs. The two research projects proposed will generate unique data on the life histories and background biology of NYABG individuals. By using minimally invasive research techniques, the projects will enhance preservation of the collection while providing essential knowledge which will then be disseminated to scientific professionals, NPS interpreters, and the public. The research projects will optimize student outreach and education and increase the numbers of underrepresented ethnic minority group members in science, technology, education, and mathematics research. The NYABG is already a designated visitor site for the entire freshman class each year at Howard University. Implementation of these projects and translation of the research results to make them accessible to the general public will make the NYABG even more valued and compelling site for visitation, reflection, and growth.

Expression of Tight Junction ZO-1 Protein in an Experimental Model of Sickle Cell Disease

Presenter's Name: Jarrett Jackson
Classification: Undergraduate Student
Presentation Type: Poster Presentation

The endothelium consists of a continuous monolayer of endothelial cells, bound together by various tight junction and regulatory proteins. By maintaining and ensuring tight cell to cell contact, these tight junction protein complexes contribute directly to the formation of a selectively resistant and semipermeable blood vessel, complete with the ability to regulate the transport of various biomolecules into and out of the bloodstream. Among these proteins, the zonula occludens (ZO)-1 provides the structural basis for the formation of these protein complexes, establishing high-resistance junctions and anchoring the various transmembrane proteins into the endothelial cell's actin cytoskeleton. In sickle cell anemia, endothelial adhesion and vasoregulation are altered significantly, causing abnormal erythrocyte adherence to the endothelium and diminishing the overall integrity of the blood vessel barrier. In this study, we hypothesized that the inheritance of sickle cell disease can lead to reduced levels of this ZO-1 tight junction protein in the brain and kidney of murine mice models, compromising endothelial barrier integrity and ultimately permitting the passage of inflammatory mediators and other harmful molecular toxins into the surrounding tissue and extracellular fluid. Tissue homogenate samples were created from the brain and kidneys of HbSS-BERK (sickle) and littermate control mice. Using the monoclonal anti-ZO-1 antibody, Western blotting was used to stain for the presence of the tight junction protein across all samples, with 1:200 (1° anti ZO-1) and 1:5000 (2° anti HRP) dilutions. Subsequent imaging revealed well-defined bands in both the sickle cell and colony-control samples with little to no detectable change of Z0-1 protein concentrations, indicative of negligible statistical significance. Thus, examination of the Western blot results appears to suggest that concentrations of the ZO-1 tight junction protein are not effected by the presence of sickle cell anemia, however, there remains to be seen whether or not there are any other internal and/or external factors that can be experimentally accounted for to more accurately recreate the vascular conditions most common during episodic sickle cell pain crises, such as age or the introduction of an inflammatory stimulus. Currently, I am attempting to elucidate the potential associations between another tight junction protein, Claudin-5, as it relates to the blood-brain-barrier endothelium.

Comparative Analysis of DNA Extraction Techniques on DNA yield from Ancient Teeth

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

While much reporting has been done to understand ancient DNA techniques for archaic human populations, little work has been done to characterize the feasibility of extracting DNA from historical populations of human who lived less than 200 years ago. Here we examine three methods for DNA extraction from skeletal remains using CC672, an individual from the W. Montague Cobb Skeletal Collection, who died 85 years ago. Dentine-cement powder was obtained from

molar teeth. Molars were scraped free of cementum (CC), calculus (CL), and periodontal ligament (PDL). Each was isolated separately and then the remaining CC, CL, and PDL debris was combined in a mixed sample (MX). Extraction was conducted using Oragene (saliva based), Qiagen (blood and tissue), and phenol-chloroform. These techniques were implemented in parallel. Extractions were then measured for DNA concentration, confirmed for DNA quality and finally amplified to further assess DNA viability. We were able to recover DNA from all three methods in all samples. The phenol chloroform extraction yielded the largest DNA amounts (138.2-1865.6 ng/μL), next the Qiagen yielded between (12.7-13.9 ng/μL for S samples, 6.5-9.7 ng/μL for CC672 samples) and Oragene yielded intermediate DNA amounts (S5:75.5 ng/μL and MX:21.2 ng/μL). DNA was amplified using the FOXP3 gene with 90% success. This molecular analysis suggests that conventional extraction methods for ancient DNA are robust to analysis of Cobb Collection samples. Amplification of the DNA extracted shows that human DNA was present in sufficient quality. This exciting result will be followed up with further analysis.

Protons Distinctly Influence Translocation of Gating Elements in the GluN1 and GluN2A N-methyl-D-aspartate Receptor Subunits

Presenter's Name: Nichelle Jackson
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Nichelle Jackson, Shaina Reid, Kevin S. Jones, PhD.

Background: N-methyl-D-aspartate receptors (NMDARs) are one of three major ionotropic glutamate receptors that mediate excitatory transmission in the central nervous system. NMDA receptor current is strongly attenuated by extracellular proton concentration (pH), but the biophysical mechanism is unclear. Here we examine the role of extracellular pH on M3 translocation during NMDAR activation. **Methods:** cRNA for wild type and A7C mutant NMDA receptor subunits were injected into Xenopus laevis oocytes. NMDAR current was evoked by bath application of agonists at various pH levels in the presence and absence of MTSEA. NMDAR current was measured by two-electrode voltage-clamp electrophysiology. **Results:** Introduction of A7C mutations into the GluN1 or GluN2A subunits did not alter the pH sensitivity of NMDARs. MTSEA modification of A7C-containing NMDARs slowed current deactivation, and attenuated pH sensitivity. Current evoked from A7C-containing NMDARs at pH 6.4 was potentiated by MTSEA modification. However, at pH 8.4, current evoked from GluN2A-A7C-containing NMDARs was potentiated, but, current evoked from GluN1-A7C-containing receptors was reduced. **Conclusions:** These results support the notion that pH inhibits NMDA receptors by restricting the translocation of the channel gate. Moreover, these data suggest the gating elements of the GluN1 and GluN2A subunits have distinct sensitivities to pH and may adopt unique conformational states during channel activation.

Parasitic Egg Consistent with Schistosoma on Rectosigmoid Biopsy

Presenter's Name: Tyrrell Jenkins
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Belen Tesfaye, Momodu Jack

Patient: A 39 years old Ethiopian male with unremarkable past medical history presented with diarrhea and rectal pain. **Case Description:** The patient presented with complaints of less than one month duration of changes in his bowel habits, diarrhea, and rectal pain. His history is significant for recent immigration to the United States. An elective esophagogastroduodenoscopy had findings of erthematous mucosa found in the antrum, body, and fundus of stomach. There was evidence of duodenitis in the duodenal bulb and second portion of the duodendum. Findings on colonscopy demonstrated mild colitis in the rectosigmoid junction and rectum, as well as hyperplastic polyps. Three biopsies were taken with subsequent findings of a parasitic egg consistent with Schistosoma species, patchy acute and chronic inflammation with mucosal eosinophilia. **Discussion:** Schistosomiasis found in endemic areas tend to take on a more insidious onset, presenting as a chronic disease. One would expect to see submucosal fibrosis on biopsied samples in chronic schistosomal colitis. There have been cases of hyperplastic and tubulovillous adenomas being associated with patients diagnosed with colonic schistosomiasis. Along with a parasite egg consistent with Schistomsoma, biopsies of in the rectosigmoid and rectum in this patient demonstrated presence of hyperplastic polys and proctocolitis. The pathogenesis of polyp formation due to schistosomal infection has been well described. It is important for American physicians to consider schistosomal colitis in patients from endemic areas presenting with classic symptoms chills, fever,

myalgias, arthralgias, diarrhea, abdominal pain, urticarial, and headache as well as nonspecific symptoms.

Role of Macrophage Stimulating Protein 1 (MSP1) in the Development of Glomerular Disease in Sickle Cell Disease

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

Sickle cell disease (SCD) is caused by a single nucleotide mutation in the b-globin gene resulting in polymerization of hemoglobin leading to sickling and hemolysis of red blood cells, and vaso-occlusion and organ damage. SCD patients are predisposed to the development of glomerular renal disease. Despite the progress in our knowledge of SCD, many aspects of renal glomerular disease development remain poorly understood and thus limit treatment options. Here we show that glomerular disease in SCD (Townes) mice is characterized by glomerular endothelial cell activation, podocytes loss, increase in renal macrophages infiltration and glomerular Macrophage Stimulating Protein 1 (MSP1) accumulation. Treatment of human macrophages with hemin or RBC lysate significantly increases expression of macrophage membrane-bound matriptase 1 (MT-SP1). In vitro, treatment with recombinant human MSP1 protein increases glomerular permeability in whole glomeruli assay, increases motility and activates human glomerular endothelial cells, and reduces survival of human podocytes. Taken together, we show that MSP1 is accumulated the glomeruli of SCD mouse and may increase glomerular permeability by interacting with both endothelial and epithelial cells of glomerular filtration barrier. We speculated that MSP1 is one of the factors that may be involved in the development of glomerular disease in SCD patients.

The Role of the Scaffold Protein RACK1 mediated stress signaling pathways in plants

Presenter's Name: Denver Jn. Baptiste
Classification: Graduate Student
Presentation Type: Poster Presentation

RACK1 (Receptor for Activated C Kinase 1) is a WD-40 type scaffold protein, conserved in single cell eukaryote yeast to human and plays regulatory roles in diverse signal transduction and stress response pathways. Loss of function mutant in Arabidopsis indicates that RACK1A regulates diverse environmental stress resistance and developmental pathways through a negative regulation of stress hormone abscisic acid (ABA) signaling pathway. In addition, RACK1 is shown to regulate the miRNA pathway in diverse organisms- Arabidopsis, nematode, and human. The role of RACK1 proteins in regulating the miRNA biogenesis and later processing steps show similar, and in some instances opposite roles in plants and animal system. In animals, these tiny (~22-nucleotide) miRNAs are involved in developmental and pathological processes, and in plants, miRNAs contribute in growth, flowering and development by regulating hormone signaling, nutrient sensing, stress responses, and immunity against pathogen invasion. To lend more confidence, it has been reported that miRNA accumulation in the rack1 knock-out mutants is globally decreased causing de-repression of the target mRNAs. It was also reported that some pri-miRNAs accumulated to higher levels in rack1 mutants, suggesting that RACK1 affects the processing and transcription/stability of certain pri-miRNAs in plants. Current studies are investigating whether RACK1 regulates ABA signaling pathways through the miRNAs (miR156, miR393) that are known to modulate the ABA signaling pathways. Understanding the precise molecular mechanism of drought stress signaling and nutrient deficiency mediated by the interaction of RACK1, miRNA and ABA will allow developing engineered crops better suited to withstand stressful conditions.

Lead in Teeth: Reconstructing Environmental Biohistory and Health at the New York African Burial Ground Using Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS)

Presenter's Name: Joseph Jones
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

The study of ancestral skeletal remains continues to reveal new dimensions and important details of African diasporic biohistory. Teeth, for example, develop at known ages (through adolescence) while incorporating environmental chemical exposures associated with forced migration, diet and health. Even a single tooth crown formed over several years serves as an archive of childhood and/or adolescent living conditions; biohistories potentially formed across varied African and American settings. Here, I report on the recent analysis of enamel-lead for 44 children, women and men excavated at the 17th- and 18th-century New York African Burial Ground in lower Manhattan. This study is

the first quantitative investigation of human lead exposure in early America via laser ablation- inductively coupled plasma-mass spectrometry (LA-ICP-MS). This recently-developed microprobe methodology enables the spatial mapping of lead concentration in teeth such that age-related changes in the extent and (acute versus chronic) nature of exposure are detectable. Among the key findings, enamel-lead concentrations ranged from 0.39 μg g-1 (i.e., the instrument limit of detection or LOD) to 14.7 μg g-1, suggesting negligible (background level) exposures for some while others spent their childhoods in high-lead environments. Mean enamel-lead concentration for young children (5.88 μg g-1) is over five times that of adults (1.11 μg g-1), a significant difference reflecting these groups' mostly American versus African geographic origins, respectively. These findings shed new light on lead exposure and poisoning – persistent public and global health concerns – at the origins of African America and the nation.

Identifying the effects and treatment of Alzheimer's disease in African Americans

Presenter's Name: Younho Jung
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

The first ever recorded case of Alzheimer's can be credited to Dr. Alois Alzheimer, a pioneer in linking symptoms to microscopic brain changes. He describes the haunting case of Auguste D. in 1906, a patient who had profound memory loss, unfounded suspicions about her family, and other worsening psychological changes. After her death 5 years later, Dr. Alois discovered that her brain underwent dramatic shrinkage and abnormal deposits in an around the nerve cells. Early discoveries regarding the peculiar disease were initiated using the electron microscope, for example, to allow further study of the brain. Beta-amyloid, a novel cerebrovascular amyloid protein and the chief component of Alzehimer's brain plaques and the trigger for nerve cell damage was discovered in 1984. Since then, major strides have been taken to deterimine the genes responsible for Alzheimer's disease. In 1991, a clinical study was launched by the federal governments. This led to the new criteria and guidelines for Alzheimer's disease diagnosis, and in turn, paved the way for the first major clinical trial for the prevention of Alzheimer's disease. But as with much progress, there are still an estimated 5.3 million Americans with Alzheimer's today, and more than half are African Americans. What is most surprising is that, it wasn't until August 11, 2015, they discovered the disease occurred much differently among patients from the European and non-European communities. That convinced researchers to further investigate patients treated historically. The Cobb Collection is an excellent site Currently, I am attempting to elucidate the clear differences on how Alzheimer's affects the African-American community, and the mistreatment in turn to the patients that lived before our lifetime.

Metformin Treatment Increases Adiponectin Expression in Rat Adipose Tissue

Presenter's Name: Lorrane Kabert
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Tameka Farley, Aida Jaldi, Priscilla Carpenter, Joanne Allard

Background: Increasing prevalence of type-2 diabetes across the nation has led to the increased and extended use of anti-diabetic agents. Metformin is the most widely prescribed anti-diabetic agent. It increases insulin sensitivity and lowers blood glucose levels partly via upregulation of AMPK activity. Adiponectin and leptin are factors secreted by adipose tissue that play important roles in fat metabolism and the development of diabetes. Leptin regulates appetite and low levels have been correlated with the development of obesity. Adiponectin regulates glucose and fatty acid breakdown. Levels of adiponectin are inversely correlated with body fat percentage in adults. In this study we aim to determine the effect of metformin treatment on leptin and adiponectin expression in rat adipose tissue. **Methods:** Adult male wistar rats were placed on one of three diets: Control (C), High-Fat (HF) and High-fat Metformin (HFM), for a period of 3 months. Body composition was assessed using Adipose tissue from the abdominal region was removed and processed for western blot, ELISA, and qRT-PCR analyses. **Results:** Metformin treated rats had significantly higher lean body mass composition compared to the C and HF groups, although the body weight was not different. In addition, metformin treated rats had higher adiponectin levels in their adipose tissue and no change in leptin levels. **Conclusion:** Although adiponectin levels were higher, that did not seem to correlate with body fat content as was expected. However the surprise result of increased lean mass suggests that metformin may affect muscle growth and metabolism which future studies will investigate.

Prenatal Nicotine Exposure Differentially Regulates Glutamatergic Expression Among Sexes in Hippocampal Sub-regions of Young Rats

Presenter's Name: Olubukola Kalejaiye
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Oral Presentation

Coauthors: Hong Wang, Marjorie Gondré-Lewis

Introduction: Nicotine exposure during pregnancy remains a leading preventable cause of gestational illness and infant mortality. Prenatal nicotine exposure (PNE) results in attention and learning deficits in humans, and rodent models of PNE. Here we examine the hippocampus, responsible for encoding new memories and processing emotional modulation of memory. We evaluated glutamatergic transmission at a key neurodevelopmental time-point associated with synaptogenesis, postnatal day 14 (P14), to determine how PNE might regulate hippocampal sub-regions. We also investigated if this regulation was sexually dimorphic. **Methods:** Timed-pregnant Sprague Dawley rats were implanted with infusion pumps distributing saline (0.9%) or nicotine (4mg/kg/day) until birth. Pups were euthanized at P14 and hippocampal sub-regions (DG, CA1, CA3) were micro-punched for western blotting of the following glutamatergic and synaptic proteins: GluR1, GluR2, NR2a, NR2b, NR2c, NR1 PSD95, CaMKIIα, SNAP25, CaM. **Results:** PNE caused significantly reduced expression of CA3 NR2b and GluR2 independent of sex, and CA3 CaMKIIα in females only; however, CA3 SNAP25 expression was elevated. CA1 glutamatergic proteins were not affected by PNE, but the DG showed a significant reduction of CaMKIIα. Some DG NMDAR subunits and SNAP25 showed a downward trend of expression indicative that the female DG may be preferentially susceptible to the effects of PNE than males. **Conclusion:** PNE may mediate reported learning and memory deficits by targeting CA3 and DG in a sex dependent manner. Studies analyzing the effect of PNE on cognition and behavior may find value in considering sex differences and an effect associated disproportionately by the CA3 hippocampal sub-region.

Ethogram of the Chinese Water Dragon, Physignathus cocincinus

Presenter's Name: Yah Kamei
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: George Middendorf

Background: Alterations in lizard behavior and ecology can indicate environmental change, but the behavioral ecology of the species must be known. This study focuses on the Chinese water dragon, *Physignathus cocincinus,* a little known species. **Methods:** The behavioral repertoire of the Chinese water dragon was assessed using a 14 hr (840 min) set of videos taken from 11 May – 24 July 1984 of a captive colony at the Smithsonian National Zoological Park in Washington, DC. After videos of behaviors exhibited by 1 male and 3 females in a glass-fronted exhibit were digitized, we analyzed the behaviors observed, as well as the behavioral sequences within and between sexes. We compared the 22 behaviors exhibited by *P. cocincinus* in our study to Carpenter and Ferguson's (1977) extensive documentation of stereotyped reptilian behaviors. **Results:** The behavioral repertoire of *P. cocincinus* is remarkably undocumented. No behaviors are listed for the species, only a single behavior for the genus, and only five for the family. Previously unreported behaviors include extended mouth gaping, jumping, dropping from a high to low elevation, climbing and swimming. Paired, tightly-linked behaviors include head nod-foreleg display, circling-aggressive charge, and male approach-female sidle-hop. **Conclusion:** The results of our observation provide an extensive addition of behaviors for this group of lizards, as well as a firm foundation for development of an ethogram of *Physignathus cocincinus*.

Pro-fibrotic pathway activation in trabecular meshwork and lamina cribrosa is the main driving force of glaucoma

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

Coauthors: Antonei Csoka

While being a leading cause of blindness worldwide primary open-angle glaucoma (POAG) still does not have clear mechanism that can explain all clinical cases of this disease. Increased intraocular pressure (IOP) and myocylin gene mutations are the primary risk factors associated with glaucoma. Elevated IOP is associated with increased accumulation of extracellular matrix (ECM) proteins in the trabecular meshwork (TM) that prevents normal outflow of aqueous humour (AH). This in turn has damaging effects on the fine mesh-like lamina cribrosa (LC) through which the optic nerve fibers pass. Applying pathway analysis algorithm, we discovered that an elevated level of TGF-β observed in

glaucoma-affected tissues could lead to pro-fibrotic pathway activation in TM and in LC. In turn, activated pro-fibrotic pathways lead to ECM remodeling in TM and LC, making TM less efficient in humour drainage and making LC more susceptible to damage from elevated IOP via increased tissue stiffness and ECM crosslinking. As future directions, we identify pathway targets for potential therapeutic interventions to delay or avoid fibrosis initiation in TM and LC tissues.

CD8+ T-cell infiltration in epithelial and stromal tissues of MSI colorectal cancer patients.

Presenter's Name: Lakshmi Kannan
Classification: Graduate Student
Presentation Type: Poster Presentation

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

Background: Microsatellite instability (MSI-H) is seen in 10-15% of sporadic colorectal carcinomas (CRC) and is associated with good prognosis and a high density of tumor-infiltrating lymphocytes (CD8+ T-cells). **Aim:** To evaluate the association of CD8+ T-cell infiltration in colon epithelial and stromal mucosa of African American patients with MSI-H colorectal cancer. **Methods:** Tissues were micro-dissected from FFPE blocks of 34 patients in a Tissue Microarray (TMA). These samples contain 29 cases of MSI-H CRCs and 5 matched normals. CD8+ T-cell densities/counts both in tumor epithelium and stromal compartment were analyzed and quantified by Immunohistochemistry. **Results:** The median (IQR) for intraepithelial CD8+ T cell was 2 (1-3%) while the stromal lymphocytes number (SLN) was 40 (20-68). All samples had 3+ intraepithelial and stromal intensity for CD8+ T-cells, the percentage being higher in females (median of 3 vs. 1 in males) and higher in stage 2 (median of 1, 4 and 2 in stage 1, 2 and 3) tumors. SLN number was higher in proximal tumors (median of 50 vs. 20 in distal tumors). **Conclusion:** The MSI phenotype defines a subset of CRCs with special molecular etiology and characteristic clinical and pathologic features. The CD8+T-cell infiltration within such tumors seems to be stronger in the stroma than in the tumor cells themselves. This distinction between the immune cells in the stromal and the epithelial compartments can help to profile MSI subtype of tumors, which will further help in targeted immunotherapy for a better outcome.

Colorectal Cancer Screening: A Comparative Study

Presenter's Name: Semegne Kebede
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Objective: This study assessed the racial disparities in the prevalence and screening of colorectal cancer among adult black men versus white men. **Background:** The prevalence of cancer increases with time and race is a factor that influences colorectal cancer screening incidence and mortality. Black men are more susceptible to colorectal cancer when compared to white men. Screening poses the best chance of early detection or confirmation of disease symptoms. Cancer oriented screening tests are much less invasive but cannot detect polyps. Individuals beyond the age of 50 years are at a higher risk of developing colorectal cancer. Health disparities played a crucial role with the black men of low socio-economic status being denied effective access to healthcare and preventive care. **Methods:** Using CINAHL, COCHRANE and PubMed datasets, we searched related articles from 2011-2015. Health disparities played a crucial role with the black men of low socio -economic status being denied effective access to healthcare and preventive care. Some reviewed articles used observational study framework with a cohort study to validate the relationships between the variables. Using the search criteria, 30 related articles were selected. **Results:** Though disparity was observed between black and white men when it comes to incidence of colorectal cancer, it has been decreasing among every race. However, the decline rate is lower among African Americans.**Conclusion:** There are some disparities in the African-American men compared to white Americans men. More research is needed to investigate why African American men decline rate is slower than other races.

HIV related Stigma in Health Care Providers: A survey Study at Howard University Hospital.

Presenter's Name: Javed Khan
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Javed Khan, Patricia Houston, Edwin Powell,
Caroline Reed, Beatrice Charles, Shirin Sultana,
Farshid Jahanparast, Sohail Rana

Background: The word "Stigma" originates from Latin and Greek roots, meaning a mark of infamy, disgrace and reproach. HIV/AIDS is one of the most stigmatized illnesses

in human history. In 2014 DC DOH HIV surveillance reported 2.5% of the DC population is living with HIV, indicative that HIV is at epidemic levels. No data is available regarding stigmatizing attitudes among DC health care providers, which if present can defer patients from receiving needed care. **Methods:** The previously validated survey, "Measuring HIV Stigma and Discrimination Among Health Facility Staff", developed by the Health Policy Project was used. Howard University Hospital physicians, residents, nurses, medical students, medical staff, front desk, cleaning and food workers were targeted. Participants (310) completed paper surveys in a semi-private area, and data was entered into RedCap. **Results:** The study is near completion. Preliminary data analysis shows: 19.7% healthcare workers wear double gloves if patient is HIV+; 29.6% observed coworkers talking badly about people living with HIV; 25.8% stated coworkers hesitant to work alongside HIV+ co-worker; 17.5% agree that HIV+ patients do not care if they infect other people; 37.7% believe that HIV patients engage in irresponsible behavior; and 24% Disagree that HIV + women should be able to have babies. **Conclusion:** It is evident that a significant degree of HIV related stigma exists among the health care workers at this facility. Stigma is one of the invisible barriers to the eradication of HIV and needs immediate attention. Detailed data analysis will follow, with plans for an intervention.

Identification of Brain Regions Associated with Morphine Aversion in Male and Female Rats

Presenter's Name: Amber Kimble
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Allison Hester, Subramaniam Uthayathas, Kimberli Richardson

Both humans and animals possess core brain networks that facilitate aversion-related processing. Through the recruitment of several brain regions, aversion-related processing can aid in the development of avoidance behavior in the presence of a normally appetitive stimulus. Many studies have identified that highly stressful aversive stimuli paired with a significant drug-associated cue can enhance drug-seeking behavior and relapse. However, we seek to use avoidance behavior as a means of behavior modification to attenuate drug seeking behavior. To that end, we have implemented a model of conditioned aversion using high light intensity to prevent a conditioned preference for morphine. The goal of this study is to identify the brain regions that are recruited to promote aversion-related behavior, thereby, attenuating the preference for morphine. Male and Female (intact and ovariectomized) Sprague Dawley rats (n=4-6/group) were conditioned using a counterbalanced design with either saline or morphine (10mg/kg, s.c.) for 3 consecutive conditioning days. When the rats were tested in a drug-free environment, aversion scores were calculated and the rats were processed for c-Fos immunohistochemistry. Immunohistochemistry for c-Fos is being used to identify the regions activated during morphine aversion testing. Studies are underway to quantify the number of Fos cells activated in various brain regions and determine any correlations with aversion scores. Preliminary immunohistochemical data suggest that the basolateral amygdala, insula cortex and hypothalamus may be major contributors to this aversive behavior. In light of the growing attention to eradicate opiate addiction in our society, it is imperative to identify the specific brain regions that can counter the rewarding properties of opiates and improve drug avoidance therapy.

Hypoxia and Low Labile Iron Pool Restricts HIV-1 in PBMC from Sickle cell Disease

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

Coauthors: Tatiana Ammosova, Sharmin Diaz, Patricia O'Neal, Andrey Ivanov, Subhash Dhawan, Sergei Nekhai

Background. Sickle cell disease (SCD) is characterized by ischemia and hemolysis. Decreased rate of HIV-1 infection in SCD [2] and refraction of HIV-1 transcription at low oxygen and reduced cellular iron [1] may be related . Iron depletion by iron chelators or overexpression of an iron export protein, ferroportin, inhibits HIV-1 transcription by blocking CDK2 and CDK9 activities [1]. As CDK2 and CDK9 do not require iron for the enzymatic activity, an apparent upstream regulation exists. Oxidative stress and iron depletion stabilizes the alpha subunit of hypoxia-induced factor 1 (HIF1) and increases HIF-1 activity. Here we analyzed HIV-1 transcription and replication in PBMC from SCD subjects with the focus on the expression of factors involved in hypoxia and iron regulation. **Results.** Ex vivo HIV-1 infection in PBMCs obtained from SCD subjects was significantly reduced comparing to normal controls. HIF-1 and ferroportin mRNA was upregulated in SCD derived PBMCs. Labile iron pool was significantly reduced

based on the calcein assay measurement. Enzymatic activity of CDK2 was significantly reduced in sickle cell PBMC. HIF-1 Knockdown in promonocytic THP1 cells increased HIV replication suggesting that HIF1α may restricts HIV-1. HIV-1 replication was inhibited by hemin treatment. This inhibition was reversed with hepcidin, a ferroportin-binding peptide mediating FPN1 degradation. Novel iron chelators, PPYeT and PPYaT induced expression of HIF1α and inhibited enzymatic activity of CDK2, efficiently inhibiting HIV-1. Hemin treatment induced expression of ferroportin and HIF1α thus mimicking the effect of iron chelators. **Conclusions.** HIV-1 Restriction in PBMC from SCD may be attributed to unusual hemolytic conditions of sickle cell disease regulating iron and oxygen metabolism. Molecules identified in the pathway that involves HIV-1 refraction may lead to novel therapeutics.

Acknowledgements. This project was supported by NIH Research Grants 1SC1GM082325, 2G12RR003048, and P30HL107253.

Exercise-Induced Changes in Microtubule Stabilization in Alzheimer's Disease Mediated by Ultraweak Emission of Ultraviolet Photons?

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

Coauthors: T.J.A. Craddock, T.O. Obisesan

A hallmark of Alzheimer's disease (AD) is neurofibrillary tangles, which are thought to arise from hyperphosphorylation of the microtubule-associated protein tau. Studies suggest that aerobic exercise is cognitively protective by promoting increased antioxidant enzyme production and therefore enhancing the removal of reactive oxygen species and other free radicals produced during respiration. Alternatively, the interaction of free radicals with biomolecules can result in ultraweak emission of ultraviolet (UV) photons. This ultraweak emission can excite a variety of biomolecular structures that serve as chromophoric antennae complexes, including nucleotide chains in DNA and aromatic amino acid networks in neuronal microtubules. Microtubules reorient and reorganize in a dose-dependent manner after exposure to UV light, with the greatest effect being observed around 280 nm. Functional microtubule networks may use the energy from this UV light as a signaling mechanism throughout the cytoskeleton. Since microtubule networks in AD patients and individuals with mild cognitive impairment (MCI) are compromised, they would be unable to support effective channeling of these UV photons for signaling. Thus, the consequent UV surplus may lead to cellular oxidative damage and hasten cognitive decline. We hypothesize that UV photons, at or near a critical wavelength of 280 nm, can excite coherent behavior in tubulin aromatic networks and can be modulated by exercise. We use diverse computational and theoretical methods to analyze coherent energy transport in aromatic amino acid networks (e.g., tryptophan, tyrosine, phenylalanine) of tubulin, the protein subcomponents of microtubules. We present coherent excitations in these tubulin networks that promote global stabilization, randomization, and/or depolymerization of microtubule structures and those cases where microtubule stabilization might have an ameliorative effect on neurofibrillary tangle formation, which correlates with AD and its prodromal MCI stage. These studies address a critical barrier to progress in the field of neurodegeneration by developing a mechanistic explanation of how light produced from aerobic activity may affect cytoskeletal signaling, genomic regulation, and other coherent cellular processes.

Bacteriophages from Waste Water Effluent Show Lytic Activity Against Antibiotic Resistant Emerging Pathogen Aeromonas sp. BP22

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

Coauthors: Osayi Ize-Iyamu, Abiel Spencer, Chantel Acevero, Janet Nwokolo-Aniekwujaniekwu, Kortland Casselberry, Ashton Webber-Deonauth, Tahirah L. Williams, Garima Bansal, Behailu Eshetea, Nivedita Bondhu, Kevin Scriber, Leon Dickson, Hemayet Ullah, Courtney Robinson, Adrian Allen, Broderick Eribo, Winston Anderson

The utilization of bacteriophages to minimize the impact of multidrug resistant emerging pathogens could be an ideal alternative to antibiotics. There is minimal emphasis placed on isolating and applying bacteriophages in these areas. In the current study, water samples were collected downstream from a water treatment plant located in Blue Plains, Maryland. The bacterial and bacteriophage diversity were evaluated using phenotypic, molecular/mass spectrometric analyses. Analyses of samples showed a dissolved oxygen (DO) and biological oxygen demand (BOD) of 6.5 ppm and 3.0 ppm,

respectively; pH 7.5, total and calcium hardness of 152 and 60 ppm, respectively. Both 16S rRNA and metagenomics sequencing identified thirteen bacterial genera including Aeromonas sp. BP22. The species found is a vanA gene cluster bacteriophage susceptible vancomycin resistant isolate. These bacteria are normally found and studied in clinical settings, however, the species in this study was an environmental isolate. Further testing on Aeromonas p. BP22 will confirm the type of vancomycin-resistant-enterococci (VRE) and identify resistance to any other antibiotics. Characteristic to bacteria species Aeromonas, sp. BP22, is a gram-negative bacillus, facultative anaerobe. Antibiotic efficacy using Kirby-Bauer test shows that the isolate was resistant to 8 of 14 antibiotics. These antibiotics include cell wall, protein and folic acid synthesis inhibitors. Nevertheless, the isolate was susceptible to one phage, KCC1CA, isolated from a water sample collected in the Chesapeake and Ohio River Canal. These findings suggest the ubiquitous nature of bacteriophages and their possible application in minimizing the impact of emerging multi-drug resistant pathogens from the genus Aeromonas.

GATA3 germline variants and breast cancer survival outcomes in SWOG 8897 trial

Presenter's Name: Victoria Larsen
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Song Yao

Purpose: GATA3 is involved in estrogen signaling and mammary cell differentiation and is frequently mutated in breast cancer. As germline variations of this gene have been found to be prognostic in childhood ALL, we sought to examine their prognostic and predictive role in breast cancer. **Methods:** SWOG 8897 comprised two groups of breast cancer patients. In the high-risk group, women were randomly assigned to one of two adjuvant chemotherapy regimens followed by randomization to receive or not receive tamoxifen. Women in the low-risk group did not receive any adjuvant therapy after surgery. Germline DNA from uninvolved lymph nodes was genotyped for 12 candidate GATA3 SNPs. Associations of genotypes with treatment outcomes were evaluated in treated and untreated groups separately. Multivariate cox hazard regression was used to estimate hazard ratios for disease free (DFS) and overall survival (OS). **Results:** After correcting for multiple testing, significant associations were identified for two variants (rs3802604 and rs568727) with DFS and OS for treated patients. In both cases, the variant genotype of each variant was associated with significantly poorer DFS and OS than the corresponding variant's common allele. In contrast, no association was found for either SNP in the untreated group. Subgroup analysis suggested that these two SNPs more strongly influenced outcomes in patients who also received tamoxifen. Seven additional variants were also associated with OS and DFS in the tamoxifen-treated group. **Conclusion:** GATA3 harbors common germline genetic variants that are related to survival following adjuvant chemotherapy and endocrine therapy in breast cancer patients.

The Effects of p21 Attenuation on HIV-1 Infection and Replication

Presenter's Name: Hatajai Lassiter
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Namita Kumari, Dymtro Kovalskyy, Sergei Nekhai

Conventional HIV-1 antiretroviral chemotherapeutics have traditionally targeted viral pathways that include: fusion, entry, transcription, integration, and protease function. Host cell-intrinsic mechanisms have been minimally defined in the inhibition of HIV-1 infection. A host cell-intrinsic factor of emerging interest is p21, a potent cyclin-dependent kinase (CDK) inhibitor. It has been implicated in direct and indirect restriction of HIV-1 replication via inhibition of HIV-1 transcription that involves CDK9 and HIV-1 reverse transcription. Previously increased p21 expression was observed in HIV-1 elite controllers. Also p21 mRNA was upregulated in patients with sickle cell disease (SCD). Here we elucidate the role of p21 in HIV-1 restriction in SCD or sickle cell trait (SCT) background via the implementation of a p21 attenuator, SN05-02, synthesized by Enamine Ltd. Molecular assays have been utilized to investigate the effect upon replication of a pseudotyped HIV-1 containing a luciferase reporter gene. CEM T cells and MCF7 cells (high p21 expression) were treated with SN05-02 (10, 30, 100 μM) and luciferase activity was analyzed as indicative of HIV-1 replication efficacy. Increased HIV-1 replication was demonstrated at the lowest concentrations of SN05-02, 10 μM, thus exhibiting the attenuating effect upon p21 inhibitory activity. Future SN05-02 investigations will utilize peripheral blood mononuclear cells (PBMCs) and primary cells of SCD or SCT to determine the role of p21 in HIV-1 restriction and to elucidate mechanisms for improved antiretroviral therapeutics, such as p21 activators or inhibitors.

Acknowledgements: This work was supported by NIH Research Grants (1P50HL118006, 1R01HL125005 and 3R01HL125005), and District of Columbia Center for AIDS Research grant (P30AI1179701). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

The Isolation and Purification of Phage LeBeau97

Presenter's Name: Daisha LeBeau
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Daisha LeBeau, Tanasia Thompson, Nichelle Jackson, Amoge Ezike, Ayele Gugssa, Winston Anderson.

Background: Bacteriophages are viruses that infect and replicate within bacteria only. Bacteriophages are specific to bacteria, which means that they infect bacteria based on the receptors on its cell wall. As bacteria are becoming more resistant to antibiotics and superbugs are evolving, research with bacteriophages help solve this problem. Bacteriophages can reproduce through the use of two different cycles once they infect the bacteria cell, the lysogenic or the lytic cycle. The purpose of the current study is to isolate and purify a phage sample taken from the environment that is specific to bacterium U102. The study was enacted as a bacteriophage sample was collected, it was spot tested to see if a phage was present, then the present phage was purified and plaque forming units were calculated. **Methods:** On September 16 2015, a sample of soil was collected in front of the Howard sign at the intersection of Howard Place and Georgia Avenue. The sample of soil was first directly plated and placed in the 30 ºC incubator for 24 hours. Another sample of soil was plated using enrichment and was allowed to sit in to the 30º C incubator for 48 hours. Possible plaques formed on the enrichment plate were used for a spot test. Plaques from the spot test were then purified using a series of plaque streaking protocol. After purifying the phage, multiple rounds of the phage titer assay was conducted in order to obtain medium titer lysate. **Results:** The direct plating resulted in all of the Luria agar plates containing contamination. The enrichment plating experiment was carried out twice. The first time resulted in contamination and the second time resulted in possible plaque formations. The spot test was successful in that it resulted in small, circular, clear plaques. Six rounds of plaque streaking were carried out until the plaques were all identical in size, shape, and morphology. The phage titer assay was completed 5 times as bacteria contamination slowed down the process to reaching medium titer lysate; however, in the fifth round of the phage titer assay many plaques were present and very consistent in size, shape, and morphology. **Conclusion:** Throughout the process of conducting the experiments, it became quite evident that the phages captured are lytic as the plaques shown after each experiment were clear, not cloudy and almost completely lysed the agar plates. The results of my experiments were very consistent with my expectations except for when I had the TA malfunctions and contamination as setbacks. The use of bacteriophages in research is becoming widely practiced as findings are proven useful to the medical field. For example, in phage-display vaccination, phages are used to transport DNA vaccines. Phage therapy is also a result of bacteriophage research. In phage therapy, phages are used to lyse bacteria that are resistant to antibiotics. Bacteriophages are also useful as they kill Listeria monocytogenes which can cause contamination in some meats. This fits with my current research because the things that are currently being practice in the lab are the beginnings of bacteriophage research, every major experiment has to start with what we are doing now. Future experiments of our lab will consist of obtaining the high titer lysate and isolating and purifying DNA.

Novel Discovery of the Presence of a Tyrosinase Inhibitory Activity in a Commercial Garlic Oil Preparation

Presenter's Name: Justine Lewis
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Manjunath Manubolu, Kamla Deonauth

Tyrosinase is a copper containing enzyme that is ubiquitously found in living organisms ranging from bacteria to man. This enzyme is essential in melanin biogenesis, catalyzing the rate limiting reaction of converting tyrosine to dopaquinoine. Although the photo protective effects of melanin are both beneficial and necessary, the enzymatic browning of fruits, various medical pathologies and the continued prevalence of the belief in many cultures that "fair" or "light" skin is more beautiful, have led to a plethora of experiments aimed at discovering inhibitors of this key regulatory enzyme. To date, many Tyrosinase inhibitors have been identified or chemically synthesized, however, the efficacy of these anti-enzymatic agents remain poor and many lines of research point to both cytotoxic and carcinogenic effects of these inhibitors.

Pressure from the agricultural, cosmetic and medicinal sectors to identify less toxic agents to suppress melaninogenisis has led to a renewed focus on natural plant products to inhibit Tyrosinase. Using a post TLC developing technique that provides a quick screening method for Tyrosinase inhibitors from natural products, we were able to inhibit Tyrosinase by using a commercially available garlic oil from Bangkok, Thailand. Quantitative analysis indicates that this inhibitor has an IC50 of 23.34ug/ml, which is lower than that of kojic acid (IC50 30.0ug/ml), the standard positive control currently used in screening methods for inhibitors of Tyrosinase. To our knowledge, this is the first time that an anti-tyrosinase activity has been studied in garlic oil. Future experiments will include 1) testing of additional commercially available preparation of garlic oil for anti-tyrosinase activity 2) identifying and characterizing the active inhibitory component in garlic oil 3) conducting in vivo experiment using human melanocytes to determine the ability of the identified compound to inhibit melaninogenesis 4) using cell viability studies to determine toxicity of the anti-tyrosinase activity component and 5) active ingredient formulation studies

---

7T MR Anatomical and Diffusion Imaging in Ex-Vivo Pig Brains – A Pilot Study

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

Coauthors: Gary Stinnett, Paul Wang

Background: Cerebral white matter (WM) injury is the major form of brain injury and the leading cause of chronic neurological disability in survivors of premature birth. Recent clinical studies using magnetic resonance imaging (MRI) suggest that term newborns with congenital heart disease are also at risk for white matter injury. **Methods:** Brains from Yorkshire piglets were imaged a 7T Bruker MRI. 2D T1, 2D T2 and 3D T2-weighted axial, coronal and sagittal anatomical scans were acquired with a Fast Spin Echo sequence. Diffusion studies were performed with a Diffusion Tensor Imaging Echo Planar Imaging (DTI-EPI) sequence. The diffusion images were processed with Bruker ParaVision software to generate fractional anisotropy (FA) and apparent diffusion coefficient (ADC) maps and color maps. **Results:** High quality anatomical images were acquired with the imaging study, showing good white matter-grey matter contrast. The FA, ADC and color maps generated from the DTI-EPI scans were generally good quality, showing clear regions of increased fractional anisotropy along major white matter tracts. **Conclusion:** We were able to acquire good anatomical and diffusion images from fixed pig brain tissue with the new 7T MRI. The anatomical and diffusion studies showed good white matter-grey matter contrast, which will allow observation of white matter development, as well as detection of insults to white matter. Further refinement of the diffusion study will reduce image artifacts and will allow for easier registration with anatomical scans. Third party post processing software is being investigated for registration of the DTI scans, and generating fiber tracts images.

Synthesis and Evaluation of Hydrolysis Resistant Dental Restorative Resin

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

Coauthors: Tongxin Wang, Laurence Chow, James Mitchell, Paula Baker, Martin Chiang, Oladapo Bakare

Background: Restorative dental composite is a common dental material for dental restoration. Among all the organic resins in composite restoratives, mixtures of cross-linking dimethacrylates are mostly used. However, currently used resin, Bis-GMA, could be hydrolyzed by acid, which greatly decreases the mechanical strength and the lifespan. **Methods:** In order to reduce the hydrolysis of dental resins, Bis-GMA analogue Easter-1 (E1), in which the conventional methyl acrylates were replaced by less degradable moieties, was synthesized. The light curing and thermal curing of E1 were studied and the mechanical properties of composites based on E1 were evaluated. Water absorption/solubility study and short-term degradation study of E1 were also conducted. **Results:** (1) E1 was synthesized and full characterized; (2) E1 had a slightly higher light-curing degree while keeping lower shrinkage stress than Bis-GMA; (3) Composites based on E1 had comparable flexural strength as Bis-GMA; (4) E1 had lower water absorption and higher hydrolysis resistance than Bis-GMA. **Conclusions:** A novel dental restorative resin E1 with more hydrolytic stable chemical structure than currently used resin Bis-GMA was developed. This new resin had lower water absorption and higher hydrolysis resistance. This unique polymeric material can be utilized as a promising dental restorative resin with longer lifespan than current commercial resins.

Keywords: dental composite, resin, degradation, lifespan

The Search For Putative Phage: Fruition

Presenter's Name: Haley Lowe
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Haley M. Lowe, Adrian Allan, Broderick Eribo, Leon Dickson, Winston Anderson, Courtney Robinson.

Background: Bacteriophages can be lytic or temperate depending on the environment and other factors that impact the host, temperate phages can enter the lytic or lysogenic pathway. The lytic pathway involves the attachment, absorption, synthesis, assembly and penetration of a phage. The temperate phage can take the lytic or lysogenic pathway which involves the attachment and absorption of phage DNA into that of the bacterial cell's own DNA, making it a prophage. **Methodology:** The phage Fruition, was found in a flowerbed outside of Carnegie Hall. It was a moist environment with a large portion of shade. Several trials of streaking proved Fruition itself is a lytic phage with two morphologies forming two different sized plaques, the average size of the plaque being approximately .3cm in diameter. After being away from Fruition for an extended period of time a titer was conducted to see if it was still viable and an empirical test was conducted. **Results/Conclusions:** The test showed that 25.6 microliters of my 10-3 dilution would make a perfect web plate and a 5 plate infection was completed. Once an HTL was harvested, a titer was conducted showing phage concentration was high enough, 3.0 x 1010, to do further research such as DNA extraction. The next step will be the examination of Fruition using electron microscopy. This examination will show the actual morphologies of Fruition as well as give a detailed look at it's make up and shape.

Isolating and Purifying Phageneko Bacteriophage

Presenter's Name: Jelani Lyda
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Loveisha Ballard, Adrian Allen, Broderick Eribo, Leon Dickson, Winston Anderson, Courtney Robinson

Background: Bacteriophages are very important to the field of medicine. A bacteriophage, phage for short, is a virus that infects bacteria. This experiment was conducted to analyze the DNA of a phage and add it to the growing data on phages. Phages can be used as an alternative to antibiotics and to eliminate antibiotic resistant bacteria. They can also be used in phage therapy to treat genetic illnesses. **Methods:** Phageneko was collected outside of the School of Business at Howard University at 38.92445N 77.02167W. An enrichment technique was used to increase the phage population. Phageneko was isolated using the streaking method. A pure concentration of phage in the form of a medium titer lysate (MTL) was created. The next stage was a high titer lysate (HTL). The HTL was made by creating multiple web plates and flooding them with phage buffer overnight. **Results:** Phageneko was successfully isolated and a MTL of titer 2.6 x106 PFU/mL was generated. A HTL of unknown titer was also successfully created. During the purification of the phage, it was found that Phageneko has 3 different sizes of plaques, .5mm, 1mm, and 3mm. **Conclusion:** The next step is to isolate and purify the DNA to preform PCR on it and to eventually look at Phageneko using an electron microscope.

Examining the Role of Historically Black Colleges and Universities (HBCUs) in Promoting Diversity in the Pharmacy Workforce

Presenter's Name: Jateh Major
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Earl Ettienne, Mary Ettienne, La'Marcus Wingate

OBJECTIVES: Educating a sufficient number of health professionals identified as underrepresented minorities is crucial to mitigating health disparities. This analysis describes the role of HBCUs in educating black pharmacists within the United States. **METHODS:** Data were abstracted from the American Association of Colleges of Pharmacies graduation and admissions data for a 10-year period from 2005 to 2014. The data were used to determine the total number of individuals that graduated with a Doctor of Pharmacy (Pharm.D.) as a first professional degree as well as the total number of blacks that were conferred a Pharm.D. during this time period. Additionally, the data were used to determine the total number of blacks earning their Pharm.D. from an HBCU during this time frame along with the proportion of all black pharmacists that were educated at an HBCU during this time. **RESULTS:** From 2005 to 2014, there were a total of 111,764 Pharm.D. degrees conferred as a first professional degree. During this 10 year time frame, 7,651 of the Pharm.D. degrees were awarded to blacks, representing 6.8% of all Pharm.D. degrees conferred during this time. Altogether,

HBCUs bestowed 3,487 Pharm.D. degrees to blacks during this time period. For the 10-year time period from 2005 to 2014, 46% of blacks earning a Pharm.D. were educated at an HBCU. **CONCLUSIONS:** Efforts should be made to increase the number of blacks earning Pharm.D. degrees. HBCUs play a pivotal role in helping to promote a diverse pharmacy workforce by providing educational opportunities to a substantial number of blacks.

The Ecology of Phlebotomine Sand Flies, Vectors for Cutaneous Leishmaniasis in Ethiopia

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

Coauthors: Meshesha Balke, Mirutse Giday, Winston Anderson, Chanda Macias, Ingrid Harris, Janelle Burke

Cutaneous leishmaniasis (CL) is a growing problem in Ethiopia. Our study focused on the northern highlands of Ethiopia where CL is endemic. CL is caused by the protozoan Leishmania aethiopica. Several species of phlebotomine sand flies are vectors. In the highlands, these species include Phlebotomus longipes, P. pedifer, and the potential vector, P. ashfordi. With the lack of ecological studies done on this species, it is important to understand the sand fly environment in order to better grasp on the distribution of the protozoan causing the disease. The first objective of this study was to summarize the distribution of the sand flies which are vectors for CL, native to Ethiopia: Phlebotomus longipes, P. pedifer and a potential vector, P. ashfordi. The second objective was to describe the ecology of the same sand flies, with field studies documenting occurrence, breeding habitat, associated plant species and soil type. We collected data on the distribution and ecology of the sand flies over a two-month period in Debre Libanos, Ethiopia. Our results showed that the distribution of P. longipes and P. ashfordi are restricted to the highlands of Ethiopia. Phlebotomus pedifer seems to be more common in the southern part of Ethiopia and parts of Kenya. It was confirmed that P. longipes and P. ashfordi do use caves/crevices as resting sites and possible breeding grounds. Soil sample analysis allowed for the conclusion to be made that sand flies prefer humid, moist environments. The diversity of the dominant vegetation near and in sand fly habitats provides data for future experiments testing phlebotomine sand fly diet. This project would have not been possible without the support of the NIH-MHIRT program.

The prevalence of multiple paternity within Pomacea spp. (Caenogastropoda: Ampullariidae) in the La Plata Basin, Uruguay

Presenter's Name: Zahra Mansur
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Brittany Galloway, Kenneth Hayes

Background: Biodiversity, including genetic diversity, is declining at a rate higher than any other time in the history of the earth. Understanding the strategies that have allowed organisms to survive previous extinction level events may provide clues as to which species will survive the current decline. Numerous reproductive strategies have evolved that allow organisms to overcome the impacts of population declines, including females mating with multiple males (i.e. Polyandry). Polyandry may increase genetic diversity through multiple paternity, defined as multiple paternal contributions to a single brood of offspring. To understand the role of multiple paternity and polyandry in the evolution of freshwater species, we are examining genotypic frequencies in multiple egg clutches from snails in the genus Pomacea. **Methods:** A total of 3435 eggs from 10 egg clutches of Pomacea spp. were collected from Laguna del Saucé, Uruguay in December 2014. To confirm clutch species identity, we analyzed a fragment of the mtDNA COI gene from at least two individuals from each clutch. The frequency of multiple paternity within each clutch was examined through genotyping with five microsatellite loci. **Results:** Preliminary analyses identified nine clutches as belonging Pomacea canaliculata and one as an undescribed species of Pomacea. All five loci have been optimized for genotyping. **Conclusion:** The majority of egg clutches (90%) belong to Pomacea canaliculata. Ongoing genotyping will corroborate previous studies that have provided evidence of multiple paternity in this species from its non-native range. These data provide insights into apple snail diversification and their reproductive strategies.

Chronic Kidney Disease (CKD) in Black women: A Review

Presenter's Name: Allison Martin
Classification: Professional Student
Presentation Type: Poster Presentation

Objective: The aim of this study is to assess the numerous factors that contribute to high incidence of Chronic Kidney

Disease (CKD) in black women. **Background:** Twenty million Americans have CKD in the United States. This disorder has become a global issue due to its prevalence and risk of end-stage renal disease, cardiovascular disease, and premature death. Blacks are three times as likely as whites to develop the disease. CKD in blacks reflect interactions between risk factors, socioeconomic status, genetic susceptibilities, and environmental factors. Unfortunately, women are affected at a higher rate and live longer than men. **Methods:** The search engines PubMed, Medline, Google Scholar, and ProQuest Health and Medicine were used to search articles from 2011-2015. Literature review was performed to investigate various factors that affect this special population. The Health Promotion Model was used as the framework for this study. **Results:** Analysis of literature showed that black women have higher prevalence of CKD than their white counterparts. The presence of the Apolipoprotein L1 gene (APOL1), feminine hormones, and longer life-span were definitive factors. Heart disease, diabetes, hypertension, and obesity were risk factors. Demographic factors of age, gender, ethnicity, weight, education, and socioeconomic status affected those afflicted with the disease. **Conclusion:** This review concluded that risk factors such as socioeconomic status, environmental factors, and genetics contributed to higher incidence of CKD in black women. Screening, educational programs, and counseling that incorporate cultural and behavioral norms must be provided. Implementation of these important strategies can change the course of the disease and improve long-term outcomes.

Microhabitat Selection by the Lizard Sceloporus jarrovii Across Four Years

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

Coauthors: George Middendorf

Background: Over a four-year period, we examined patterns of habitat use by Yarrow's spiny lizard, *Sceloporus jarrovii*, in a .5 km stretch of Cave Creek Canyon in the Chiricahua Mountains of southeastern Arizona. We hypothesized that microhabitat features might result in differences in lizard abilities to thermoregulate, find prey, and escape predation (Smith 1996). **Methods:** To assess this, we examined the role of stream geomorphometric characteristics associated with summer territorial site selection, as well as on location changes between years to see whether selection of microhabitat types would affect lizard survival and success. In all years we marked all individuals and the microhabitats in which they were found. In 2015, we collected geomorphometric data at 5m intervals throughout the site, categorizing stream direction, canyon slope, and habitat substrate based on the abundance and size of rocks. **Results:** Thus, rock wall indicated that >80% large rocks or a wall dominated the immediate area, boulder with 40-80% of the area covered by large rocks and boulders, and scattered boulder as open habitat with <40% rock and boulder cover. We identified individual movements from year to year and examined survival with patterns of microhabitat selection. Microhabitat within the canyon varied with 32% rock, 11% boulder, and 57% open. Lizard usage differed significantly with 39% using rock, 32% boulder and 22% open, indicating that these lizards preferred rock wall and boulder over more open locations ($X^2 = 32.59$; $p < 0.01$). Individuals followed between years showed site fidelity with average movement of ~15 m ($X \pm sd = 15.2 \pm 33.2$ m; N=28) and little change in microhabitat selection. **Conclusion:** Those animals that did change microhabitat type, shifted equally between rock wall and boulder. Because the distribution of sites typically used (preferred) by lizards, exposed shale outcrops and associated bouldered areas, varied greatly within the canyon and even more so, outside the canyon, the availability of preferred microhabitat is expected to constrain the distribution of the species regionally and locally.

The impact of glucosinolates on the microbiota and host health of Pieris rapae

Presenter's Name: Leslie McKinnon
Classification: Graduate Student
Presentation Type: Oral Presentation

Background: It can be difficult to study the dynamics in animal-associated microbiota due to community complexity. Previous work shows that the microbial communities in Pieris rapae larvae are relatively simple. In this study, we tested the hypotheses related to how diet impacts the midgut microbial community and host immune response to pathogenic invasion in P. rapae. More specifically, we investigate how different concentrations of glucosinolates, the predominant phytochemical within P. rapae's natural diet, alter community structure and the immune system upon challenge with the pathogen Serratia marcescens. **Methods**: Larvae were fed either a control wheat germ diet, a wheat germ diet amended with 3mg/ml sinigrin, 6mg/ml sinigrin, or 9mg/ml sinigrin. Larvae infected groups were also fed approximately 10^6 CFUs of S. marcescens, while uninfected

groups were fed 1XPBS. Fourth instar larvae were then dissected and DNA and RNA were extracted. To determine shifts in the microbial community, the 16S rRNA gene was targeted and subjected to pyrosequencing. cDNA was generated from RNA and qPCR was used to target insect immune genes. Various computational tools were applied in order to process raw data. **Results**: Sinigrin, a type of glucosinolate, altered the microbial community in 4th instar P. rapae larvae. The predominant phyla in all treatment groups were Proteobacteria and Firmicutes. Significant difference in beta diversity was mostly found when sinigrin 6mg/ml and the control treatment groups were compared. Initial analyses indicated that certain concentrations of sinigrin may have altered expression of the Pierisin-1 gene. **Conclusion**: The impact of sinigrin on the structure of the midgut microbiota is dose dependent, and it is still unclear how diet and the microbiota influence immune response to infectious disease.

The Isolation, Purification, and Characterization of Phenix15- a novel bacteriophage

Presenter's Name: Aaliyah Meade
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Background: Bacteriophages- or phages- are viruses that infect bacteria. Viruses cannot independently metabolize and reproduce; therefore, they are obligate parasites. Phages reproduce one of two ways within a bacterial cell- the lytic or lysogenic cycle. Both start with injection of phage DNA, progeny, into a bacterial host followed by integration of progeny into the host genome. Lytic phages redirect bacterial cell machinery to produce virions resulting in destruction of the host. Temperate phages utilize the lysogenic cycle. Their progeny remains dormant and replicates during bacterial binary fission. Once induced, gene expression and replication of progeny begins. **Methods:** A soil sample was extracted from in front of Howard University's Hospital. Before plating, the sample was enriched and cultured with Bacterium U102. Plaques from the enrichment plating were subjected to a spot test to confirm the presence of phage particles. Using the streak protocol, a putative phage population was isolated. Medium and High titer lysates (MTL and HTL) were produced using 5-plate infection and harvested. From the HTL, phage genomic DNA was isolated. **Results:** Phage Phenix15 yields clear plaques approximately 1.5 to 2mm in diameter. **Conclusion:** Clear plaques indicate Phenix15 is a lytic bacteriophage specific to Mycobacterium smegmatis. Phenix15 will be characterized structurally via electron microscopy; and its DNA will be genotypically characterized with electrophoresis and restriction enzymes. Phages can be used in lateral gene transfer between species of bacteria and viruses; thus, they affect bacterial evolution and pathogenicity. It is probable, phage Phenix15 will be used in future medical research.

Hydrodynamic Conditions and Media Concentration Variation on the Efficacy of Anti-Biofilm Agents

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

Bacterial biofilms are tightly formed communities of bacterial cells which grow on organic or inorganic surfaces and surround themselves with secreted proteins and carbohydrates. Due to their overall complexity and high level of organization, biofilms are less susceptible to the effects of antibacterial drugs. The resistance of biofilms to antibiotics contributes to the occurrence of chronic and persistent infections. Some studies suggest that bacterial biofilms account for 60-80 % of microbial-related human infections, including Staphylococcus aureus infections. The development of a biofilm can be affected by several factors, such as nutrient concentration, shear rate, types of bacteria, and cell-cell communication within the biofilm. In this study, we investigated the effects of shear rate and nutrient concentration on the development of bacterial biofilm and how these environmental factors affect the success of antibiotics application. We hypothesized that the combined effect of nutrient concentration and shear rate applied to the bacterial biofilm would have statistically significant influence on the ability of antibiotic drugs, such as ampicillin and tetracycline, to degrade bacterial biofilms. The study suggests that the efficacy of antibiotics is greatly affected by the shear forces present within the growth environment and, to a lesser extent, by nutrient strength. These results may be used to predict the efficiency of antimicrobial dosage regimens against pathogens prone to biofilm formation under hydrodynamic milieus

---

Hypertension in Black and White American Males: A Review

Presenter's Name: Dagmawit Mekonnen
Classification: Professional Student
Presentation Type: Poster Presentation

Objective: This study assessed and compared the prevalence of hypertension between black and white American males. **Background:** The World Health Organization classifies hypertension among the leading causes of mortality and morbidity in the United States and other countries around the world. Meeting the health care needs of patients with hypertension is costly for state and national governments. The increasing number of individuals who are being diagnosed with hypertension compounds such costs. Commonly investigated risk factors that may be associated with the prevalence of hypertension include race and ethnicity. **Methods:** ProQuest, PubMed, and JSTOR datasets were used as search engines to acquire related articles from 2011-2015. Social cognitive theory was used as a conceptual framework for this study. **Results:** An assessment of the selected articles showed that many variables were linked with greater hypertension prevalence in African American population. It is noteworthy that there was a lower risk among white men. The risk factors among black males were influenced by variables factors such as lack of health education, poor adherence to drug therapy, false health beliefs, lack of motivation and personal strength to change lifestyle. Furthermore, the mistrust of African Americans to the state and healthcare system, due to long-term mistreatment and abuse were contributing factors as well. **Conclusion**: The review has revealed that hypertension was more prevalent among African-Americans compared to white Americans. African-Americans may be more vulnerable to hypertension due to various factors that include mistrust to the health system, incorrect lifestyle and health beliefs.

Occurrence of Leishmania in Phlebotomine Sand Flies Collected in Northwest Ethiopia.

Presenter's Name: Zachary Mills
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Ingrid Harris

Background: Insects, like other animals, are associated microbial communities. These microbiota offer a number of benefits to the insects such as help with digestion and protection against pathogens. These insects can sometimes also pass on parasitic protozoan to other animals. In Ethiopia and other parts of the world, potentially deadly diseases are transmitted by blood-feeding insects. Phlebotomine sand flies transmit leishmaniasis, a disease caused by protozoa in the Leishmania genus. Two common species of phlebotomine sand flies in Ethiopia are Phlebotomus longipes and Phlebotomus ashfordi. P. longipes is a known vector of Leishmania aethiopica, the causative agent of cutaneous leishmaniasis and P. ashfordi is highly suspected to be a vector. In the current study, we used PCR screening to test for the presence or absence of Leishmania in samples collected in northwest Ethiopia. **Methods:** Phlebotomine sand flies were collected in Debre Libanos, Ethiopia in the summer of 2014, Total DNA was extracted from whole insects and stored at -20 degrees Celsius. The DNA was then subjected to PCR screening using primers that specifically target Leishmania. **Conclusion:** This work is the continuation of research that had previously screened approximately 50% of the summer 2014 collection and identified three putative carriers: one P. ashfordi and two P. longipes samples. The current project will complete the screening of the summer 2014 collection and confirm the carrier status of the samples identified in the previous study. The results of these experiments will help to find new ways to fight this important parasitic protozoan disease.

Adrenal Androgens Increase CWR22 Growth and Provide Resistance to ADT

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

Coauthors: Michael Fiandalo, Elena Pop, James Mohler

Prostate cancer (CaP) is the second leading cause of cancer-related death. CaP relies on the relationship between the androgen receptor (AR) and testicular androgens, testosterone (T) and dihydrotestosterone (DHT). Men diagnosed with CaP are treated with androgen deprivation therapy (ADT), which reduces serum androgen levels and induces CaP regression. ADT is not curative and CaP recurs as lethal castration-recurrent CaP. One mechanism for CaP recurrence is intratumoral intracrine androgen metabolism, which is defined as the conversion of weak adrenal androgens, androstenedione (ASD) or dehydroepiandrosterone (DHEA) to T or DHT. The central hypothesis of the proposed summer project was to determine if adrenal androgens impact CaP

growth. To address this hypothesis, CWR22 human CaP xenografts were implanted in mice with T implants without adrenal androgens (control) or in combination ASD or DHEA. Once tumors grew to 0.5 cc T was removed to simulate ADT and after 30 days, tumors were harvested at specific time points. Immunohistochemistry (IHC) was performed on CWR22 tissue to assess protein expression for AR, prostate-specific antigen (PSA), KI-67 and caspase-3. Ki-67 and caspase-3 expression levels are used to assess growth rate. IHC revealed that growth rates between control and DHEA treated CWR22 were similar. ASD treated CWR22 growth rates were higher than DHEA or control CWR22 groups. These IHC data suggest that ASD promotes CWR22 growth during androgen deprivation.

Powered by Caffeine - Caffeine Typing

Presenter's Name: Sarai Mosby
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

My experiment was to determine if caffeine will effect a person's typing speed? Four people were asked to participate in the experiment. Each participant used an online typing test to measure their speed before drinking caffeine. The test results were recorded. The participants drank 8 ounces of caffeine and waited for 30 minutes. Each participant retakes the testing type and the results are recorded. The process was repeated for ten trials over several days. My hypothesis stated, I think caffeine would effect a person's typing speed, because caffeine gives you more energy.

Renal Complications of Sickle Cell Disease: Histopathological Findings .

Presenter's Name: Mehad Musbah
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Oral Presentation

Coauthors: Mulham Osman, Mustafa Ali,
Uzoamaka Nwaogwugwu, Oyije Iheagwara,
Constance Mere, Alem Mehari

Background: Sickle cell disease (SCD), a hereditary hemolytic disorder is characterized by chronic hemolysis, oxidative stress, vaso-occlusion and end-organ damage. SCD nephropathy is prevalent and is an independent marker of early mortality. The causes of renal failure in patients with SCD are not well understood and stems in part from the paucity of renal- autopsy/biopsy data in these patients. **Methods:** To improve our understanding of sickle cell renal pathology we conducted a retrospective review of autopsy findings of the kidneys from 23 patients with SCD deceased between 2004-2013 at Howard University Hospital. **Results:** The median age was 40 years (range 18- 69yrs) and 14(61%) were men. Most of the patients 22(96%) were African Americans and HbSS was the most common sickle cell genotype 22(96%). Thirteen patients (76%) were admitted with vaso-occlusive pain crisis before their demise. Kidney autopsy finding: On gross examination the median right kidney size was 153.5(42-249) grams while median left kidney was 150 (39-300) grams. About 44% of the autopsies showed granular kidney surface, and 33% revealed smooth cortical surface with focal scarring. On microscopic examination: 44 % of autopsies showed evidence of renal vascular sclerosis e.g. proliferation of the smooth muscle cells, intimal thickening or obliteration, and 56% had significant vascular congestions. Glomerular finding were focal glomerular sclerosis /hyalinization in 67 % and glomerulomegaly in 39 % of the autopsies. Tubular microscopic examination revealed tubular necrosis in 33%. Interstitial finding were mainly interstitial fibrosis/inflammatory cells infiltration in 61%. Other findings were: 33 % hemosiderin disposition and 17 % showed nephrocalcinosis. **Conclusion**: Wide range of pathological changes occurs in the kidney of patients with SCD and these changes might stem from vascular occlusion leading to endothelial cell injury and renal vasculopathy. **Implication:** Understanding the pathological alterations may unravel new therapeutic avenues against hemolytic diseases related kidney disease.

Turning up the Heat: Climate Change Effects on an Antarctic Fish

Presenter's Name: Frederick Nelson
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Anne Todgham, Nann Fangue, Brittany Bjelde

Since the Industrial Revolution, atmospheric CO2 levels have risen at an unprecedented rate. As atmospheric CO2 increases, ocean warming (OW) and ocean acidification (OA) are occurring which may pose a threat to marine organisms. Polar ecosystems are predicted to be vulnerable to global climate change (GCC); however, it remains unclear whether polar organisms that have evolved under extremely cold and stable conditions can acclimate to the OA and OW projections. Already studies have begun to show the impacts

of temperature and CO2 on adult polar fishes, but few studies have assessed early life history stages, which may be most vulnerable to environmental stressors. In this study, we exposed juvenile Trematomus bernacchii to projected OA (800 µatm pCO2 and 1250 µatm pCO2) and OW (+2ºC) conditions and measured changes in cardiorespiratory physiology to understand the metabolic costs associated with growing up under future ocean conditions. Changes in heart rate and ventilation rate over acute (48 h to 7 days) and long-term (14 to 28 days) acclimation time were measured through video analyses. While increased temperature significantly increased heart rate, elevated pCO2 had no effect. An additive effect was apparent in ventilation rate as both temperature and pCO2 significantly increased ventilation. Acclimation time also had an effect on ventilation, such that at 28 days ventilation rate decreased at elevated temperature, potentially demonstrating compensation mechanisms over longer time scales of acclimation. Projected OA and OW significantly affected cardiorespiratory physiology of the juvenile emerald rockcod, suggesting increased energetic costs associated with coping with future ocean conditions. OA and OW conditions will occur over the next decades and therefore longer term experiments are required to examine whether elevated costs of living may ultimately impact reproductive output and overall fitness of fishes.

Isolation and Characterization of the Brevibacillus strain U102 Phage Xuchi

Presenter's Name: Victoria Nguyen
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Victoria Nguyen, Lourds Fernando, Adrian Allen, Broderick Eribo, Courtney Robinson

Background: Howard University SEA-PHAGES is a research-intensive course designed to isolate, purify, and characterize an unknown bacteriophage. Bacteriophages are obligate intracellular parasites of bacteria with either DNA or RNA as their genome. Highly specific and not susceptible to antibiotics, bacteriophages attach to bacterial walls and inject their genetic material, carrying out one of the two life cycles, lysogenic or lytic, as indicated by cloudy or clear plaques, respectively. **Methods:** Nine grams of soil was obtained by Howard University's Founders Library (38.9226 °N and 77.0198 °W) under 3.5 cm below mulch. This soil sample was subjected to two methods of isolation: Direct Plating and Enrichment. The bacteriophages contained in observed plaques were then purified through a series of streaking and serial dilutions. Once the purified bacteriophage population was obtained, 7 mL of phage buffer was used to flood the web plate (85% lysed) to create the Medium Titer Lysate (MTL). **Results/Conclusions:** The isolated bacteriophage, named Xuchi, produced about 142 translucent plaques, round in morphology, and approximately 1.5 mm in diameter. The clearness of the plaques obtained from the steaking and spot plates suggests that Xuchi is lytic in nature. Further studies of Xuchi will involve the production of High Titer Lysate (HTL), restriction enzyme digestion, and electron microscopy. Future DNA analysis of Xuchi may illuminate a novel and possibly beneficial application for this bacteriophage.

The Effects of Fatostatin on Mitosis

Presenter's Name: Chelsea Nnebe
Classification: Undergraduate Student
Presentation Type: Poster Presentat

Coauthors: Ankur Gholkar, Jorge Torres

The sterol regulatory element binding proteins (SREBP) have become attractive targets for pharmacological inhibition in the treatment of cancer. SREBP-1a and SREBP-2 are responsible for the production and metabolism of lipids and cholesterol (1). Fatostatin is a synthetic small molecule inhibitor of SREBP that has many anti-tumor properties including the inhibition of cancer cell proliferation, invasion, and migration, the arrest of cancer cells in G2-M phase of the cell cycle, and the induction of caspase-mediated apoptosis in prostate cancer cells (1). Although Fatostatin has been viewed as an anti-prostate tumor agent due to its inhibition of SREBP, we show that Fatostatin's anti-cancer properties are the result of its interference with mitosis. In this study we treated HeLa cells with DMSO (positive control), Taxol (negative control), PF-429242 (SREBP inhibitor), and Fatostatin, and examined the various effects of these drugs on mitosis with the aim of determining whether or not Fatostatin was involved in the deregulation of mitosis. Our immunofluorescence microscopy results showed that 100% of Fatostatin treated cells displayed abnormal mitotic phenotypes, similar to those observed with Taxol treatment. Moreover, Fatostatin treated cells failed to show proper Aurora B localization to kinetochores during mitosis. Aurora B is a prominent kinase in cell division, and these images support our hypothesis that Fatostatin's detrimental effects are on mitosis. Future experimentation will use immunoblot analyses to investigate whether other mitotic proteins are deregulated in Fatostatin treated cells, but not cells treated with other SREBP inhibitors, like PF-429242 and Betulin.

Identification and Quantification of Parinari Ethanol and Aqueous Extracts Using UHPLC-Tandem Mass Spectroscopy.

Presenter's Name: Oyonumo Ntekim
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Poster Presentation

Type 2 diabetes is a chronic metabolic disease that is characterized by insulin resistance or deficiency in insulin production by the pancreas, which results in chronic hyperglycemia. This disorder often serves as a precursor to other chronic diseases such as neuropathy, nephropathy, cardiovascular and cerebrovascular diseases. Diabetes Mellitus is currently one of the leading causes of morbidity and mortality in developing countries. "Remedies" of plant origin serve as substitutes for traditional oral anti-diabetic agents in many developing countries. Parinari seed (chrysobalanaceae), is widely used in sub-Saharan Africa for the treatment of diabetes. The study seeks to identify the components of Parinari seed that potentially effect blood glucose reduction by comparing constituent structures to those of commonly used oral anti-diabetic drugs. The Parinari seeds were sourced from Western Nigeria and stored at -25 degree until the time of usage. The seeds were air-dried under ambient temperature for 24 hours and ground into powder using devoted coffee grinder. The Bligh and Dyer method was used to extract contents of 25g of Parinari seed. The two phases of the filtered extract (lipid and aqueous) were separated and stored at -86°C pending analysis. The extracts were analyzed at the USDA Food Composition and Methods Development Laboratory, Beltsville Human Nutrition Research Center, Beltsville, MD. The preliminary results show significant fatty acid content while the aqueous phase result is pending and structural analyses are pending.

Chronic Eosinophilic Leukemia in an African American Male

Presenter's Name: Stanley Nwabudike
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Onyekachi Ogbonna, Patricia Oneal

Introduction: Hypereosinophilic syndrome (HES) refers to a rare group of disorders characterized by a persistent, marked proliferation of eosinophils (>1500 eos/mm3) with end-organ involvement, in the absence of secondary causes of eosinophilia. Chronic eosinophilic leukemia (CEL) is a very rare myeloproliferative variant of HES characterized by clonal eosinophilia. It discriminately affects men and can present with anemia, thrombocytopenia, hepatosplenomegaly, and bone marrow dysplasia/fibrosis among other findings. We present a case of CEL seen at our institution. **Case:** A 54-year-old African-American male with history of asthma presented with sudden onset pleuritic chest pain and dyspnea. His chest x-ray was normal and cardiac work up was negative. He was treated for acute asthma exacerbation with steroids and nebulizers with improvement in his symptoms. Interestingly, he was found to have significant eosinophilia of 11,070 eos/mm3 (45% of leucocytes) on admission, which had been longstanding on review of his medical record. On evaluation by the hematology team, he denied constitutional symptoms, travel abroad, camping and exposure to unsanitary water or food. He denied easy bruising or bleeding, allergic reactions or history of allergy to medication. Family history was significant for Asthma in his mother who died of asthma related complications. Home medications were albuterol and Advair inhalers only. Physical examination revealed diffuse inspiratory and expiratory wheezing in all lung fields and moderate splenomegaly. He underwent a bone marrow biopsy, which revealed a markedly hypercellular marrow with predominant eosinophilia (60% of total marrow cellularity). Flow cytometry showed myeloid predominance with increased CD52+ eosinoforms; and florescent in-situ hybridization (FISH) was positive for the FIP1L1-PDGFRA (F/P) mutation, consistent with chronic eosinophilic leukemia. Cytogenetic analysis revealed normal karyotype. Given that patients with F/P mutated CEL have virtually universal response to Imatinib, we encouraged the patient repeatedly to begin treatment with Imatinib. Unfortunately, he declined. **Implications/Discussion:** Hypereosinophilic syndrome (HES) refers to a rare group of disorders characterized by a persistent, marked proliferation of eosinophils (>1500 eos/mm3) with end-organ involvement, in the absence of secondary causes of eosinophilia. Chronic eosinophilic leukemia (CEL) is a very rare myeloproliferative variant of HES characterized by clonal eosinophilia. It discriminately affects men and can present with anemia, thrombocytopenia, hepatosplenomegaly, and bone marrow dysplasia/fibrosis among other findings. A patient suspected of having HES/CEL owing to prolonged profound eosinophilia should first undergo evaluation to rule out secondary causes of eosinophilia. Failure to identify a secondary cause for the eosinophilia should then lead to a comprehensive work-up to identify possible end-organ damage from HES and a possible clonal population of eosinophils, as is the case with CEL. Screening of the peripheral blood for the F/P mutation

by FISH or reverse transcription polymerase chain reaction and bone marrow biopsy with cytogenetics is crucial in identifying clonal eosinophilia. Patients with F/P positive CEL or PDGFR-associated CEL should be treated with Imatinib given their almost universal response to Imatinib. Second-line agents include corticosteroids and interferon alpha. Novel therapies in the management of HES and/or CEL include Alemtuzumab and Mepolizumab, both of which are humanized monoclonal antibodies that target CD 52 and IL-5 respectively. Given the rarity of CEL, these cases should be reported if identified to increase our understanding of the disease.

GAD67 Expression in the Hippocampusl and Medial Prefrontal Cortex of Adult Rats Shows Low Correlation to Early Exposure to Stress

Presenter's Name: Thomas Obisesan
Classification: Graduate Student
Presentation Type: Poster Presentation

Early exposure to adverse life conditions may alter the neural maturation of an organism, and in humans, this negative experience early in life predisposes them to the development of psychiatric disorders and substance abuse. However, the abnormal neuroanatomical circuits and biochemical mechanisms that underly such changes are poorly understood. As such, in this study we attempted to determine if early life stress (ELS) influenced signaling within the inhibitory GABA circuits of the hippocampus and medial prefrontal cortex (mPFC), two brain regions that are implicated in mood disorders. Methods: We used a chronic postnatal maternal deprivation paradigm as our ELS, where Sprague Dawley neonate rats were separated from their mothers daily for 3 hrs and then returned to their cage. Brains were processed for immunohistochemistry. Using a stereology system, we performed unbiased counting of neurons in the mPFC or HIP stained for GAD67, an enzyme necessary for GABA production. We also evaluated expression of GABAA receptors in hippocampal subregions of young ELS rats by western blotting. Results: Sex-dependent and independent analysis of GAD67 stained neurons revealed no statistically significant differences in the number of GABA-ergic neurons in hippocampal or mPFC. By contrast, western blot analysis indicates that there may be sex-dependent differences in GABA A α1 and α2 receptor subunits in subdivisions of hippocampus. Conclusions: These data indicate that the inhibitory system is complex and ELS influences differential regional and temporal regulation of GABA-ergic neurons, of GABA receptor expressing neurons, or of the GABA neurotransmitter itself.

Ubiiquitination Controls the Angiotensin Converting Enzyme 2 Expression Levels and Subcellular Localization

Presenter's Name: Blessing Ogunlade
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Srinivas Sriramula, Eric Lazartigues, Catalin Filipeanu

Hypertension is a major risk factor for cardiovascular diseases, which are the number one cause of mortality worldwide. Renin-angiotensin system (RAS) is well known to be involved in the development and progression of hypertension. Angiotensin converting enzyme 2 (ACE2) is the newest discovered member of this system and prevents the pathologic actions of angiotensin II (angII) mediated by angiotensin type 1 receptor (AT1R). Our group recently demonstrated for the first time that in presence of angII, ACE2 is internalized and degraded. Enzyme internalization requires AT1R as shown by the fact that the receptor blocker losartan fully prevented enzyme internalization, whereas leupeptin (a lysosomal blocker) inihibited ACE2 degradation Furthermore, co-immunoprecipitation experiments demonstrated that ACE2 and AT1R are interacting in angII-dependent manner and that angII enhanced ACE2 ubiquitination, which is the major posttranslational modification involved in protein degradation. Amino acid analysis demonstrated that ACE2 has only five putative ubiquitination sites. We generated single ACE2 ubiquitination-deficient mutants and tested their activity in HEK293T cells co-transfected with AT1R. Surprisingly, we found that each of these mutants was resistant to angII-induced internalization and degradation. Moreover, we found that these mutants displayed higher enzymatic activity even in basal conditions (i.e. in absence of angII treatment) compared to ACE2 wild-type. These data clearly indicate that ACE2 internalization and degradation is constitutive and this process contribute to the attenuation of ACE2 activity during development and progression of hypertension. Targeting this mechanism may provide new therapeutic approaches in the cardiovascular diseases.

A Comparison of the Cost-Effectiveness of Community Pharmacy Based Promotion of Herpes Zoster Vaccine in 60 Year Olds and 70 Year Olds

Presenter's Name: Tanjinatus Oishi
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Jateh Major, La'Marcus Wingate

Background: Receipt of the herpes zoster (shingles) vaccine is suboptimal as less than 30% of seniors receive the vaccine as recommended. This analysis compared the cost-effectiveness of community pharmacy oriented interventions for promotion of herpes zoster vaccination in 60 and 70 year olds. **Methods:** A Markov analysis was used to compare the cases of shingles and shingles related costs with two strategies: (1) no formal vaccine promotion and (2) active promotion of the vaccine within community pharmacies. The analysis was conducted from a healthcare perspective and utilized a lifetime horizon. An incremental cost effectiveness ratio (ICER) was calculated by dividing the difference in total cost between the two strategies by the difference in shingles cases between the two strategies. **Results:** For a cohort of 100,000 60 year olds, the vaccine promotion program resulted in 1.3 fewer cases of shingles and increased total costs by $25,005, resulting in an ICER of $19,246 for each additional case of shingles prevented. For a cohort of 100,000 70 year olds, active promotion of the vaccine in community pharmacies was associated with 1.5 fewer cases of shingles and $23,570 in additional costs, with an ICER of $15,713 for each additional case of shingles prevented. **Conclusion:** Community pharmacy based promotion of herpes zoster vaccine may be slightly more efficient in 70 year olds as opposed to 60 year olds, but the promotion programs were shown to prevent the disease when administered at both ages.

Identification and Quantification of Parinari Ethanol and Aqueous Extracts Using UHPLC-Tandem Mass Spectroscopy.

Presenter's Name: Edidiong Abasi Okon
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Precious Nwagu, Oyonumo,Ntekim

Type 2 diabetes is a chronic metabolic disease that is characterized by insulin resistance or deficiency in insulin production by the pancreas, which results in chronic hyperglycemia. This disorder often serves as a precursor to other chronic diseases such as neuropathy, nephropathy, cardiovascular and cerebrovascular diseases. Diabetes Mellitus is currently one of the leading causes of morbidity and mortality in developing countries. "Remedies" of plant origin serve as substitutes for traditional oral anti-diabetic agents in many developing countries. Parinari seed (chrysobalanaceae), is widely used in sub-Saharan Africa for treatment of diabetes. This study seeks to identify the components of Parinari seed that potentially effect blood glucose reduction by comparing constituent structures to those of commonly used oral anti-diabetic drugs. The Parinari seeds were sourced from Western Nigeria and stored at -25 degree until time of usage. The seeds were air dried under ambient temperature for 24 hours and ground into powder using devoted coffee grinder. The Bligh and Dyer method was used to extract contents of 25g of Parinari seed. The two phases of the filtered extract (lipid and aqueous) were separated and stored at -86°C pending analysis. The extracts were analyzed at the USDA Food Composition and Methods Development Laboratory, Beltsville Human Nutrition Research Center, Beltsville, MD. The preliminary results show significant fatty acid content while the aqueous phase result is pending and structural analyses are pending.

Differences in Patient Outcomes of Myocardial Infarction in Urban Teaching and Non-Teaching Hospitals

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

Coauthors: Johnnie Daniel

Background/Aims: Patients with myocardial infarction (MI) reportedly have different outcomes on discharge. We evaluated the differences in the outcomes between Howard University Hospital (HUH) and Urban, large, Private, and Non-Profit Teaching Hospitals (NPTH) inpatients' outcomes. **Methods:** Sample of seventy seven patients who presented to HUH emergency room with myocardial infarction in 2012 were analyzed based certain hospital characteristics, using the National and HUH datasets according to International Classification Diseases, ICD 9 codes 41000 for MI. **Results:** The result of the study showed that more males (6%) were admitted to National while more females (6%) were admitted in HUH. Of these, HUH had 8.3% white, and 91.7% black

with (72.8%) white and (10.7%) black in National. The National hospitals had a significant (14%) percentage of age groups (80 years or older) group than HUH. A significant difference (~39%) of patients with income range ($48,000.00 – $62,000.00) were admitted at HUH than the National. Mortality rates and hospital charges were comparable for both hospital categories. However, a significant difference (~10%) was noted for hospital stay of 14-days or longer when compared to other hospital stay categories. **Conclusion:** Elderly and middle class-income patients were admitted more at HUH than in the National hospitals. HUH inpatients stayed longer in the hospitals than their National counterparts with no significant difference observed for both charges and mortality rates. The authors call for similar study to be replicated with comparable black dominated hospitals using higher level of analytics to ascertain the impact of the variables on the outcomes of MI patients.

Indoor Air Quality Study on Howard University Chemistry Building Basement Level

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

Background: The aim of this study was to determine the indoor air quality within the Chemistry Building Basement Level located on Howard University campus in Washington, D.C. **Methods:** Airborne microflora was collected using bioisolation filters connected to an electric pump. The system was placed in each of three different locations and allowed to sample between 48-72 hours. Initial qualitative observations were performed using high-powered light microscopy on mold samples collected from surfaces. Microflora was then cultured in three separate Petri dishes containing potato dextrose agar. Samples were placed in an incubator for 24 hours and then refrigerated for future use. **Results:** Visual examination of spores yielded a diverse population that varied spatially. The pigmentation of the cultured samples ranged from black to orange to off-white. Some colonies were circular while others were irregular or rhizoid. One colony observed exhibited strong antimicrobial traits by producing a small zone of inhibition in its surrounding area. The greatest number of cultures was observed in room B-13. **Conclusion:** Further testing is being conducted to determine the specific microorganisms present within the samples and chemical co-dependencies. The filters will be tested for heavy metals to identify the classes of co-pollutant that accompany the fungal communities. This study serves as a pilot that is intended to be extended throughout the chemistry building.

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration.

This material is based upon work supported by the National Oceanic and Atmospheric Administration, Educational Partnership Program, U.S. Department of Commerce, under Agreement No. NA11SEC4810003

Elucidating the role of AIB1 in invasive Triple Negative Breast Cancer cell lines

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

Triple negative breast cancer (TNBC) patients do not benefit from directed therapy because these tumors do not express targetable molecules; such as, hormone or growth factor receptors (ER, PR and HER2). These tumors exhibit an increased inflammatory signal and an aggressive phenotype that leads to an increased frequency of metastasis. We demonstrate that cell lines representing different TNBC subtypes have varying degree of sensitive to AIB1 shRNA by lentiviral infection. The knockdown has a considerable effect in viability, initially, we report the presence of a fraction of cells that proliferate independent of AIB1. This suggests that AIB1 plays an important role in how TNBC subtypes utilize the glycolytic pathway to sustain the cancer phenotype.

Understanding the Genetic Basis of Salt Sensitivity in Populations of African Descent

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

Coauthors: Michael Campbell

Salt sensitive hypertension (SSHTN) is characterized by a rise in blood pressure in response to increased dietary salt intake, which can lead to a number of complications, including kidney disease and stroke if left uncontrolled. Prior studies have also shown that SSHTN disproportionately affects

African Americans relative to other populations in the United States. While multiple factors likely contribute to SSHTN in general, it has been hypothesized that elevated risk for SSHTN in African Americans may be due in part to genetic adaptations in ancestral West African populations that were beneficial in the past but are no longer adaptive in populations of African descent living in different environments. To explore this hypothesis, we examined patterns of variation within 7 salt sensitivity genes, totaling more than 1,000,000 bases of sequence data, in ~1400 individuals from worldwide populations, including 5 distinct African populations. Here, we report striking patterns of diversity in the coding region of the PRKG1 gene on chromosome 10, which is involved in the renal reabsorption of sodium. Specifically, we detected a strong bias towards high-frequency mutations, indicative of positive selection or adaptation, in our West African samples. We also identified previously undescribed amino acid-altering mutations in PRKG1 that likely have been targeted by selection, representing interesting candidate variants that potentially contribute to gene function. Overall, the detection of genic regions under selection is highly informative for identifying functionally-relevant sites underlying complex traits, and/or for discovering candidate variants that might serve as effective drug targets for the treatment of disease.

Diversity of Mycobacteriophages Isolated from Soil Samples at Howard University

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

The Honors biology program at Howard University is being funded by Howard Hughes Medical Institute to study bacteriophages through a course called Phage Hunters Advancing Genomics and Evolutionary Science (PHAGES). In the 2014-2015 PHAGES course, 96 mycobacteriophages were isolated. PHAGES students infected the bacterium Mycobacterium smegmatis (strain MC2^155) (a gram-positive a bacillus bacteria) with bacteriophages, which are viruses that infect and reproduce within certain bacterial cells, which were collected from the Howard's campus. The purpose of this project is to isolate and characterize a novel bacteriophage from the environment, extract the DNA and ultimately annotate the genome. Four genomes of these phages were sequenced using Illumina sequencing at the Pittsburgh Bacteriophage Institute: Morizzled23, Kwadwo, HUTC2, and Haleema. One of the bacteriophages that were isolated is Morizzled23 which was isolated by Morinne Osborne. It is cluster C1 phage that contains a genome that is 155,131 bp in length. It has a G+C content of 64.6%, and contains 234 ORFs and 30 tRNAs. Preliminary BLASTn analyses indicated that Morizzled23 is most similar to phage Spud (99% in common), which was isolated in Pittsburgh, PA in 2004. A cluster B1 phage, Kwadwo, was also isolated from the HU campus. Kwadwo, which was discovered by Kwadwo Assensoh, has a G+C content of 66.5% and contains 102 ORFs in its 68.3Kb genome. This phage is most similar to phage Sophia (99%), which was isolated from West Lafayette, IN. Phage HUTC2, is a cluster A11 phage and is most similar to phage Fibonacci (99%), which was isolated from West Lafayette, IN. HUTC2's genome is 51.3Kb in size, contains 97 ORFs and one predicted tRNA. Rasheed Nawaz's phage, Haleema, is another cluster B1 phage. Similar to Kwadwo, Haleema's genome has a 66.5% G+C content, a length of 68.4Kb and 104 ORFs. Haleema is most similar to Xavier (99%), which was isolated from soil in St. Louis, MO. Recent studies have focused on finalizing the annotations of the genome and using PCR to determine the cluster affiliations of the 92 remaining phages.

Reduced Neurological deficits in pediatric SIV Infection using Antibody SMI-311

Presenter's Name: Jillian Pailin
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Pediatric HIV infection remains a global health crisis with an estimated 1500 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. There is little known about pediatric HIV infection because of the low sample access. There have been imaging studies that have shown reduced diffusivity suggesting demyelination may be a prominent feature in pediatric HIV infection that is associated with diminished executive function. The hypothesis for this study deals with the idea to test vaccine studies and test if pediatric SIV infection diminishes myelination fibers and axons in the brain. The study includes macaques (Macaca mulatta) that received oral inoculation with repeated exposure of SIVmac 251. The brains were sacrificed after 16-18 weeks and used for histopathological analysis. The antibody SMI-311 was used on the frontal cortex, hippocampus, and motor cortex. Data suggests that reductions in myelination and myelination fibers were reported. A decline in hippocampal neurons was seen to be associated to pediatric HIV infection.These data

will provide a neuroanatomical substrate for reduced radial diffusivity as well as reported multiple sclerosis-like signs in HIV- infected children.

Discovery, Mapping and Validation of Posttranslational Modification in Ebolavirus Phosphoproteome by Tandem Mass Spectrometry and Conformational Analysis

Presenter's Name: Christian Parry
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Andrey Ivanov, Iinykh Philipp,
Christian Parry, Xionghao Lin, Yuri Obukhov,
Tatiana Ammosova, Alexander Bukreyev, Sergei Nekhai

Posttranslational modification is of utmost importance in signaling and regulation of diverse cellular processes. Posttranslational modification also serves as a means by which viruses, with limited genomes, expand the functional repertoire of their proteins. The West Africa Ebola virus epidemic of 2014 has clearly demonstrated our unpreparedness against new and re-emerging pathogens; there is an urgent and unmet need for effective prophylactic and post-infection treatment for Ebolavirus infection. Tandem mass spectrometry is a powerful and reliable tool for identifying and quantifying posttranslational modification. This technique utilizes several computational approaches for interpreting MS data: database searches, analyses, bioinformatics, as well as molecular modeling and structural analysis. We have carried out comprehensive mapping of the entire phosphoproteome of Ebola virus by nanoLC mass spectrometry. For a fuller interpretation of MS data, we have modeled the structure of the inherently unstructured Ebolavirus proteins by ab initio methods, fragment assembly and by comparative modeling. We have also carried out multi-nanosecond molecular dynamics simulations. The spatial and temporal dynamics of protein phosphorylation are important in discerning biological function. Alanine mutation of phosphorylation sites help in validating phosphorylated residues, and phosphorylated VP35 and Ala mutation counterpart show different folding and dynamic behavior than wildtype protein. VP35 is a multifunctional filovirus protein essential for nucleocapsid assembly, transcription and replication and also Ebolavirus virulence. VP35 rapidly and efficiently shuts down the host innate and adaptive immune response. Our findings suggest a means of developing new therapeutics that counter Ebola virus virulence by inhibiting virus transcription and replication.

Targeted genome editing to study the functions of cancer susceptibility genes

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

Cancer is caused due to mutations in genes that control cell division and growth. Exposure to environmental carcinogens and endogenous factors increases our chances of acquiring mutations hence risks to develop cancer. Mutations not only affect the functions of the gene but also the cell processes that control cell replication, growth, survival and response to stress. How these changes alter the gene function is important in understanding the molecular basis of cancer development and in designing effective anti-cancer drugs. Exome sequencing studies have revealed that mutations in genes that belong to the category of DNA repair predispose the individuals to develop cancer. Germline mutations in a DNA helicase, RECQ1, are linked to increased breast cancer susceptibility in Chinese, French and Polish population. We have previously shown that RECQ1 is essential for maintaining genomic stability. We aim to develop cell models for mechanistic studies to understand the critical functions of RECQ1 that are important for its biological activity as tumor suppressor. Here we describe the successful use of CRISPR-Cas9 genome editing system to knockout RECQ1 from human cancer cells. We validate this approach in two independent cell lines and confirm RECQ1 deletion by western blotting. We will now utilize the CRISPR system to engineer patient-derived mutations and create a model for human breast cancer. These genetically modified cell lines will serve as models to explore the functions of RECQ1 that regulate cancer development and progression thereby laying the foundation for the development of cancer therapeutics.

Minimally Invasive Method to extract DNA from Dentition using Cobb Collection Human Skeletal Remains

Presenter's Name: Alexis Payne
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Teeth have been used as a source of DNA for identifying fragmented and degraded human remains. Cellular cementum is collected and analyzed for DNA sequencing. Cementum is

the outside layer of the tooth that is located on the roots. The location of teeth within the jawbone make them a great choice due to the protection the bone provides. Teeth selection for extraction is based in studies of the anatomical characteristics of teeth. Additionally, it is known that cellular cementum will be greatest on teeth with the largest root surface area, like molars, premolars and canines. The extraction process of removing cementum, however is not as widely understood. With the use of the Cobb Collection's dental remains, a new procedure for cementum extraction that grants preservation of the entire tooth has been developed. The Cobb Collection provides a unique source of 19th and 20th century African American biological histories. Cementum extraction and DNA sequencing of these individuals will support further subsample studies on raw material of human remains. The procedure also supports oral microbiome analysis to understand dietary habits and disease exposure in studied individuals. Cementum extraction through the roots is a minimally invasive. It can provide critical information that can advance clinical science. Our methodology re-engineers current clinical dental practices for research purposes by curvette removal of plaque, calculus, cementum, and remnant periodontal ligament tissue. We have successfully extracted dental-derived DNA from all of the aforementioned layers and are currently optimizing these procedures. This technique both protects and makes use of the precious material for current studies and future generations.

The Isolation, Purification, and Observation of Bacteriophage Vanessa325

Presenter's Name: Aaliyah Pleasant
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Adrian Allen, Lourds Fernando, Courtney Robinson

Background: Bacteriophages are a type of virus that only infect bacteria. Researching phages provides insight to their relationship with their host bacteria and the observation of their genetics. **Summary of Experiments:** A soil sample was collected on campus. The sample was then enriched, magnifying the number of phages. Next, the phages were isolated and plated, with bacteria U102, a strain of Brevibacillus commonly found in soil, as the host and HUph, a phage-positive sample as the positive control. Through spotting, streaking and titering, a single phage strain was isolated and observed. After isolation and purification, the single phage was serially diluted testing the concentrations in order to observe which concentration results in a maximum web plate, a plate that is at least 85% lysed, also known as the titer. The medium titer lysate, a concentrated liquid with the phage suspended throughout, was collected through the flooding of the plate. The spot test using the MTL, was used to calculate the titer, number of plaque forming units per µL of MTL. The titer was tested in a 5-plate infection, testing different volumes for a web plate. After seeing the results, 8 µL was applied in a 10 plate infection, allowing the high titer lysate, a more concentrate lysate than the MTL, to be obtained. **Results:** The isolated phage, Vanessa325, has a smooth round edge with a radius of 1.3 millimeters. Only 8 µL of Vanessa325 at a 10-4 dilution produces a max web plate. **Conclusion:** The DNA will be isolated, sequenced and annotated, which is the identification and interpretation of the coding regions found in the genome.

Identification and Characterization of Differential Properties of Tendon Stem Cells

Presenter's Name: Aja Pollard
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Aja Pollard

Background: Tendinopathy, a common occurrence in athletes, results in the formation of inferior scar tissue. Scar tissue limits muscle contraction and can worsen an injury. As a result, patients must undergo long healing processes that require minimization of physical activity. Recently, scientist have confirmed the presence of tendon stem/progenitor cells (TSCs), where only tenocytes were believed to exist. However, the precise differential properties of TSCs are largely unknown. This research aims to characterize the multi-differentiation properties of TSCs using Rat Achilles Tendon Stem Cells. **Methods:** The cell marker expression and differentiation potential of rat-derived TSCs and tenocytes were examined using the stem cell markers, Nucleostemin, OCT-4, and SSEA-4 and the assays Alizarin Red S (Osteo), Safranin O (Chondro) and Oil Red O (Adipose). The two types of cells were compared through microscopy analysis using immunohistochemistry, chemical staining, and comparative cell morphology. **Results:** TSCs were found to express stem cell markers, while tenocytes showed no expression. Additionally, it was found that TSCs were able to differentiate into adipocytes, chondrocytes, and osteocytes in vitro. In contrast, tenocytes exhibited no differential

properties. Morphology analysis showed a rhombic shape in TSCs, while tenocytes depicted a more elongated morphology. **Conclusion:** Based on the differential properties observed in vitro, it is suggested that TSCs could form tendon-like, cartilage-like, and bone-like tissues in vivo. The findings will shed light into sports medicine advances in the attempts of accelerating tendon injury healing processes.

Correlations between Oxytocin Neuronal Cell Number and Social and Depressive-Like Behaviors in a Rodent Social Deprivation Model

Presenter's Name: Eva Polston
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Coauthors: Yaminah Gilles

Oxytocin (OT) is an essential hypothalamic neuropeptide most widely recognized for its peripheral actions related to parturition and lactation. A rich body of literature also supports an important functional role for oxytocin released centrally in the brain. Centrally released oxytocin is strongly associated with affiliative behaviors and social bonding. Animal and human research implicates decreased numbers of oxytocin neurons in social deficits, anxiety and depression. In the present study we employed two models of social deprivation, post-natal and post-weaning, that are known to induce depressive-like behaviors in rats. Male and female Sprague-Dawley rats were assigned to two neonatal groups, maternally separated (MS) or non-separated (NS). MS pups were separated from their mothers for four hours each day for the first 21 days of life, while NS pups remained undisturbed with their mothers. On postnatal day 21, half of the animals from each treatment group were weaned into either single housing (SH) or same-sex group housing (GH) conditions to yield four experimental groups: maternal separated/single housed (MSSH), maternal separated/group housed (MSGH), non-separated/single housed (NSSH), and non-separated/group housed (NSGH). A series of behavioral tests was performed after weaning. A social play test was performed at 5 weeks of age, followed in adulthood by two tests for depressive-like behaviors, the forced swim test (FST) and the sucrose preference test (SPT). All animals were then euthanized, and sections through the hypothalamus were immunostained for OT neurons. Numbers of OT-immunoreactive neurons in the paraventricular and supraoptic nuclei of the hypothalamus (PVN, SON) were quantified stereologically. A significant main effect of post-weaning housing was observed in almost every behavioral measure. Single housed animals exhibited more social behaviors than group housed animals, irrespective of whether the behaviors were categorized as 'prosocial' (sniffing grooming, approach) or 'antisocial' (boxing, pinning, rejecting). Results from the FST and SPT were similar. Post-weaning housing exerted the most dominant effect on depressive-like behaviors. No group differences in OT cell numbers were observed in the main cell groups of the PVN and SON, and there were no correlations between the numbers of OT neurons in any region and the display of depressive-like behaviors. However, correlational analyses on numbers of OT neurons in the anterior parvicellular division of the PVN (PVNap) revealed significant inverse correlations between the numbers of parvicellular OT neurons in the PVNap and the frequency of antisocial behaviors observed in the social play test. Our results suggest that OT neurons in the PVNap may contribute to social affiliation and bonding by inhibiting the display of antagonistic behaviors.

Characterizing phage David: 1997

Presenter's Name: Brandon Prince
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Brandon Prince, Ngozi Elobuike, Ashley Queen, Leon Dickson, Courtney Robinson

Background: A bacteriophage (phage) is a virus that infects a bacterium. Phages can live either in lytic or lysogenic cycles. In the lytic cycle, the bacteriophage lyses its host cell immediately after invasion. The lysogenic cycle is characterized by integration of the bacteriophage nucleic acid into the host bacterium's genome or formations of a circular replicon in the bacterium's cytoplasm. Phages are used extensively in scientific research, particularly for phage therapy which is the lysis of antibiotic resistant bacteria. The purpose of this research was to isolate a single phage and characterize it by electron microscopy, by analyzing its DNA by restriction enzyme cleavage, PCR, and DNA sequencing and annotation of the DNA sequence. **Methods:** Soil samples were collected from the campus of Howard University at (20.768493 N/ 19.3653651 W). Following this collection, an enrichment procedure was performed to amplify the presence of phage in the population. After enrichment, a spot test was conducted to confirm that the plaques present were indeed phages. These procedures were followed by plaque streaking and titer assays to further isolate a single population of phage. **Results:** A single phage population was isolated and the titer

assay phase was reached in the lab. Most of the plaques produced by the phage were lysogenic.

Isolation and Purification of Majetogmatis

Presenter's Name: Imazul Qadir
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Imazul Qadir, Devon Byrd, Ashley Queen, Leon Dickson, Courtney Robinson

Background: Bacteriophages are a class of viruses that target bacteria. Phages can be used as tools to manipulate DNA for cloning, mutation, and other laboratory techniques. Studying phage genomes and biodiversity may be useful for therapeutic applications such as treatment for antibiotic-resistant bacteria that cause disease. The purpose of this experiment was to explore the interactions between the host bacteria and a novel bacteriophage. This phage was isolated and will be characterized through several methods. **Methods:** A soil sample was taken from Howard University's football stadium (38.92484N, 77.02036W). Once the sample was enriched and filtered, the plaques were spot-tested and streaked to purify the phage populations. Once a single phage population was purified, a titer was performed on the sample to determine the concentration of plaque-forming units in a given solution. **Results:** At first, several different mixed phage populations were present, but upon multiple streaking trials, a single, pure phage population (Majetogmatis) was isolated. Currently, this phage population is being titered to confirm the concentration of plaque-forming units in a given solution. **Discussion:** Once the titer is obtained, the empirical test will be performed to determine the dilution of lysate necessary to obtain a max-web plate. Then, the phage will be analyzed using electron microscopy and phage genomic DNA will be isolated and purified for restriction analysis and sequencing protocols.

Characterization of BRCA1 SNPs of unknown clinical significance in breast cancer

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

Coauthors: Yasmine Kanaan, Luisel Ricks-Santi, Muneer Abbas

Background: The BRCA1 gene, codes for a tumor suppressor protein which plays an important role in the regulation of DNA replication, repair, and cell cycle control. Altered or truncated protein products of BRCA1 due to genetic variation are found to be associated with increased risk of developing hereditary breast cancer (BCa). This study seeks to characterize single nucleotide polymorphisms (SNPs) in BRCA1 that are variants of unknown clinical significance (VUS). We hypothesize that genetic VUS in BRCA1 may increase the predisposition to developing BCa in African Americans (AA). **Methods:** This study's population included 768 AA female subjects with sporadic and familial BCa in addition to familial and population controls. Two BRCA1 SNPs, rs16941 and rs799917 were genotyped by the TaqMan® allelic discrimination assay. Statistical analysis was performed using SNPstats to test for SNP association with models of inheritance. **Results:** The risk allele for rs16941 is C. Using the codominant model for all BCa cases and all controls, those with the C/T and C/C genotype are more than two times more likely to be a BCa case. Using the dominant model, those with the C/T-CC genotype are two and a half times more likely to be a BCa case. The risk allele for rs799917 is A. **Conclusion:** Using the codominant model for all BCa cases and all controls, those with the A/G genotype are more than 34% more likely to be a BCa case; those with the A/G-G/G genotype are 38% more likely to be a BCa case in the dominant model.

---

etr-1 plays a novel role in spermatogenesis in Caenorhabditis elegans

Presenter's Name: Kristina Ramirez
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Kristina Ramirez, Ruby Boateng, Anna Allen

Background: Sperm formation during male gametogenesis is important when considering possible causes for male infertility. We use males from the organism Caenorhabditis elegans to study the role of etr-1, a gene formerly identified as exclusively muscle-specific, in spermatogenesis and spermiogenesis. This gene has recently been found to affect hermaphrodite germline and fertility. **Methods:** We used RNAi feeding to knockdown etr-1 in males from C. elegans wild-type and RNAi hypersensitive rrf-3 strains. Antibody staining was performed on male gonads and their sperm to determine the localization of ETR-1 and other integral factors necessary for spermatogenesis and

spermiogenesis. Dissected sperm were activated in-vitro using a protease mixture. Samples were viewed using DIC and immunofluorescence microscopy. Fertility assays were performed using etr-1 RNAi-depleted rrf-3 males and fog-2 feminized hermaphrodites. **Results:** ETR-1 expression in the male germline localizes towards the proximally located seminal vesicle and distally located loop region. Males depleted of ETR-1 via RNAi produce a decreased brood size when mated with fog-2 worms. Staining of spermatids and spermatozoa dissected from etr-1(RNAi) animals is currently a work in progress. **Conclusions:** Antibody staining of wild-type male gonads implicates etr-1's role in spermatogenesis. ETR-1's spatiotemporal localization corresponds to regions within the male germline in which spermatogenesis occurs. Fertility assays support this conclusion as rrf-3 males depleted of ETR-1 produce lower broods compared to controls. This reduction in brood is possibly due to abnormal activation of sperm.

Cranial Abnormalities and Human Trisomy 18: Osteogenic-Neural Development

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

Coauthors: Janine Ziermann, Marjorie Gondré-Lewis

Background: Trisomy 18 (T18), Edward's syndrome, is one of the two most common autosomal aneuploidies in humans, and is often associated with malformations of midline structures. Yet, no studies have analyzed contributions of synchronous neurocranial and neural development in these disorders. We posit that failed interactions between osteogenic factors in development of skull and in neural development exacerbate the severity of cranial malformations. Here we present the first in-depth analysis of malformations of the basicranium of a holoprosencephalic (HPE) T18 fetus with synophthalmic cyclopia and alobar HPE. **Methods:** Fine gross dissections of the cranium and facial skeleton combined with three dimensional (3-D) reconstructions of computed tomography (CT) scans, investigated the interior cranium of a T18 human fetus at 28 weeks caused by a translocation at 18p11.31 compared to a non-trisomy 29 week old. **Results:** Adverse effects in the cranial and neural patterning of the T18 genetic anomaly, included, but were not limited to, an absent anterior cranial fossa with missing orbital plates of the frontal bone, exposed underlying hard palate, anteriorly shifted middle cranial fossa, fused eyes, and a pituitary gland in direct contact with overlying neural tissue. **Conclusions**: TGIF, located on chromosome 18, is crucial to neural patterning, and in the proper development of neural and cranial structures. Its intricacy may be attributed to the confluence of signaling pathways that influence development of the eye, pituitary gland, and cranial base.

Effects of Herbivore Experience and Elemental Plant Defense on Food Choice in a Specialist Insect

Presenter's Name: Tayannah Rivers
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Background: Efficient and appropriate food choices are critical for survivorship of insect herbivores faced with diverse plant phenotypes, including plants such as Alyssum corsicum and Alyssum murale that can hyperaccumulate toxic Ni from the soil. Like other members of the Brassicaceae, A. corsicum and A. murale produce glucosinolates that provide defense against generalist herbivores. Murgantia histrionica (Pentatomidae) is an aposematic insect herbivore that specializes on Brassicaceae and sequesters glucosinolates from its diet for its own defense. **Methods:** This Honors Thesis investigates the impacts of prior experience and Ni defense on food choice by Murgantia. Three "experience treatments" were compared: (1) Naïve Murgantia (no previous exposure to Alyssum) (2) Murgantia previously exposed to A. murale and (3) Murgantia previously exposed to A. corsicum. Exposure treatments included Alyssum plants grown with and without Ni. After starving Murgantia adults for 12-24 hours, the behavior of individual insects was recorded during controlled time trials in an array of 4 plants: A. murale without Ni, A. murale with Ni, A. corsicum without Ni and A. corsicum with Ni. **Results:** Naïve insects show preference for Alyssum corsicum. Experienced insects show preference for visiting the novel species. Naïve insects show no preference for plants with or without Ni; the pattern for experienced insects is more complex.**Conclusions:** Differing responses from naïve and experienced Murgantia suggest associative learning is important for food choices involving Alyssum.

The study of the bacteriophage BonNAroo through infection of host bacterium U 102

Presenter's Name: Asia Riviere
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: India Bradley, Ashley Queen, Leon Dickson, Courtney Robinson

Background: A bacteriophage infects bacteria, replicates, and produces mature viral particles using the bacterial host. Phages are important because they play a huge role in the carbon cycle (ecology) and in the recent findings of uses as alternative treatment for antibiotic resistant strains of bacteria (evolution). The study of phage size and characteristics facilitates an understanding of phage biology at a molecular level. The purpose of this study is to isolate a phage population to isolate and characterize the phage genome. **Methods:** Soil was collected on the campus of Howard University [38.97N, -77.02W] and through the process of direct plating a phage population was selected using the Spot Test, which will verify the presence of a phage and its ability to create plaques in the host bacterium. After phage presence was verified, the streak test assay was used to dilute the phage to further isolate individual plaques to use in a titer assay. **Results:** It has been determined that BonNAroo is a phage that lyses the host bacterium quickly and needs to be diluted to ensure early detection of plaques. The phage has been diluted and isolated for plaque morphology through several trails of the plaque streak protocol. **Discussion:** The next step in this study is to generate and collect BonNAroo's medium titer lysate and titer so that the empirical test can be performed. After successful empirical testing a higher titer lysate will be generated, which will be used to isolate phage BonNAroo's DNA and for additional molecular applications.

Isolation, Purification, and Partial Characterization of Phage Zelda

Presenter's Name: Marlynn Rollins
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Lourds Fernando, Courtney Robinson, Broderick Eribo, Adrian Allen

Background: A bacteriophage is a bacterial virus. These bacteriophages are medically important, and have potential therapeutic application against antibiotic resistant bacteria. **Methods:** In this study, a soil sample was obtained from the environment, specifically from the ground at Cook Hall (Latitude: 38.92542, Longitude: -77.021734) at Howard University. The phage was then isolated from an enrichment sample, and was purified by streaking and the phage-titer assay. The Medium-Titer-Lysate was collected from a webbed plate of the final titer assay. After the MTL was obtained, empirical testing and the ten plate infection were performed. It was from the flooded ten plates that the High-Titer-Lysate (HTL) was obtained. The bacteria that was used for the infection process of this study was Brevibacillus spp. strain U102, and the bacteriophage used for the positive control was HUph. After obtaining the High-Titer-Lysate, genomic DNA of this phage named "Zelda" was then isolated and purified. **Results:** "Zelda" had a smooth and uniform morphology on the plate, which had forty-six plaques. The titer of the plate was 4.6x10^7 pfu/ml. It has an average concentration of 50.7 ng/ml, and a diameter of 4mm. **Conclusion**: "Zelda" is a bacteriophage that invades its host bacteria. Effort to further understand the genetics of this bacteriophage through molecular characterization is on going in the laboratory.

The Influence of Public Assistance on Childhood Obesity in Lower Socioeconomic Populations: A Review

Presenter's Name: Whittney Russell
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Objective: To assess the effects of public assistance on childhood obesity in lower socio economic population. **Background:** There has been research to show a correlation between individuals in lower socioeconomic populations receiving assistance through the Supplemental Nutrition Assistance Program and obese children. The discussion is starting to shift from providing these resources to those in need, to placing restrictions on where they can be used and what can be purchased through the program to decrease instances of obesity in this population. **Methods:** PubMed and Google Scholar search engines were used to located peer reviewed articles dating from 2011-2015 in order to make sure my conclusions can be considered evidence base practice. The articles consisted of research on childhood obesity, SNAP and childhood obesity, data on parental influence in obesity, and possible ways to influence positive changes in behaviors. The Health Belief Model is used in the research study, to show correlating factors between lack of education in nutrition and childhood obesity rate increases. The Self Care Needs Model is also used to show

that psychological stressors and environment impact overall health and increases in the childhood obesity rate. **Results:** The review showed that although Supplemental Nutrition Assistance Programs are helpful in maintaining adequate nutrition in lower socioeconomic populations, regulations may be necessary prevent the intake of high caloric food (such as fast food & soda), and allow for nutrition to be available from vendors who offer healthier alternatives; conducive to maintaining a diet and weight. **Conclusion:** It will be concluded that actions can be taken to decrease the rates of childhood obesity in children from lower economic backgrounds by reevaluating the choices in food purchasing preferences, unhealthy allowances in public assistance programs, and acceptance of weight gain in this population.

Prescribing Patterns among Pregnant Women and Women of Reproductive Age among Office-Based Physician Visits

Presenter's Name: Noor Saeed
Classification: Graduate Student
Presentation Type: Poster Presentation

Objectives: The objective of this study was to evaluate whether socio-demographic characteristics and clinical factors were associated with receiving a non-vitamin/non-mineral prescription among women who were pregnant and of reproductive age. **Methods:** A cross-sectional analysis of office-based, pregnancy reported visits from the 2005 to 2012 National Ambulatory Care Survey(NAMCS) was done. Descriptive statistics for all study variables were estimated. Factors associated with a non-vitamin/non- mineral prescription were assessed using chi square and t-test tests. All analyses were performed using SAS 9.3. **Results:** A total of 3853 pregnant and 13943 women of reproductive age had an office-based physician visit between 2005 and 2012. The mean age was 28.1±6.3 and 32.2±8.2 years for pregnant and women of reproductive age, correspondingly. Majority of pregnant and women of reproductive age were white and had private insurance. Of the pregnant and women of reproductive age who were prescribed at least one medication, 35.4% and 52.9% were prescribed a non-vitamin/non-mineral medication, respectively. Bivariable analysis showed that race, insurance status, physician specialty, and metropolitan statistical area were associated with a non-vitamin/non-mineral prescription among both pregnant and women of reproductive age with at least one medication ($p<0.05$). **Conclusion**: Race, insurance status, physician specialty, and metropolitan statistical area are associated with prescribing of a non-vitamin/non-mineral during pregnancy and reproductive age.

A machine learning approach to thermochromic substance detection

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

Coauthors: Legand Burge

Thermochromic substances change color based on temperature. These substances are used in battery testers, coffee cups, forehead strip thermometers and etc. Since these substances are often used in situations where there is extreme heat or as indicators for hazardous situations, their practical uses involves safety critical situations. In this study, a process is developed to measure temperature in thermochromic substances from images acquired from smartphones. The process requires the use of a machine learning algorithm after a number of attributes are extracted from the images. A couple machine learning algorithms such as support vector machine, decision trees and different forms of linear regression were compared using four performance metrics, which are memory taken, runtime, model build time, precision and accuracy. The precision and accuracy of the process was based on ten fold-cross-validation, error statistics(Root Relative Mean Squared Error) and a 60/40 data split. The advantage and disadvantage of each algorithm is evaluated against the corresponding problem. Since the process involves a camera and not the naked eye, the technology has the potential to introduce inexperienced biotech professionals to high hazard situations with minimal risk and less noise or contamination added.

A Crowdsourced, Comprehensive Database of Rare Diseases Prevalent in People of African Descent: The Case Study of Sarcoidosis

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

Coauthors: S. Shami, K. Bazemore, A. Bededa, F. Chen, A. Johnson, B. McCollum, P. Quach, K. Tang, H. Teferra, S. Aftab, S. Areda, S. Hakeem, G. Tanashia, A. Thomas, S. Atef-Vahid, B. Abadejos, E. Addo, S. Anador, K. Xiang, Simon Wang

There has been an increased push towards categorizing disease states on the basis of genetics, moreover specifically race. The momentum began due to the increased understanding of genetics owing to advances like the Human Genome Project. There are several benefits to understanding the racial biases of certain diseases. For example, in pharmacy understanding that certain Cytochrome P-450 isoforms are more prevalent in certain racial populations allows for better treatment options. Furthermore, identifying populations at risk of developing particular diseases allows for decreased disparity in health care and overall better tailored treatment options. However, with that being said, the need remains urgent to develop a comprehensive database of rare diseases within different racial populations, particularly in persons of African descent. An rare disease is any disease that affects a small percentage of the population, specifically in the United States, any disease or condition that affects fewer than 200,000 people. One such disease is Sarcoidosis. Sarcoidosis is a disease involving abnormal collections of inflammatory cells (granulomas) that can form as nodules in multiple organs, mainly the lungs and lymph nodes. In the United States, sarcoidosis is more common in people of African descent than Caucasians, with annual incidence reported as 35.5 and 10.9 per 100,000, respectively. Additionally, the heritability of sarcoidosis varies according to race, about 20% of African Americans with sarcoidosis have a family member with the condition, whereas the same figure for whites is about 5%.1 The disease can manifest as an acute disease and clear on its own. However, there are also incidences of it being a chronic condition in which treatment includes anti-inflammatory drugs. It is our hope that by generating a database on rare diseases that target the population of persons of African descent, we will be able to increase awareness, understanding, and to facilitate therapeutic options of such disease states. Notably, due to the large size of workload our efforts have been conducted via the crowdsourcing approaches, i.e. to solicit contributions from a large group of people, mainly via the online mode followed by strict data verifications.

[Research supported by the National Institutes of Health (NIH), the District of Columbia Center for AIDS Research (DC CFAR) and the Alzheimer's Drug Discovery Foundation (ADDF)]

Trophic ecology of Pomacea spp. in the La Plata Basin, Uruguay

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

Coauthors: Mariana Meerhoff, Romi Burks, Ellen Strong, Kenneth Hayes

Background: With their primarily pantropical distribution, Ampullariidae are major components of tropical freshwater ecosystems. Some Pomacea species are invasive, voraciously consuming macrophytes, thereby increasing eutrophication and reducing biodiversity and habitat heterogeneity. Trophic ecology of shallow lakes and the role of ampullariids in them are poorly known; yet critical to understanding the evolution and ecology of the snails. To develop this understanding, we are studying snails from their native ranges in Uruguay using stable isotopes; which reveal at which trophic levels (15N) and where (13C) in the environment organisms are feeding. This in turn provides insights into the role of Pomacea spp. in shallow lake ecosystems in their native and non-native habitats. **Methods:** Pomacea spp. (N=57), Pomacea eggs, aquatic plants, macroinvertebrates, zooplankton, phytoplankton, fish, a frog, bird feathers, and detritus were sampled from two shallow lakes in Maldonado, Uruguay. Taxon identities were verified using DNA barcodes where possible. Stable isotope analyses were performed at the Smithsonian Institution's OUSS/MCI Stable Isotope Mass Spectrometry Facility. **Results:** There are at least two Pomacea spp. in our samples from Uruguay. Stable isotope analyses indicate they are broad primary consumers feeding mostly on aquatic plants, detritus, and periphyton, but may be exploiting other resources, including carrion. **Conclusions:** The highly successful nature of certain Pomacea spp. may, in part, be attributed to their broad generalist diets that appear to be highly flexible in response to resource availability. Additionally, insights from this study provide a fuller understanding of the role of macroinvertebrates in shallow water ecosystems.

Biodiversity and the Assessment of Commercial Fish Species in Lake Tana

Presenter's Name: Nika Sewell
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Lake Tana is the largest lake in Ethiopia at about 3600 km2 and it is significant because it is the origin of the Blue Nile River which travels across countries and eventually merges to become the Nile River. About 65% of the catchment seasonally becomes a flooded extensive wetland. A vast majority of the region's population depends on the lake for fishing, income, food and overall survival. There are three (3) main species of fish that will be focused on which are commercially sold throughout the region. Those three species include the Nile Talapia (Coreochromis nitolicus), African (Clarias Garipenus) Catfish and Labeobarbus (Labiobarbs spp) Based on environmental effects such as pollution, invasive weeds and deforestation, researchers hypothesized that there has been a decline in these three main fish species since 2012 (2004 E.C.) Additionally, researchers hypothesized that fishing practices are influenced by many variables such as climate change, various types of fishing gear used, different types of boats and location. Methods included comparing new fish population data with those reported in previous years. Also, a survey was administered to the fisherman of Lake Tana to solicit responses about fishing practices. Results showed that the three fish populations have declined in recent years as predicted. Future research on this topic should concentrate on the environmental influences and fisherman practices that have contributed to the decline in fish production. This material is based upon work supported by the National Science Foundation under Grant No. HRD-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

---

Justification for Penicillin G as a Treatment for Tertiary Stage Syphilis The Infamous Tuskegee Syphilis Study

Presenter's Name: A. Keyana Simmons
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Syphilis is a highly contagious, chronic, sexually transmitted disease caused by the bacterium Treponema pallidum. In 1932 the United States Public Health Service (USPHS) performed the USPHS Study of Untreated Syphilis in the Negro Male at Tuskegee, also known as the infamous Tuskegee Study. This study sought to determine the long term effects of untreated syphilis in its tertiary stage on the physiology of Black men. The 40-year study was performed from 1932 to 1972 in Macon County, Alabama on a patient set of 600 men, who were described as "poor, uneducated, Black sharecroppers". The data set consisted of 399 men diagnosed with latent or tertiary syphilis and 201 control patients. The proposed scientific justification for the study was to determine if tertiary syphilis had a different clinical manifestation on the body of Blacks versus Caucasians. Throughout the duration of the study the men were not given a proper diagnosis. Further, they were not provided with treatment at the beginning of the study nor later when penicillin became widely available in the 1940s, claiming that the reaction could be fatal due to the tertiary stage of the disease and their patients' ethnicity. This study will be a biochemically intensive, historical research project placed in the context of early and mid-1900s biomedical technology and the sociopolitical and socioeconomic climate of time. I will attempt to show that the biochemical efficacy of penicillin G, developed during the time period of the study, was effective for treatment of all stages of syphilis. If proven, it will nullify the USPHS's claim that it would be harmful to administer the treatment to their tertiary syphilis patient set. The end result of not administering the treatment was a painful debilitating existence for patients and early death for many.

The Isolation and Purification of the Bacteriophage, Shorty

Presenter's Name: Tamara Sullivan
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Kyliah Hughes, Courtney Robinson, Leo Dickson, Adrian Allen, Winston Anderson, Broderick Eribo

Background: Bacteriophages are viruses that infect bacteria. They are highly specific, and typically, one type of phage only infects one type of bacteria. Phages can be found everywhere and are significantly smaller than bacteria. Interestingly, bacteriophages cannot replicate without a host bacterium cell. Studying bacteriophages can help understand other organisms and can also lead to possible medical treatments for bacterial infections. **Methods:** This project linked together a number of experiments to isolate a phage population and eventually characterize that particular phage. Enrichment and direct plating of the soil

sample lead to plaques that could then be tested for phage presence. The spot test revealed whether bacteriophage was actually present in those plaques. The phage streak protocol isolated a single phage population out of many. Following streak protocol, the phage titer assay was completed to determine the concentration of plaque-forming units. Then the medium-titer-lysate (MTL) was collected and a spot test on the phage lysate was performed. Following this procedure the empirical test was completed. **Results:** These experiments in combination assisted in isolating Shorty, a single phage for further study. The average diameter of the phage, Shorty, was 0.93 mm. The concentration of plaques calculated from the titer assay was 2.2 x 107 pfu/mL. Shorty is a lytic phage because of its clear plaques. **Conclusions:** A single phage population was successfully isolated. Eventually, the DNA of the phage will be collected and annotated. The phage will be further characterized and possible uses of Shorty can be determined.

Single Nucleotide Polymorphisms in Serotonin Receptor (HTR7) and its association with C-reactive protein (CRP) and Cortisol levels in African-Americans.

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

Coauthors: Areej Alaamer, Forough Saadatmand, Clarence Lee, Georgia Dunston, Muneer Abbas

Background: Serotonin is a neurohormone involved in biological processes such as behavior and immune function. Psychosocial stressors may cause serotonin release resulting in immune system dysregulation, seen by increased levels of immune mediators such as C-reactive protein (CRP) and cortisol. Previously, we reported on associations between the mediators CRP and cortisol with three single nucleotide polymorphisms (SNPs) in the serotonin receptor 7 (HTR7) gene. In this research, two additional SNPs within HTR7 are being analyzed for the purposes of genotypic and haplotypic associations with the immune mediators C-reactive protein and Cortisol. This might help to find a better haplotypic association. We hypothesize that genetic polymorphisms in the HTR7 gene are associated with differential levels of CRP and cortisol, blood biomarkers of inflammation and stress respectively. **Methods:** The study population included 602 African-American subjects between 18-25 years of age who from two urban communities in Washington, D.C. Five SNPs, rs2420367, rs12412496, rs2185706, rs7089533, and rs7093602 in HTR7 were genotyped by restriction fragment length polymorphism or the TaqMan assay. Statistical analysis using the program SNPstat was performed to determine their associations with CRP and cortisol measured in the study population. **Results:** Both rs2420367 ($p=0.002$) and rs2185706 ($p=8e-4$) were found significantly associated to CRP levels in the study population by the recessive (rs2420367) and dominant (rs2185706) models of inheritance. No haplotypes were found significantly associated to CRP levels. Cortisol levels were not found significantly associated to any genotypes, but the haplotype AAGCC ($p<0.0001$) was significantly associated. **Conclusion:** Based on the results, certain genotypes and haplotypes within the HTR7 gene are associated to blood biomarkers of inflammation and stress.

Robotic Surrogate Mother

Presenter's Name: Darryl Taylor
Classification: Graduate Student
Presentation Type: Oral Presentation

Robotic gestational surrogacy, the robotic surrogate mother receives a human child embryo. The robotic surrogate mother is the gestational carrier. The robot has the full simulated complement of the female reproduction system plus oxygen, food and blood. The robot shall have a three level built-in redundancy system which can switchover to the next full system and an availability rating of .999996 which translates into a worst case possibility of 12 seconds of system downtime per nine months. The robot shall monitor the embryo 24/7. The parent's interface is conducted by means of vocal recognition and/or digital inputs. Two attached printers serve as a backup baby and system monitor/status output for the redundant 20 terabyte hard drive. The robotic surrogate mother is connected to the parent's OB/GYN and the local hospital, via, the internet. The advantages are selectability of nutrients; audio radiance, such as selected music or type of music and the mother's and father's voice; and rudimentary school lessons (i.e. alphabets, numbers, children stories). Currently, I am building a rapid proto-type to demonstrate feasibility.

A Crowdsourced, Comprehensive Database of Rare Diseases Prevalent in People of African Descent: The Case Study of Lassa Fever

Presenter's Name: Hilina Teferra
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: S. Aftav, S. Areda, S. Atefvahid, A. Bedada, F. Chen, S. Hakeem, S. Shami, G. Tanashian, H. Teferra, A. Thompson, S. Wang

A rare disease is any disease that affects a small percentage of the population. There are more than 6,000 known rare diseases, and it is estimated that about 25 million Americans are affected by them (as of 2002). Notably, there has been a lack of recognition and funding for rare diseases due to the low prevalence and high cost of investment into developing a drug for a rare disease. Such diseases are largely ignored in the population of African Descent including African Americans, due to the disproportionate share of disease burden on minorities. Herein we report our ongoing efforts of building database of this type via the crowdsourcing approaches, i.e. to solicit contributions from a large group of people, mainly via the online mode followed by strict data verifications. Particularly we focused on the Lassa fever, an arenavirus that is enveloped, single-stranded, and bi-segmented RNA virus. It is an acute, often fatal viral illness named after a town in Nigeria. This fever is endemic virus, which affects people living in West Africa, including Guinea, Sierra Leone, Nigeria, and Liberia. The main objective of this research is to collect and analyze biomedical data on Lassa virus. All the information collected will be indexed at a website making it easily accessible to the public. This crowdsourced database will help educate the public about Lassa Fever's signs and symptoms, prevention, biomarker, druggable targets and current treatments, thus to facilitate the development of orphan drugs for this disease.

[Research supported by the National Institutes of Health (NIH), the District of Columbia Center for AIDS Research (DC CFAR) and the Alzheimer's Drug Discovery Foundation (ADDF)]

Targeted Resequencing of DISC1 Pathway Genes Identifies Genetic Variants Implicated in Major Psychiatric Disorders

Presenter's Name: Shaolei Teng
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Schizophrenia, bipolar disorder and recurrent major depressive disorder are common psychiatric disorders with a significant genetic overlap, but the underlying mechanisms are incompletely understood. Disrupted in schizophrenia 1 (DISC1) gene is a convincing genetic risk factor for developing these psychiatric disorders. The DISC1 protein directly interacts with a large set of proteins (DISC1 Interactome) that are involved in brain development, and a set of these genes have been independently implicated in psychiatric disorder. Modulation of DISC1 expression has been shown to alter the expression of a set of genes (DISC1 Regulome) that are also implicated in brain biology and disorder. To investigate the genetic variants in the DISC1 pathway genes, we performed targeted resequencing to sequence 14Mb regions covering the exons, promoters and conserved elements of 56 DISC1 Interactome genes and 190 DISC1 Regulome genes in 654 psychiatric patients and 889 controls from Scotland. We found total 226,953 single nucleotide variants (SNVs), 78% of which are rare variants with a minor allele frequency (MAF) less than 1%. We observed an overall enrichment of rare disruptive SNVs in DISC1 Regulome genes in schizophrenia relative to controls. We also observed an increase in the burden of damaging singletons in DISC1 Interactome genes with cognitive ability measures. In addition, we identified a novel association between a common variant and combined diagnoses. We also estimate the effects of missense mutations using protein structure modelling approaches. The findings provide useful information for further analyses to estimate the functional effects of the candidate variants and target genes, and can improve our understanding of the roles of rare and common variants in the causation of major psychiatric disorders.

Developmental NMDAR Blockade and the Sexual Dimorphic Alterations in Biochemical Markers of GABAergic Signaling

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

Coauthors: Antolice Thomas, Kevin S. Jones

Background: Impairments to inhibitory neurotransmission are strongly implicated in the pathophysiology of schizophrenia (SZ). Immunohistochemical analyses of post-mortem brain tissue reveal decreases in the expression of biochemical markers for gamma aminobutyric acid (GABA) signaling. NMDA receptor hypofunction is also implicated

in the etiology of SZ as NMDA antagonists elicit SZ-like behaviors in healthy humans. NMDA receptor blockade has emerged as a common approach to model SZ in animals. Our lab recently discovered male mouse pups injected with MK-801 during early development exhibited several impairments in the physiology and biochemistry of neocortical GABAergic interneurons. Here, we repeat this study in female mice to identify sexual dimorphic responses to neonatal NMDA receptor blockade. **Methods:** Female mouse pups received an s.c. injection of 0.75 mg/kg MK-801 or an equal volume of saline on PND6 for three consecutive days. Mice were then raised to adulthood under standard conditions. Mice were anesthetized, perfused with paraformaldehyde, and the brain was removed. 50 uM coronal brain sections were acquired and stored in PBS at 4 degrees until staining. **Results:** Brain sections from the prefrontal, somatosensory, and motor cortex of female mice will be stained for biochemical markers of GABAergic signaling to identify sexual dimorphic responses to perinatal NMDAR blockade. Specifically we will examine expression patterns of GluN2B, GAD 65/67, and parvalbumin.

The Isolation and and Identification of a the bacteriophage, Tera

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

Background: Bacteriophages are viruses that infect bacteria. Lytic phages replicate themselves within the host bacterium. The host bacterium is then lysed or destroyed. In the lysogenic cycle the genetic material of the phage will integrate with the host cell. The virus remains dormant and will replicate as part of the host cell genome harmlessly. When conditions deteriorate the viral genetic material will activate, replicate itself and use the host cell to build phages that will eventually lyse the host cell. **Methods:** A bacteriophage will eventually lyse their host bacterium, which will be visible on plate as a clear plaque. Plaque formations help us use their morphologies to isolate a single phage. In this project a soil sample was enriched and plated directly with the Brevibacillus strain U102. The soil sample for my project was taken from in front of the Administration Building at Howard University. Direct plating did not allow enough time for the phage to grow and develop. The enrichment sample was used to collect a phage sample to be streaked. The sample was purified with multiple rounds of streaking till isolated plaques with the same morphology resulted. The Medium Titer Lysate(MTL) was collected from flooding the web plate. A five plate infection is being conducted using the MTL. A ten plate infection will then be conducted yielding a High Titer lysate. **Results:** The isolated phage, named Tera, was measured to 1mm in diameter with a circular morphology. **Conclusion:** The DNA will be isolated from the phage Tera and will be annotated.

Isolating and purifying a bacteriophage sample taken from the environment for DNA analyzation.

Presenter's Name: Breanna Thompson
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Breanna Thompson

Background: Phages replicate abundantly in areas with a high concentrations of bacteria, such as soil. This project was conducted to obtain information on phages that inhabit the soil on the campus of Howard University. These phages have the potential to be used in research in scientific labs across the world. Methods: Phage SouthernBelle was isolated from soil at the corner of Georgia Ave and Howard place. The phage was then streaked 5 times to isolate a pure phage population. This population was mixed with phage buffer to create a medium-titer lysate which was diluted 10 times to find a plate that presented a number of plaques between 20 and 200. This plate led to a 5 plate infection. Conclusion/ Results: SouthernBelle produced different morphologies. The plaque diameters produced were: 2.0 mm and 1.0 mm. Upon the generation of a high-titer lysate, the phage DNA will then be extracted, analyzed using standard molecular biology techniques. This analysis will provide important information on the type of phage and can be used in future experiments. After final analysis, my research will be sent to a database and used for future reference.

Isolating and Characterizing the Phage Qurius

Presenter's Name: Nancy Trang
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Broderick Eribo, Adrian Allen,
Courtney Robinson, Lourds Fernando, Shirley Lakpa

Background: A bacteriophage is a virus that infects and replicates or survives within a bacterial host. In the SEA-PHAGES program, a single bacteriophage species

was isolated, purified, and characterized. **Methods:** Approximately 12 grams of soil was collected from outside Cook Hall at 30.55'31'N, 77.1.17'' W, filtered and prepared using enrichment sample and direct plating methods to grow the phages using the host bacteria, Brevibacillus spp. strain U102. The plaques from the 10 -4 dilution enrichment plate were confirmed with a spot test and purified through seven rounds of streaking until only the Qurius phage was present and isolated. A phage titer assay was performed to collect a medium titer lysate (MTL) of 4.2 x 109 PFU/mL. An empirical test based on the MTL calculations and 10 plate infection and harvest were performed to obtain a high titer lysate of 4.4 x 107 PFU/mL. Qurius DNA was then isolated and purified using nucleases. The concentration of the phage DNA solution was then determined to be 148 ng/μL using a nanoDrop spectrophotometer. Gel electrophoresis and restriction enzyme digest procedures were performed to characterize Qurius. **Results:** Qurius is a lytic phage that forms jagged clear circular plaques about 1 cm in diameter. Qurius produced about 4.4 x 107 plaques per mL. **Conclusion:** Qurius is a viable lysogenic phage. Information about Qurius is essential to expanding the phage database to improve upon bacteriophage therapy and develop new treatments for various sicknesses.

Evidence for Arthritis and Specifically Osteoarthritis in the Cobb Collection

Presenter's Name: Maimouna Traore
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Arthritis is a chronic disease characterized as the inflammation of joints caused by the degradation of the fundamental cartilage. The symptoms associated with arthritis are severe pain, swelling and stiffness amidst the affected joints which can impede the motility of the affected individual. Consequently, arthritis has risen as the main cause of disability amongst Americans. Although there are a multitude of forms of the disease, one of the most common forms is osteoarthritis. Osteoarthritis occurs predominantly on joints that endure the pressure of weight such as the knees and hips of the human body. Naturally, the risk of acquiring osteoarthritis increases with age as the cartilage degrades over the course of several years. Currently, between 10%-20% of adults are suffering from a degree of osteoarthritis in North America alone. However, age is not the only variable with which the disease correlates. Studies analyzing knee radiographics have shown that osteoarthritis has a greater prevalence amongst African Americans, more specifically African American women. Therefore, the Cobb Research Lab intends to investigate the African American ls individuals of the skeletal collection for evidence of osteoarthritis. The determined severity of the disease in each case can give further insight into the identity of the individuals as it suggests age, physical health and range of motility.

Effect of Ferroportin Q248H Mutation on Cellular Iron Export and Ferroportin Degradation

Presenter's Name: Guelaguetza Vazquez-Mevs
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Guelaguetza Vazquez-Meves, Victor R. Gordeuk, Sergei Nekhai

Background: Ferroportin is the iron exporter expressed primarily in macrophages and enterocytes that controls systemic iron level. Ferroportin is regulated by hepcidin which is produced by the liver and binds to ferroportin leading to its internalization and degradation by lysosomes. Ferroportin Q248H mutation has an allele frequency of 2.2-13.4% in African populations and is associated with a mild tendency to increased serum ferritin in the general population. We reported that ferroportin Q248H mutation has reduced sensitivity to physiologic hepcidin concentrations in patients with sickle cell disease. **Objective:** We analyzed the effect of ferroportin Q248H mutant in comparison to WT ferroportin on cellular iron accumulation and ferroportin degradation by lysosomes and autophagy. **Methods:** WT ferroportin-EGFP and mutant ferroportin Q248H-EGFP were transiently transfected into HEK293 cells and these were treated with 50 μg/ml cyclohexamide for 2 hr and then with Hepcidin for 60 min. For immunoprecipitation and western blotting, proteins were extracted with RIPA buffer supplemented with protease inhibitors. Ferroportin-EGFP was immunoprecipitated with anti-GFP antibodies or anti-ferroportin antibodies. For western blotting analysis of ubiquitination, anti-Ubiquitin antibodies (Enzo Lifesciences) were used. Autophagy was analyzed with p62 (Cell signaling) and LC3 (Cell signaling) antibodies. To measure labile iron, we saturated cells with calcein that binds the available iron inside the cell. The cells were washed in then treated for 40 min with iron chelators and fluorescence was measured. The following formula was used to analyze the data: $F/Fi = 1 + k(Q)$, where Fi is the fluorescence in the presence of quencher (iron) at time 0; F is the fluorescence at a given time after the addition

of chelator; and Q is the concentration of the quencher (iron). To visualize ferroportin and lisosomes we used Lisotracker (Invitrogen) and 4',6'diamino-2-phenylindole (blue, Invitrogen) for 5 min. Cells were visualized using an apifluorescene microscope (Olympus) and images were acquired using picture framer analysis software (Olympus). **Results:** We observed reduced protein degradatation kinetics of ferroportin Q248H comparing to WT ferroportin in the cells treated with hepcidin. This correlated with increased labile iron pool present in the cells expressing WT ferroportin and treated with hepcidin. Ubiquitination patterns of WT ferroportin and Q248H mutant were different. We observed marked increase in the number of lysosomes in cells expression ferroportin Q248H and treated with hepcidin. Also hepcidin treatmend of cells expressing ferroportin Q248H induced autophagy. **Conclusion:** Ferroportin Q248H mutant degradation is impaired as we previously suggested. The impairment is likely due to the inability of lysosomes to process the mutant ferroportin Q248H which could be due to the impaired autophagy or endocytosis. We are currently testing these two scenarios to identify the exact mechanism of ferroportin Q248H degradation.

Acknowledgments: This work was supported by NIH Research Grants (1P50HL118006, 1R01HL125005 and 5G12MD007597). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Colorectal Cancer in Young African Americans: Is it time for new guidelines and prevention?

Presenter's Name: Kimberly Vilmenay
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Hassan Brim, Adeyinka Laiyemo, M. Nouraie, Hassan Ashktorab

Abstract: Previous studies have demonstrated a marked increase in the incidence of colorectal cancer (CRC) among adults younger than 50 years of age. Historically, African Americans as a group has disproportionally higher CRC incidence and mortality. To date however, few studies have examined CRC burden among young African Americans relative to other race-ethnicities. **Methods:** Using the Surveillance, Epidemiology, and End Results (SEER) cancer registries' data, we identified patients diagnosed with CRC between 2000 and 2012. The age-adjusted rates for non-Hispanic whites (NHW), African Americans and Asian Pacific Islanders (API) were calculated using SEER*Stat Software. Using this data, we subdivided these racial groups into 20-24, 25-29, 30-34, 35-39, and 40-44 age categories. **Results:** CRC age-adjusted incidence was significantly higher for African Americans compared to NHW and API across all years 2000-2012 ($P<0.001$). Stage IV CRC was higher among African Americans compared with NHWs. There was higher percentage of stage III CRC among API compared with NHWs. **Conclusion:** CRC frequency is increasing among young African American adults who display highly advanced tumors in comparison to other races. There is a need to address CRC burden disparities among persons younger than 50 years, an age before the recommended CRC screening guidelines for the population at large.

Gene X Environmental Factors of Hypertension within the African American Community

Presenter's Name: Jacob Walker
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Hypertension strains the heart and blood vessels, and increases the risk of stroke and kidney problems. Largely a symptomless condition, research indicates that reliable signs include, but are not limited to, chest pain, fatigue, irregular heartbeat, and presence of blood in the urine. More importantly, hypertension has its connections to other health problems, like cardiovascular disease, stroke, and renal disease. In the U.S., 41% of blacks suffer from hypertension, compared to 27% of whites. Research shows that Blacks develop high blood pressure at earlier ages than other American ethnic groups. They are thus more likely to develop problems associated with hypertension, like kidney disease and dementia. High blood pressure in the black community may be due in part to the genetic make-up of Black people. Black Americans are also more likely to be overweight than Blacks in other countries. Other hypertension risk factors include: smoking, excessive weight, low potassium intake, and high dietary salt and fat content. By utilizing the Cobb Collection, analysis of skeletal remains of individuals who suffered from hypertension will allow us to identify important genomic regions for the disease. Studies of their clinical and demographic records will allow us to reconstruct their environmental constraints. These analysis will provide insight as to how certain gene sets in particular environments contribute to hypertension and its related health discrepancies. This research will serve

as a foundation for understanding the chemical and physical background for future epigenomic studies.

Deletion of Interleukin-6 reduces renal inflammation and injury during Angiotensin II hypertension

Presenter's Name: Makeeva Walker
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Increases in plasma levels of Interleukin-6 (IL-6), an inflammatory cytokine, correlate with mean arterial pressure (MAP) elevations. Previous results from our laboratory demonstrate that IL-6 knockout (KO) mice have an attenuated blood pressure response during Angiotensin II (Ang II) hypertension. Ang II activates many proinflammatory genes, such as intracellular adhesion molecule-1 (ICAM-1) and monocyte chemoattractant protein-1 (MCP-1), through the activation of several intracellular signaling mechanisms, including nuclear factor-κβ (NF-κβ). Cyclooxgenase-2 (COX-2) is considered a cytokine-induced cyclooxygenase, as NF-κβ has been shown to increase COX-2 in the kidney, and Ang II has also been shown to stimulate glomerular COX-2 protein expression. The goal of the current study is to determine whether the deletion of IL-6 decreases renal inflammation and injury during a slow pressor dose of Ang II would decrease proinflammatory mechanisms involving plasma IL-6, renal MCP-1, renal expression of ICAM-1 and COX-2, while attenuating increases in blood pressure during Ang II hypertension. We hypothesize that the deletion of IL-6 would decrease renal MCP-1, ICAM-1 and COX-2 expression and reduce urinary albumin excretion, an index of renal injury. Male (10 - 12 weeks old) IL-6 KO mice and their wild-type (WT) controls were implanted with biotelemetry devices and infused with a slow pressor dose of Ang II (400 ng/kg/min) for 12 days. Kidneys were collected and homogenized for western-blot analysis. Baseline MAP were not different between IL-6 KO and their wild-type controls. On day 12 of Ang II, mean arterial pressure (MAP) was 136 ± 7 mmHg in WT and 119 ± 6 mmHg in IL-6 KO mice. Kidney MCP-1 (WT: 900 ± 90 pg/mg) (IL-6: 600 ± 73 pg/mg), ICAM-1(WT: 1.2 ± 0.3 DU) (IL-6: 0.9 ± 0.1 DU), and COX-2 (WT: 1.1 ± 0.1 DU)(IL-6: 0.8 ± 0.2 DU) expressions were decreased in Ang II-treated IL-6 KO mice, when compared to WT + Ang II mice. Our results demonstrate that deletion of IL-6 attenuates Ang II-induced hypertension through an attenuation of inflammatory markers such as plasma IL-6, renal MCP-1, renal expression of ICAM-1 and COX-2.

Isolation and characterization of a novel human-like porcine G9P[23] rotavirus in China provide evidence for human-to-porcine interspecies transmission

Presenter's Name: Shengfeng Wan
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Xinbin Gu, Qigai He

A case, characterized by watery diarrhea, dehydration and weight loss in adult pigs and highly lethal in piglets (with 25%-55% mortality) was outbreak in a pig farm in Yunnan province, China, August 2013. The pathogen was ultimately identified as porcine rotavirus. In this study, the pathogen was isolated from the piglet's intestine using IPEC-J2 cell cultures and designated as YNR. The virus was identified by RT-PCR method, cytopathic effects observation, indirect immunofluorescence assay and transmission electron microscope observation. Its genomic sequence was sequenced. The results showed that the YNR was a group A rotavirus. On whole genome analyses, it can be cataloged to a unique genotype constellation: G9- P [23] - I5- R1- C1- A8- N1- T7- E1- H1. Phylogenetic analyses presented that 9 of 11 genes of this strain (VP1, VP2, VP3, VP6, VP7, NSP2, NSP3, NSP4, and NSP5) was closely related with human rotavirus strains or porcine-like human rotavirus strains, while the VP4 and NSP1 genes clustered into the same clade with porcine rotaviruses. Therefore, YNR had a human rotavirus genetic backbone, and was likely to be of human origin. The VP3 gene of YNR was also clustered into the same clade with that of giant panda rotavirus CH-1 strain and human rotavirus R479. The recombination analyses revealed that the YNR appeared to be derived through reassortment events and interspecies transmission involving human, pig and giant panda rotavirus strains. The genome comparison of these genetic closely related human and porcine rotavirus strains indicate that the main genotype skeleton of these interspecies transmission strains was G4/G5/G9- P [X] - I5- R1- C1- A8- N1- T1/T7- E1- H1. These results would help us better understand the characteristic, the origin and the reassorment events and interspecies transmission of human, giant panda and porcine rotavirus strains.

Keyword: Porcine rotavirus, Isolation, Characterization, Human rotavirus, Interspecies transmission

---

A preclinical study to evaluate MUC 7, a new salivary biomarker for the early diagnosis of diabetes

Presenter's Name: Wei Wang
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Wei Wang, Shuang Shi, Belinda Hauser, Xionghao Lin, Grace Robinson, Gail Nunlee-Bland, Xinbin Gu

Background: Diabetes mellitus is a great threat to global health. Diabetes affects an estimate of over 171 million people worldwide. In 2014, the Centers for Disease Control and Prevention estimated that 29.1 million people in the United States have diabetes. Saliva has recently been found to be a promising bodily fluid for diagnostic purposes. Saliva collection is noninvasive compared to phlebotomy and, as a result, may be more acceptable and convenient to patients. In recent years, we first found that salivary mucin 7 (MUC 7) expression levels in human saliva are lineally associated with glycated hemoglobin (A1C) level. In this preclinical study, we have evaluated the properties of salivary MUC 7 and as a new salivary biomarker for the early diagnosis of diabetes. **Methods:** Human salivary samples were collected from Howard University Hospital and the College of Dentistry. MUC 7 level was determined by using Western Blot, HPLC/LTQ-XL Orbit rap mass spectrometer and ELISA methods. **Results:** Up to date, we have collected over 100 human salivary samples and the majority samples were collected from African American population. We confirm that MUC 7 expression levels are up-regulated in diabetes patients. In addition, the MUC 7 protein in saliva is stable at least first 6 hours in 4 ℃ and last 30 days in -20℃ freezer. The change of MUC 7 protein level can be detected by mass spectrometer in 20μl saliva. Sixty micro liter of saliva is sufficiently applied for western blot and ELISA methods to determine MUC 7 protein. **Conclusion:** In this study, we confirm that MUC 7 expression levels are up-regulated with A1C levels in the diabetics. Based on these tests, we have established a series of standard protocols for the clinical test. Advantageously, it has been found that diagnostic tests using saliva can be just as effective as, and often even more effective than, blood-based tests because saliva samples can reflect real-time biomarker levels, unlike other biological fluids, such as urine, which is stored in the bladder for a few hours before sampling.

Functional mGluR/Endocannabinoid Receptor Signaling in Regulation of Long-Lasting Currents in Mitral Cells of the Mouse Main Olfactory Bulb

Presenter's Name: Ze-Jun Wang
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Thomas Heinbockel

Endogenously produced cannabinoids, endocannabinoids, have been shown to play critical roles in the modulation of neuronal behavior and sensory processing. We investigated the modulation of long-lasting depolarizing currents (LLCs) by endocannabinoids and the underlying mechanisms in mitral cells of the mouse main olfactory bulb (MOB). Mitral cells are the key output neurons of the main olfactory bulb. LLCs are thought to be generated by spillover of glutamate after its release among mitral cells in olfactory glomeruli and to be involved in odor information encoding. Ionotropic glutamate receptors participate in the development of LLCs. In this study, we explored the modulation of LLCs by G-protein coupled receptors, namely, cannabinoid receptors and metabotropic glutamate receptors (mGluR). Our experimental approach used whole-cell patch-clamp recordings in acute mouse brain slices. The group I mGluR agonist DHPG reversibly enhanced inward currents of LLCs and increased the frequency of LLCs in mitral cells. The mGluR antagonist LY367385 showed opposite effects on LLCs. mGluRs were also found to be involved in the development of LLCs in over-excited mitral cells. The cannabinoid receptor agonist WIN 55,212-2 (WIN) increased the frequency of spontaneous LLCs and was associated with induced inward currents. In contrast to the agonist WIN, the cannabinoid receptor antagonist AM251 displayed the reversed effect on LLCs with reduced frequency and evoked outward currents in mitral cells. In the presence of gabazine, a blocker of GABAergic synaptic transmission, AM251 and WIN maintained their effects on LLCs and currents. The modulation of glutamatergic LLCs by cannabinoids, while blocking GABA-A receptors, strongly suggests the involvement of glutamatergic synaptic transmission in mediating the cannabinoid effects in the main olfactory bulb. Both mGluR and cannabinoid receptors regulate LLCs in mitral cells which suggests that G-protein coupled receptors participate in odor information encoding in the mouse main olfactory bulb. These experiments provide novel insights about the function of endocannabinoids in the olfactory system and could pave the way for novel treatment strategies in drug addiction.

Support: NIH (MD007597) and NSF (IOS-1355034) to TH.

The Tree of Heaven?….. or The Tree of Hell?: The affect of Ailanthus altissima on nitrogen fixation in Robinia psuedoacacia.

Presenter's Name: Kyaira Ware
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: David Carr

Nitrogen fixation is an important biological process that supplies certain trees, such as Robinia psuedoacacia, with the ability to convert atmospheric nitrogen into usable forms (e.g., ammonia). With the help of Rhizobium, special nitrogen fixing bacteria, R. pseudoacacia (black locust) is able to grow and maintain its health even in stressful, low nitrogen conditions. The invasive Ailanthus altissima (tree of heaven) produces allelochemicals that aid in its competitive ability. We tested the hypothesis that competition with A. altissima may interfere with nitrogen fixation. We present data that show no significant difference between 15N/0/00 levels in various Robinia and Ailanthus competition plots. Futhermore, Ailanthus does not seem to signficiantly affect nitrogen uptake in Robinia. The data does however show an interesting trend in decreasing 15N/000 levels in Robinia as competition with Ailanthus decreases.

A Chemical Screen for Chemical Compound Modulators of the Vibrio cholerae Phosphotransferase System and Biofilm Formation.

Presenter's Name: Mahtab Waseem
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Emmanuel Ike, Kalah Ozimba, Terinney Haley

Phosphoenolpyruvate-carbohydrate phosphotransferase system (PTS) is a multistep chemical process which regulates the intake and use of carbohydrates by bacteria. When bacteria grow through the use of nutrients, such as sugars, they may form a biofilm which in essence is a layer of bacterial cells that grow attached to one another in a film. In addition to controlling the sugar usage of bacteria, the PTS regulates several cellular functions such as chemotaxis, glycogen metabolism, catabolite repression and the aforementioned biofilm formation. In recent experimentation we have identified small molecule compounds that promote the production of Vibrio cholerae biofilms. A V. cholerae O139 strain, MO10, served as the model organism for our experimental assays. It was grown in the absence of chemical compounds as a negative compound control, while an altered strain, which lacks PTS activity, served as a positive control. Biofilm induction was confirmed by monitoring the growth of V. cholerae in the presence of chemical compounds. Further assays will determine whether biofilm promotion occurs through interactions with the bacterial PTS. Success of this project will result in the identification and characterization of antimicrobial agents that regulate biofilm formation. This may lead to the development of novel microbial control strategies with applications in engineering, physical, biological, medical, and pharmaceutical sciences.

Targeted Sequence Polymorphism Selection of Manganese Superoxide Dismutase, Apoptotic, and DNA Repair Genes using HapMap and F-SNP for a Phase II Clinical Trial

Presenter's Name: Alexandria Wells
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Tamaro Hudson, Muneer Abbas

Background: Muscadine grape skin extract (MSKE) has been shown to induce apoptosis and target survival pathways in prostate cancer (PrCa) cells. Based on this finding, a Phase I/II clinical trial was instituted by Johns Hopkins Sidney Kimmel Comprehensive Cancer, Howard University, and other institutions to evaluate toxicity and biological efficacy of MSKE in men with biochemical recurrence. As part of the trial, genetic variance of MnSOD, as well as several DNA repair and apoptotic genes will be determined and used in the evaluation of drug responsiveness. **Methods:** Ten DNA repair genes, fourteen apoptotic genes, and the MnSOD gene were evaluated utilizing HapMap and F-SNP genomic databases. The International HapMap project was used to analyze allele frequency and population data. SNPs with significant differences between the Caucasian and Yoruba populations were determined by chi-square analysis and analyzed by F-SNP to determine the functionality of the polymorphism. The two SNPs with the highest F-SNP scores were selected for future TaqMan® analysis. For the MnSOD gene the SNP, rs4880, had been previously linked to prostate cancer risk and was selected for RFLP testing. **Conclusions**: Thousands of SNPs were analyzed for the MnSOD gene, DNA repair and apoptotic genes. 945 significant genes were found; 425 significant genes were found to have functional consequences. 44 genes were selected for future

TaqMan analysis. SNP, rs4880, was selected and genotyped using restriction fragment length polymorphism (RFLP) analysis. Further research is warranted to fully elucidate the association of these SNPs and their role in PrCa and MSKE responsiveness.

Antimicrobial and Cytotoxicity Study of Silver Chloride/ Poly (3-hydroxylbutyrate-co-3-hydroxylvalerate) (AgCl/PHBV) Film: A Potential Scaffold for Bone Tissue Regeneration

Presenter's Name: Lauren Wells
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Rotimi Bakare, Ayele Gugssa

Currently, there is a major need to design a scaffold that can prevent biofilm formation while sustaining bone tissue regeneration. AgCl/PHBV composite film was prepared from NaCl/PHBV film by an ion exchange reaction. Studies were conducted to optimize the AgCl content in the PHBV film via washing as well as varying the soak times of films in various concentrations of AgNO3. The composite film was acid digested and assayed for ion content by Atomic Absorption Spectrometry (AAS). The release of Ag+ ions in aqueous solution from AgCl/PHBV film as a function of time was also studied. The antibacterial efficacy of AgCl/PHBV film against E. coli, S. aureus, and P. aeruginosa was evaluated by standard microbiological assay, while cytotoxicity of the scaffolds towards MCTC3-E1 cells was determined by MTT assay. Clear zones of inhibition around AgCl/PHBV film were noticed on a modified Kirby-Bauer disk diffusion assay. Colony forming unit measurements showed that AgCl/PHBV composite film has broad bactericidal activity with strong inhibition towards E. coli, followed by S. aureus, and P. aeruginosa. AgCl/PHBV film and osteoblast biocompatibility was also shown but cell attachment was greater on films with a lower AgCl concentration. Future studies will examine this relationship further. These studies provide a novel approach to formulate scaffold with enhanced antimicrobial activity while exhibiting limited or no cytotoxicity towards bone cells.

The Influence of Sunlight on the Habitat Selection by Sceloperous jarrovii (Yarrow's Spiny Lizard)

Presenter's Name: Alexa White
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Coauthors: Earyn McGee, George Middendorf

We investigated patterns of habitat preference for Yarrow's Spiny Lizard, Sceloporus jarrovii, in Cave Creek Canyon in the Chiricahua Mountains of southeastern Arizona in the summer of 2015. Historical observations reveal these lizards to be non-randomly distributed concerning sun and shade. To assess lizard preferences for sunlight use in thermoregulation, we determined the average percentage of sunlight at each 10-meter interval along a 0.5 km canyon-bottom transect. Because the amount of sunlight varied over the course of the day, data for the calculations of the average percentage of sunlight were collected at three times: 0900, 1200 and 1500. We found lizards to prefer sites with a sun-shade average percentage range between 70-79% sunlight, but were showed use of sites ranging between 50%-89%. Juvenile lizards differed from adult by avoiding sites with lower sun-shade averages, preferring sites with greater sun-shade averages. Smaller adults, presumably 1-2 yrs old, showed the widest range of sun-shade average percentages at both the high and low ends of the spectrum. While larger adults, >2 yrs old, selected higher sun-shade average percentages, similar to SVL 1 lizards, their times of activity differed.

Subchronic Exposure Sensitizes Zebrafish Larvae to the Anesthetic Action of Dizocilpine (MK-801)

Presenter's Name: Kevin White
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Background: The N-methyl-D-aspartate receptors (NMDARs) are one of three major ionotropic glutamate receptors that mediate excitatory transmission in the central nervous system. Dizocilpine (MK-801) is a dissociative anesthetic that blocks the ion channel pore of NMDARs MK-801 and causes anesthesia in mammals at high doses, but elicits a robust hyperlocomotor response at low doses. The neural basis for these distinct actions are unknown. We recently demonstrated that the hyperlocomotor action of MK-801 is conserved in larval zebrafish. Here we demonstrate repeated exposure to MK-801 elicits behavioral plasticity in zebrafish larvae. **Methods:** At 1 dpf (day post fertilization),

zebrafish larvae were immersed in fish water containing 0, 2, or 20 uM MK-801 for 1 h for seven consecutive days. On 8 dpf, a dose-response experiment was performed by exposing single larave to 0 to 100uM MK-801. Locomotor activity was captured by digital video recording, and analyzed offline. **Results:** We observed no difference in the hyperlocomotor action of acute MK-801 on subchronically exposed larvae. However, we observed an increase in sensitivity to the anesthetic actions of MK-801 in zebrafish larvae in larvae subchronically treated with 2 or 20 uM MK-801. **Conclusions:** These data establish that repeated exposure to MK-801 causes sensitization to the anesthetic action of MK-801 in zebrafish larvae. Moreover, these findings support the notion that zebrafish larvae are a suitable model to investigate the mechanisms neural plasticity.

A Pilot Study of Sleep Disordered Breathing and Nocturnal Hypoxemia in Young Adults with Sickle Cell Disease

Presenter's Name: Peter Whitesell
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Poster Presentation

Coauthors: Oluwakemi Owoyemi, Patricia Oneal, Seyed Nouraie, Elizabeth Klings, Angela Rock, Thomas Mellman, Tessema Berihu, Joseph Lavela, Robert Taylor, Susan Perrine

Sleep disordered breathing (SDB), including transient hypoxemia and hypercarbia, is reported in 60–80% of adolescents and children with sickle cell disease (SCD). Less information is known regarding SDB in adults with sickle cell disease. To assess the prevalence and degree of sleep-related hypoxemia and potential associations with altered cardiovascular function in young adults with SCD, we performed overnight sleep studies using a Type II sleep monitor NOX-T3 (Carefusion, Inc), 6-minute walk tests, echocardiograms, hematologic and chemistry panels, and PSQI questionnaires in 20 adults with SCD, ages 21-30 years. Apnea–hypopnea episodes (AHI) >5 during sleep occurred in 10/20 (50%) of subjects, and oxygen desaturation indices (ODI, 2.7 vs 0.2, p=0.018) were more frequent than in subjects with AHI scores ≤5, with a trend to lower oxygen saturation during sleep. Patient-reported symptoms of SDB on the PSQI questionnaire were strongly associated with SDB (Sensitivity = 80%). General quality of life was lower in patients with AHI>5 (mean score of 39 vs. 50, p = 0.01). Left ventricular diastolic function was more affected in patients with AHI>5 (median MV E/A ratio of 2.0 vs. 1.5, p = 0.04). 6 minute walk was more greatly reduced.Patients with more severe anemia (Hgb <9) showed less correlation between AHI and indices of desaturation (ODI, ave. SpO2, minutes SpO2 <90). These findings suggest that SDB and nocturnal oxygenation should be investigated further in SCD patient populations. Treatment may reduce vaso-occlusive events and adverse cardiovascular outcomes.

Characterizing the phage Maubee246

Presenter's Name: Kevin Wickham
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Kevin Wickham, Amber Durand, Ashley Queen, Leon Dickson, Courtney Robinson

Background: A phage or bacteriophage is a virus that infects and replicates within a bacterium, most times killing the bacterial organism by lysis. Although they are viruses and therefore parasitic to bacteria they have contributed largely to the field of biology for example, genetic engineering and phage therapy. The purpose of this study was to isolate a novel phage from the environment and characterize its DNA. **Methods:** The phage was found in dry soil in front of the Quad dorm (38.9219899 N, 77.0181315 W). The sample was enriched and isolation was performed via streaking, and the phage titer assay. **Results:** Phage was in fact obtained from the soil sample and isolated via the streaking methods **Discussion:** In the future the phage titer assay will be performed until a single phage population is obtained in order to determine the plaque forming units in a given solution. The empirical test will then be performed to obtain a medium titer lysate. The empirical test will lead to the collection of high titer lysate which will be used for phage characterization and DNA sequence analysis.

Green Coffee Bean Extract has a Hypotensive Effect and Decreases Arterial Stiffness in Obese Young Adult African American Women

Presenter's Name: Kaila Wilcher
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Rachel Branham, Oluwatosin Olaitan

Background: Green coffee extract is a supplement and/or food product that contains chlorogenic acid which has shown an antihypertensive effect in spontaneously hypertensive rats. **Purpose:** The aim of the present study was to investigate the effects of green coffee bean extract containing chlorogenic acid on blood pressure and peripheral augmentation index. **Methods:** In a randomized double-blind design, eight obese (%fat=31.5 ±0.8) young adult African-American women. (Age=19 ±0.4 years) received treatment with chlorogenic acid (360mg/day) from green coffee bean extract or placebo for seven days. Radial artery pulsatile volume waveforms were captured using a Vasotrac APM205A continuous blood pressure monitor interfaced with a BioPac MP100 data acquisition recorder. Arterial stiffness was determined using the peripheral augmentation index defined as the ratio of late systolic pressure to early systolic pressure. **Results:** Resting systolic blood pressure was 4.0% ± 1.8 lower ($P<0.05$) with green coffee bean extract than with placebo, whereas no difference was observed between diastolic blood pressure. After consumption of the dietary supplement of green coffee bean extract, augmentation index was lowered ($P<0.05$) by 7.9%±0.01 but was not reduced with placebo. **Conclusion:** The present study shows that green coffee bean extract induced reduction in blood pressure is associated with reduced arterial vascular stiffness. Furthermore, as green coffee bean extract improves blood pressure and arterial function, green coffee bean extract may postpone or prevent developing risk of hypertension in obese African-American women.

Detection of Superoxide Dismutase Activity in C. elegans

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

Coauthors: Atanu Duttaroy

The enzyme superoxide dismutase (SOD) performs the function of neutralizing reactive oxygen species (ROS) that are created during oxygen metabolism. Because ROS are damaging to DNA, proteins, and carbohydrates, this damage can lead to loss of mitochondrial function and decreased cellular energy, which contributes to aging. SOD has been found in organisms from bacteria to humans. In Caenorhabditis elegans, a soil nematode, 5 SOD genes are reported but their knock downs showed no effect on viability. This led us to the question, is there an active SOD enzyme present in C. elegans? To answer this question I am setting up an in gel SOD activity assay by extracting proteins from Drosophila melanogaster. In this study, a superoxide dismutase activity assay is performed to compare its activity in Drosophila melanogaster, Caenorhabditis elegans, and Mus musculus. Previous studies have indicated that D. melanogaster carries two forms of SOD and mice have 3 forms of SOD enzyme. Studying the function of superoxide dismutase is significant because it can give researchers an insight into its influence in age-related pathologies. To set up an in gel SOD assay, total protein was extracted from the three organisms mentioned in standard protein extraction buffer carrying 2 µL of protease inhibitor. After determining protein concentrations gel electrophoresis was carried out and the gel was stained. Active SOD bands were located in Drosophila and mouse proteins but no active SOD bands were found in C. elegans. I am currently performing repeat experiments to confirm this observation.

Trends and Causes of African-American Osteoarthritis and Osteoporosis within the Cobb Collection

Presenter's Name: Sierra Williams
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Like many other health problems, the misconception that African Americans should not be concerned about developing osteoporosis leads to African American women being under diagnosed and treated. Statistically, African American women have a higher bone mineral density than European American women. Bone mineral density represents the strength of the bone and the amount of calcium within the bone. Degeneration and "wear and tear" on the bones will show aging in the bones, a sign of osteoarthritis, is a condition expected to see in the collection due to the lifestyles of the individuals. Within the Cobb collection we will be looking for the presence of osteoarthritis and osteoporosis likely caused by disease, poor nutrition, inadequate physical activity, excessive thinness and being post menopausal. There are increased risks of fracture and bone strength with those suffering from osteoporosis. By observing the skeletal remains we will be able to recognize some of these conditions that may cause osteoporosis. From our observations we hope to find that African American females have a significant amount of bone disease however in comparison to the white females in the collection they may be lower. Low bone mass, deterioration of bone tissue, and disruption of bone architecture is what we expect to see from this collection. This study will focus on a subset of African American and European American post-menopausal women,

who from clinical and physical clues suggest evidence of bone disease. These groups will then be analyzed for statistical significance using ANOVA/t-test. The literature suggests the need for further research in the area of bone disease in African Americans.

Vancomycin resistant Bacillus sp. AWD is susceptible to Bacteriophages isolated from waste water effluent

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

Coauthors: Ashton Webber-Deonauth, Ashley Holt, Chantel Acevero, Janet Nwokolo-Aniekwu, Kortland Casselberry, Osayi Iyam, Shirley Lakpa, Abiel Spencer, Garima Bansal, Nivedita Bondhu, Behailu Eshetea, Kevin Scriber II, Leon Dickson, Hemayet Ullah, Courtney Robinson, Adrian Allen, Broderick Eribo, Winston Anderson

Bacteriophages could provide a competitive alternative to fighting the increased incidences of multidrug resistant bacteria, minimizing our dependence on an estimated annual production of 100,000 tons antibiotics. In the current study, water samples were collected from the Bladensburg Waterfront Park, part of the Anacostia Watershed ("38.934229, -76.938930") and microbiota evaluated using phenotypic, mass spectrometry and molecular methods. Evaluation of water samples indicated a temperature of 78°F, dissolved oxygen (DO), 4.2 ppm; biological oxygen demand (BOD) of 3.7 ppm; total and calcium hardness of 276 and 50 ppm respectively and pH 6.25.A number of organisms were isolated from the water sample, which included a multi drug resistant organism; Bacillus sp. AWD. Unique fatty acid methyl esters were identified for Bacillus sp. AWD isolate. The efficacy of fourteen antibiotics on this particular Bacillus isolate showed resistance against several antibiotics including vancomycin. Vancomycin is the active agent used against most gram-positive cocci and bacilli that are resistant to penicillins and cephalosporins. This third generation drug affects the cell wall synthesis in bacteria. Although the clinical significance of these bacteriophages isolates is not known at this time, it is however conceivable that they may have potential application in developing alternate antimicrobial therapy in Bacillus infections.

The Power of Population Diversity in Probing the Biology of Positive Selection in Asthma Disparities

Presenter's Name: Bradford Wilson
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Tshela Mason, Luisel Santi-Ricks, Georgia Dunston

Background: Genome-wide association studies (GWAS) have been informative for identifying single nucleotide polymorphisms (SNPs) statistically associated with asthma, a chronic inflammatory disease common in African Americans. The interrelationship of these statistically associated SNPs in the etiology of asthma is unknown. In characterizing these SNPs, recent signatures of strong positive selection were used to study genomic adaptation underlying the pathophysiology of asthma. **Methods:** The GWAS Catalog was queried for all signals that were significantly associated with asthma, asthma (childhood on-set) and atopy. These signals were stratified based on their signatures of recent strong positive selection. Next, interaction and pathway analyses were conducted on the selection signals of interest. Lastly, the literature was mined for information linking the selection signals of interest to the pathophysiology of asthma. **Results:** One of the GWAS signals located in a gene associated with asthma had a strong signature of recent positive selection among African descent populations in the International Haplotype Map Project. Twelve additional genes within a two mega base region of the GWAS signal were found to have the same selection profile. Through interactions analysis and literature mining, eleven of the thirteen associated genes and several of their interaction partners demonstrated a correlation with airway dysregulation in asthma. **Conclusions:** These results illustrate that positive selection can be used as a tool for interrogating the biology associated with common complex diseases.

MR imaging of β-cell function using highly sensitive MRI contrast agent

Presenter's Name: Yunkou Wu
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Poster Presentation

The goal of this study is to develop highly sensitive MRI Zn2+ sensors and use them to study β-cell function. The new sensors are built on structural motif of the previously reported sensor GdDOTA-diBPEN, but the new sensors introduce faster

water exchange Gd3+ complex units into platform to further enhance the Zn2+ detection sensitivity. The success of this molecular design strategy is demonstrated in the dramatic higher relaxivity enhancement values for all sensors than that of GdDOTA-diBPEN. Especially, two best molecules, G3-S3 and G3-S4, offer amazing high relaxivities of arond 50 mM-1s-1, after the Zn2+ and HSA binding. This value is around 3-fold higher than that of the GdDOTA-diBPEN. In addition, this study provides important knowledge about the relationship between structural modifications and water exchange lifetime and stability property of the sensors. The process of Zn2+ release during glucose-stimulated insulin secretion (GSIS) from β-cells can be detected using the new sensors. It is expected some sensors presented in this work could possibly be translated into clinic for human use in the future.

A novel nitrogen doped graphene/poly(3,4-ethylenedioxythiophene) composite as applied to neural electrodes

Presenter's Name: Yinghong Xiao
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Tongxin Wang, Jianfei Che, James Mitchell

Background: The diagnosis and treatments of neurological conditions and traumas are becoming more and more important, such as Parkinson's disease, retinitis pigmentosa, depression and chronic pains. Generally, the interactions between neural prosthetic devices and neural tissues are carried out at electrode interfaces. After implantation, due to the accumulation of resident immune cells, there will form a barrier between the target neural tissue and the device, leading to inflammation of the surrounding tissues which will affect the signal transport. With the development of neural electrodes, critical attentions are paid to the high-performance, long-lasting and biocompatibility of the electrode materials. **Methods:** Considering the requirements for neural electrodes, we attempted to seek a new material as electrode coating to improve the electrical performance, long-term stability and biocompatibility of implanted devices. We fabricated a novel nanocomposite of poly(3,4-ethylenedioxythiophene)/nitrogen doped graphene (PEDOT/g-C3N4) and demonstrated that it has greater potential as applied to electrode materials in terms of electrochemical performance and biocompatibility. **Results:** We found that in comparison with PEDOT/graphene, PEDOT/g-C3N4 electrodes have (1) lower impedance and higher charge storage capacity (CSC); (2) better electrochemical stability revealed by the cyclic voltammetry experiments; and (3) lower cell toxicity and better biocompatibility with neural cells. **Conclusions:** In summary, a novel nanocomposite of PEDOT/g-C3N4 was developed and it exhibits superior properties in comparison with traditional materials such as PEDOT/graphene. The unique nanocomposite is a promising candidate and puts forward a new generation of electrode materials for neural implantable devices.

The Effect of Micro-arc Oxidation on the Bonding Strength of Ti/porcelain

Presenter's Name: Xuetao Yue
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Qingbo Tian, LimingFeng, Tongxin Wang, James Mitchell

TA2 titanium plates(5mm×5mm×1mm) were chosen in order to compare the influence of oxidation time on the structural properties of titanium surface, especially bonding strength of fused porcelain of ZrO2. TA2 titanium plates, some of which were given micro-arc oxidation treatment, numbered randomly as the experimental groups. Other titanium plates left were control group. The titanium plates were named M0, M5, M10, M15 and M20 based on the oxidation time (0 minute, 5 minutes, 10 minutes, 15 minutes, 20 minutes). All samples were covered with fused porcelain of ZrO2. The surface properties of titanium plates were characterized with the means of SEM, XRD, EDX and universal testing machines. The SEM result shows that small and evenly distributed pores were observed on the surfaces of titanium plates of M5. However, larger, overlapped and uneven distributed pores were observed from those plates of M20. The bonding strength of Ti/porcelain after oxidation is greater than the control groups, but the effect of different oxidation time to the bonding strength was not observed.

Quinine Attenuates Hyperpolarization-induced Spiking in Dopaminergic Neurons Derived from Human iPS cells

Presenter's Name: Xiping Zhan
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Poster Presentation

Background: Quinine is a drug that induces hearing loss and tinnitus, for its ototoxic effects on cochlear hair cells but its effect in the nonauditory structures, especially in limbic system is not known yet. Dopaminergic neurons project to both auditory and limbic systems. The dopaminergic activity has been implicated in tinnitus, but findings of dopaminergic active agents on tinnitus are conflicting. We have reported that sodium salicylate attenuates the neuroexcitability of induced human dopaminergic neurons (iDA), that support dopaminergic involvement in tinnitus. Here, we extend our study on the effects of quinine on the function of dopaminergic neurons. **Methods:** The iDAs were generated from human induced pluripotent stem cells and were characterized by immunohistochemistry and neurophysiology. Patch clamping recordings combined drug treatment were performed to characterize the physiological properties of the dopaminergic neurons. **Results:** We found that quinine (50-150 μM) attenuated the half-width of rebound potentials induced by hyperpolarization in mature iDA neurons, and it dampened the hyperpolarization induced sag. In the spontaneous spiking neurons, the action potential was widened as well. **Conclusions:** This finding is consistent with quinine effects on the neurons of animals. Presumably, quinine attenuates Ca dependent potassium conductance that cause a delayed sodium spike, thus modulates the timing of DA neuronal spontaneous activity. As Ca dependent potassium channels are distributed widely in neurons in the auditory system, quinine may directly affect the auditory system. Taking together, quinine might generate tinnitus by a convergent effect on multiple neuronal targets, either in the auditory or the dopaminergic-limbic system.

Business

Understanding the Realized Value of Diversity in Information Technology: The Business Case

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

Coauthors: Mary Oyatoye

The under-representation of minority groups in the Information Technology (IT) field is a well-known and persistent problem. It has been well documented that diversity is a critical driver of excellence in research and innovation in STEM. This paper explores the current state of practice in diversity in technology teams: an extensive review of research on diversity and inclusion, why diversity is so difficult to implement and why software engineers should care about diversity. By analyzing current errors in technologies and applying the logic of diversity research, we validate how an organization's bottom line and competitive advantage depends on having diversity of thought and approach in their functional teams creating the new technologies; a workplace that is inclusive is directly correlated to better problem solvers. We develop a business case that outlines the competitive advantage of an organization having a diverse IT workforce. Specifically, we identify the subsequent technology-related issues that exist because of the under-representation of minority groups in IT by outlining the problems that have arisen in the execution of application. IT artifacts and processes benefit from different perspectives, backgrounds and experiences. Therefore, both computing education and technological innovation benefit from including a myriad of people and is a necessary prescription for the success and continued growth. Furthermore, we indicate how organizational leadership must strategically invest to ensure this strong diverse infrastructure.

Internalization of Restaurant Franchises: An overview

Presenter's Name: Maryam Khan
Classification: Senior Faculty
Presentation Type: Oral Presentation

The race for global dominance is an important one for franchise restaurants, particularly those that are saturated in the U.S. and are looking overseas for growth, particularly in Asia and other emerging economies. The objective of this research is to identify the internalization of socio-cultural, political, economical, environmental, and technological factors on franchise restaurants at global level. Findings show the current status and the rate of growth of franchised restaurants in selected countries, internalization or localization of menu offerings, supply chain issues, and future potential. Some trends that are evident are: (a) increased educational status of the local population (b) technological advancement facilitating travel, intercultural cooperation, and instant dissemination of information (c) exposure to different foods, the willingness of younger generation to try new products and non-traditional types of foods (d) improved economies and increased disposable family income (e) the increased significance of convenience as a result of one or more factors mentioned above and (f) the popularity of take-out or home-delivered meals.

Key words: franchise restaurants, internalization, food, globalization

---

Is it greenwashing? Environmental behavior and the legitimacy conundrum

Presenter's Name: Anupam Kumar
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Recognizing the duality in firm's environmental behavior driven by strategic versus institutional legitimacy and accounting for cognitive constraints of the stakeholders, the study hypothesizes the distinct impacts from a firm's independent versus conformant environmental strategy on environmental reputation. Using two years of data in a panel setting from the top 500 green ranked firms in the US, the study finds that firm behavior aligned with an independent strategy positively impacts environmental reputation, whereas ignoring concerns risking a non-conformant behavior has no such direct negative impact. Furthermore, the study finds that increased concerns adversely impact environmental reputation under conditions of increased scrutiny that highlights the lack of congruence in firm behavior. In summary, the study highlights the environmental management conundrum faced by managers on account of strategic versus institutional legitimacy, and provides a theoretical basis to study the phenomena called greenwashing.

Reexamining clients' fee dependence on the auditor opinions' issued

Presenter's Name: Lucy Lim
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Poster Presentation

This study reexamines (Reynolds and Francis (2001) to investigate whether a client's fee received by an auditor's office affect the audit's opinion issued for the client's financial statements. The paper uses a regression model with White-adjusted t-statistics for the discretionary accrual model and a logistic model for going concern analysis. Discretionary accruals are defined as the non-cash parts of accounting income that are affected by management's choice of accounting methods (e.g. depreciation method). While going-concern opinion is an opinion issued by an auditor's when there is doubt on the client's ability to continue as a going concern (to continue to operate indefinitely). If there is fee dependence we should examine that the higher proportion of the fee earned by an auditor's office, (1) the higher is the size of discretionary accruals and (2) the less likely that the auditor will issue going-concern opinion. The most current discretionary accrual model is used to improve the original model, use actual fee data (not available previously), and add analyses using the two components of total fees (i.e. audit and non-audit fees). As opposed to Reynolds and Francis (2001), the results show that the Big Five auditors are less conservative with higher-paying clients as they allow their clients to have more discretionary accruals. While Reynolds and Francis (2001) found that auditors are more likely to report going concern opinions for higher-paying clients, the results in this paper does not show any difference in the propensity of auditors to issue going concern opinions.

Do Gibrat's and/or Zipf's Laws Hold for Foreign Currency Reserves?

Presenter's Name: Denise W. Streeter
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Coauthors: Maru Etta-Nkwelle
With this study, we aim to determine the forecast ability of Gibrat's Law and Zipf's Law in relation to foreign currency reserves held by central banks and monetary authorities. We test for the conditions of Gibrat's Law and Zipf's Law using quarterly total reserve data, in US$, excluding gold, for 167 countries for the period of 2000q1 through 2015q2. Tests are conducted for this nearly 15-year period segmented by three periods around the 2008 Financial Crisis as well as by developed and developing countries. We find that Gibrat's Law of Proportionate Effects does not hold in the accumulation of foreign currency reserves, implying that the size of the reserve in the prior period is not independent of growth rate. With regard to Zipf's Law, we find that the law holds as there is an inverse relationship between the size of reserves of the largest amount of currencies and subsequently ranked countries, from the worldwide, developed, and developing country views. Based on these results, Gibrat's Law is not suitable, but Zipf's Law can be used to forecast foreign currency reserves.

Ineffective Internal Controls and Information Systems Lead to Largest Embezzlement in DC Government History

Presenter's Name: Jean Wells
Classification: Senior Faculty
Presentation Type: Poster Presentation

This paper details how a lone District of Columbia government employee was able to embezzle over $48 million from her employer for nearly 20 years. This embezzlement is the largest known government embezzlement case in District of Columbia history. The paper describes how the embezzlement occurred with the assistance of each of her craftily constructed web of co-conspirators and how the funds were spent to support a lavish lifestyle. The paper examines how the employee was able to circumvent the government's internal controls and information systems. The paper documents how the embezzlement escaped detection by her supervisors and internal and independent auditors for almost two decades. The paper explains how the embezzlement was eventually discovered by an external third party. Lastly, the paper recommends changes that the District of Columbia should implement to strengthen its internal controls, information systems and work environment to reduce the risk of future embezzlement.

Creative Arts & Design

The social and cultural impacts of Hip-Hop on the Black community across generations

Presenter's Name: Clarice Metzger
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Oluwatobi Oladejo, Kenae Damon, Jacquelyn Grant

Hip hop is defined as a style of popular music of US black and Hispanic origin, featuring rap with an electronic backing. Hip hop has been widely known for its influence in the African American community in particular and its creative criticism of the social and political issues at the time. The purpose of this research is to identify the social and political movements that have been inspired by Hip-Hop. In order to do this, we will examine various controversial Hip-Hop songs and the events that have occurred as a result of them in a five year interval.

Black Media Outlets in the United States and its Relation To The African American Community

Presenter's Name: Chanique Rochester
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Coauthors: Chanique Rochester, Krylios Clarke, Nkechi nnorom, Ibrahim Onafeko

Black media has led the way in the coverage of issues impacting the black community such as Trayvon Martin's shooting, the coverage of the stop-and-frisk policy, and the unfortunate death of Sandra Bland. The launch of the Freedom's Journal, the first black press, in 1827, was aimed at countering the degradation of black people and to call for an end to slavery. Today, the role of the black press has become more difficult to define as some white/mainstream media have attempted to include black news. Regardless of that fact, black media is still needed to provide invaluable and non-mainstream news about black people, black communities and black media. The research is focused on exploring the impact that black media has on African-Americans in the context of the current Black Lives Matter movement in contemporary society. The results of this project will investigate individuals' perceptions for the continued need of black media outlets and its impact on the black community.

When African-American music artists explicitly express their experiences of being Black in America in their music, do they receive negative or positive feedback

Presenter's Name: Amaya Starkey
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Amanda Addison, Jazmin Goodwin, Martine Eliemarrelie

The music industry is composed of artists from racial backgrounds that sing different types of music genres. While African-American artists are represented among different ranges, which range from opera to hip-hop, one commonality that exists is that African-American artists endure completely different experiences than their musical counterparts of an opposite race. Although racial relations have seemingly improved throughout the years, there is still a disconnect in regards to African American artists overtly discussing the negative sides of being black in their music. The purpose of this research is to analyze the reactions received by African-American artists when they explicitly talk about their experiences of being African-American in America within their music.

Best Practices for Branding a Small, Black-Owned Business

Presenter's Name: Lori Allan
Classification: Graduate Student
Presentation Type: Poster Presentation

What are the best practices in branding and identity and how can they be applied to small, minority-owned businesses or start-up companies to increase their sustainability in a community undergoing revitalization? I have identified and refined existing models that allow the brand identity process to support the growth and sustainability of a minority business. I have created a five-phase design process that I have also developed into a guidebook for small businesses and designers.

Examining Relationships Between Parental Education Levels, Income, and Childhood Art Experience

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

Coauthors: Jules Harrell, Monique Major, Mariah Sims, Shonta Newman, Brittany Ketchup, Bre'Shae Grandberry, Damon Williams, Brandy Younge, Jaedyn Bonner, Gillian Finley

Background: The purpose of this study is to examine the relationship among parents' educational level, their income, and the amount of art their child experiences (i.e. dance classes, music lessons, etc.). Through this study, the child's art experience is evaluated in order to address three research questions: (1) Are parents' educational levels associated with their income level? (2) Are parents' income levels associated with the amount of art their child experiences? (3) Can parents' education level be a predictor for the amount of art their child will experience in the future? We hypothesized that parents' educational levels will be positively associated with their income level, as well as, a predictor for the amount of art their child will experience. It is also hypothesized that parents' income level will be positively associated with their child's art experiences. **Methods:** The participants in this study consisted of a sample of 169 college females, ranging in ages 18 to 24. The participants answered demographic questions regarding their parents' educational background, family income, and the amount of times they participated in art-related activities, such as dance classes, music lessons, and art exhibit visits. Correlation and regression analyses will be used to address the research questions. **Conclusion:** Future findings from this study may implicate that parents who attain high levels of education are able to provide their children with greater access to various art avenues, thus increasing their children's creative competence.

"A visual study of images featuring Black culture and life produced by four African American photographers"

Presenter's Name: Milbert Brown
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

At the turn of the last century, often the only photographs of African Americans highlighted them in poverty, victims of discriminatory isolation, and or as unappreciated laborers. Later in the mid- 20th- century, pictures of enforced racial segregation, and excessive police brutality were on display to the world produced by white photographers. Fortunately, the grace, joy, and spirit of African American life were captured by the culturally sensitive vision of Black photographers. Even today, Black photographers still find themselves marginalized as valued image-makers despite their experience. The purpose of this study is to examine 20th-century African American pictures by four Black photographers. This investigation will help scholars to understand better the significant contributions that Black photographers made, as visual caretakers who showcased cultural aspects of Chicago, Baltimore, New York, and Washington, D.C.'s Black community. During the second decade of the 21st century, the researcher began collecting comparative visual data, which serves as an image repository of Black American life. The research supports the theoretical framework of Ervin Goffman's Frame Analysis Theory. According to Goffman (1974,) the picture frame concept illustrates how people use the frame (which represents structure) to understand the image's context. The results of this qualitative study will help to establish a first Black photographers' educational guide for Howard University's Digital Library website. In conclusion, this creative research will hope to provide exposure to unrepresented positive images of the Black experience similar to the imagery captured in Norman Rockwell paintings.

The Juxtaposition Present in Women's Roles in Theatre

Presenter's Name: Khadija Roane
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Theatre can reveal as much about fears and anxieties that reside unseen beneath the surface as it can about observable surface realities. Across time and various cultures, women's voices have consistently been suppressed, marginalized, or silenced. Since art is not created in isolation from the world, this phenomenon has been reflected in art in myriad ways. Portrayals of women in theatre have almost always been a direct juxtaposition to their roles and actions in society. This idea is manifest in Greek Tragedies as well as in Early Modern Dramas. Interestingly enough, women were portrayed in Greek Tragedies as murderous, while women in Early Modern Dramas tended to end their own lives. These representations reveal anxieties around women as instruments of destruction as a direct outcome of their status in society as being subservient to men. Although, there are many differences between the likes of Clytemnestra, Medea,

Hedda Gabler, and Miss Julie, these women all are portrayed in ways that are the exact opposite of their reality in society. By analyzing Aeschylus' Agamemnon, Euripides' Medea, Strindberg's Miss Julie, and finally Ibsen's Hedda Gabler I will show how the portrayal of women in theatre is not only a juxtaposition to the roles they play in society, but also shed light on what this means about the playwrights who create these roles.

Dance is a Weapon: The Activism of Pearl Primus

Presenter's Name: Reya Roussel
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Choreography is an expression of the self and all it entails. Through exploration of herself and her true identity in relation to her African ancestry, Pearl Primus combatted false narratives of Black people in America and all over the world. This study examines the choreography and performance of Pearl Primus as a form of radical sociopolitical activism through her use of identity and experience as a Black woman. By analyzing the academic research and social activism of Pearl Primus, with an evaluation of her dances in historical context, this paper will show how the work of Primus contributed to the African American liberation activities and racial discussions occurring at the time. Pearl Primus, born in Trinidad in 1919 and raised in New York City, lived in a time when there were many misconceptions of African life and heritage. Many Black Americans and other diasporic Africans were struggling with identity within their respective countries. Many cultural connections to the motherland were cut off by past colonization and slavery. Her artistic and academic work in America and beyond exposed African tradition and its connection to its people globally. The act of being Black in America is radical in itself. The expression of the experience of Black life in white spaces was controversial and considered radical by the majority, especially when it challenged the present stereotypes. Primus challenged stereotypes of African culture and African Americans through her choreography and performance.

Education & Outreach

My Major Makes Me Crazy But Keeps Me Sane: Field of Study, Anxiety and Future Orientation Among College Students of African Descent

Presenter's Name: Chynere Best
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Chynere Best, Debra Roberts

Background: There has been a significant rise in anxiety among college students that is overwhelming university counseling centers across the United States. Anxiety can stem from numerous sources such as family expectations, a new cultural environment, and increased social and academic demands. Previous studies have indicated anxiety as having a negative impact on students' academic performance. However, little is known about the relationship between anxiety and future orientation. This proposed study seeks to investigate the moderating role of cultural context and field of study on the relationship between anxiety and future orientation among college students of African descent. **Methods:** Using a sample of freshmen and senior students from three diverse universities, data for the key variables will be gathered via questionnaires. Subsets of the population will participate in focus groups to provide qualitative data. **Conclusion:** This research affords the potential to construct culturally relevant theoretical frameworks that can address the role of the environment and perceived security in major field of study on future outlooks. It will lay the foundation for revealing mechanisms that can improve student success at the university level, especially in STEM fields.

"Siri Taught Me" The impact of the Internet and Technology on Education and Student Engagement

Presenter's Name: Dwayne Bryant
Classification: Graduate Student
Presentation Type: Poster Presentation

With today's advances in technology, the access and ability to receive information is becoming more accessible. As our society continues to grow and change we as educators must adapt and alter the way we present information. In the field of school psychology a portion of our responsibility is to assess and evaluate students ability to learn and acquire knowledge. Just as technology grows and develops, our understanding of how students learn must follow. This presentation is a qualitative analysis of the impact of the Internet and technology in regards to education and student engagement. Over the last ten years the atmosphere and the general composition of the classroom has changed, with the integration of more high tech equipment and less lecture based lesson plans. The emergence of social media has also increased the rate of information exchange both socially and academically. With this in mind it leads me to a few questions. How does the use of technology effect student engagement in the classroom? How many school age children use social media? How does a student's use of technology outside of the classroom impact learning in a classroom setting? The content of this presentation will be reflective of these questions, which will be the foundation to exploring information that is applicable to aiding student's comprehension of lecture, course content and recommendations to improve curriculum structure.

Adapting Health Communication Methods to Cultural Needs: South Africa & United States

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

The geographical divide between America and South Africa is significant. Although cultural practices and traditions differ across the equator, the effect that HIV/AIDS has on residents has transcended to both nations. South Africa is noted for having "the biggest and most high-profile HIV epidemic in the world" while according to the CDC "more than 1.2 million people in the U.S. are living with HIV infection and almost 12.8% are unaware of their infection. It is without a doubt that health communication is an integral component of developing effective health literacy, health promotion and palliative care for those who have been exposed to, or have the potential of being exposed to, HIV/AIDS. The purpose of this study is to garner a better understanding, compare and develop impact solutions for the existing health communication methods in South Africa and the United States. In using the qualitative methods of personal reflection and interviews of individual residents, the results suggested that there was a divide between the health communication practices in both nations and the actual needs of the community. The consensus suggested that residents both in South Africa and the United States declared

the need for health communication practices to respond less to data-driven approaches and more to the needs of the intended audience, especially through increased use of social media and mobile telephony. The significant cultural relevance of this research project are highlighted in the new approaches to help combat a culture that knows more yet does less about HIV/AIDS prevention. Although health communication will not address the virus that is responsible for AIDS, it does, however, have an impact on the knowledge, attitudes, social norms and behavioral responses of those who have been exposed to or have the potential of being exposed to the virus. Lastly, effective and strategic health communication methods that undeniably empowered residents to take control of their own health with regard to HIV/AIDS prevention and maintenance were deemed the most effective coast to coast.

Exploring the Relationship between Racial Identity Beliefs and Achievement Goal Orientations in African American Students

Presenter's Name: Kendra DeLaine
Classification: Graduate Student
Presentation Type: Poster Presentation

Background: The literature on the relationship between African Americans' racial identity and academic achievement highlight two competing perspectives: a positive racial identity can be viewed as either an educational risk factor or an educational protective factor (Graham and Hudley, 2005). Racial identity as a protective factor will be explored in connection to achievement motivation using the achievement goal theory as the guiding framework. **Methods:** Data collected from a longitudinal research study examining psychosocial and academic factors in African American college students will be analyzed. The sample included 323 freshmen STEM majors attending a Historically Black College/University. Students' achievement goals were measured using the Patterns of Adaptive Learning Survey (PALS; Midgley et al, 2000). Additionally, the Luhtanen and Crocker's (1992) Collective Self Esteem scale was used to measure students' racial identity (subscales: membership, private, public and identity centrality). **Anticipated Results:** It is hypothesized that: H1. Students with higher public and private regard will adopt more mastery goals; H2. Students with lower public regard will adopt more performance goals; H3. Race centrality will moderate the relationship between public and private regard and achievement goal orientations. **Conclusions:** Exploring racial identity in connection to achievement goals can offer insight into the mechanisms underlying the motivational aspect of racial identity. Research in this area is warranted considering the discrepancies in achievement goals between African American students and their White counterparts (e.g., D'Lima, Winsler, & Kitsantas, 2014).

Impact of educational module on occupational therapy students' knowledge of and interest in professional engagement issues

Presenter's Name: Nicole George
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Lynda Hill, Joy Wills

Many factors influence occupational therapy students' professional engagement. A pilot study conducted with occupational therapy students suggested that their knowledge of and interest in professional engagement issues may be positively impacted by embedding professional engagement modules in the core curriculum. A more rigorous study is indicated to learn more about the most effective educational methods to use to meet the objectives. **Methods:** A pre and post survey will be administered to first year students to assess knowledge of and interest in engaging the occupational therapy profession. Between administration of the pre and post survey, four educational modules will be administered by faculty and senior occupational therapy students using a didactic , experiential, and adult learning format to educate the students on relevant professional matters and resources. **Practice implications:** With the current dynamic health care climate, it is essential that students and professionals engage with the occupational therapy professional body and their local representatives to promote the profile of occupational therapy and to assure financial and government support of occupational therapy services. **Conclusion:** Engaging students professionally presents many challenges. Educating students on the many ways they can engage professionally, and the impact of their potential engagement can improve ability and motivation to engage in professional political activities.

The Efficacy of Socrative, a free web-based software, to improve learning outcomes and student retention in both a STEM and Non-STEM college classroom

Presenter's Name: Aitza Haddad Nunez
Classification: Graduate Student
Presentation Type: Oral Presentation

Most postsecondary educators receive little formal training in pedagogy, resulting in a faculty that is: 1) unfamiliar with educational theories 2) unaware of the importance of utilizing instructional strategies to accommodate different learning styles and 3) reluctant or uncomfortable with incorporating effective teaching technologies in their course delivery. Research indicates that instructors often adopt a teaching strategy that closely mirrors their learning style or one that they have adopted from former instructors during their higher education experience, a practice, which often creates a divide between the teaching style of the instructor and the learning style of the student. (Hawk & Shah, 2007). Exacerbating this divide, is the dependence of millennial learners on the use of technology in their daily lives. A recent survey of 100,000 students from 195 participating institutions, indicate that, 86% own a laptop, 62% own a smartphone, 33% own a desktop computer, 15% own a tablet, and 12% own an e-reader" (Wash, 2014). These statistics indicate that the millennial student embraces technology and expects that its use will contribute to their learning. Arguably, most instructors are currently forced to integrate certain academic technology into their teaching, since various course management systems (CMS) are routinely used throughout college and universities. However, a recent study examining faculty and student usage of CMS, and whether or not this software enhanced students' perception of learning based on the Seven Principles of Good Practice in Undergraduate Education, concluded: "that although students enjoy using many of the course management tools, they do not see the tools as highly effective at enhancing the learning experience." (McCabe and Meuter 2011). Conversely, studies have shown that students embrace interactive learning technologies and that their use contributes to better teaching and learning outcomes (Wash, 2014). This study will empirically examine the efficacy of the interactive software Socrative to increase student engagement, improve performance and decrease attrition rates in a Science Technology Engineering and mathematics (STEM) and non-STEM course. Both qualitative and quantitative data will be collected and will be used to both evaluate the efficacy of Socrative in improving learning outcomes and to determine if there are epistemological differences in knowledge acquisition between STEM and Non-Stem learners.

Exploring Intersecting Microaggressions for Minority Women, Stressors, and Coping Mechanisms

Presenter's Name: Wyneiceia Hyman
Classification: Graduate Student
Presentation Type: Poster Presentation

The purpose of this presentation is to explore the influence of microaggressions for racial and ethnic minority women with a focus on how these forms of microaggressions act as psychological stressors. In recent years, the United States has had some transitioning from more overt forms of racism to more subtle forms of racial oppression, such as racial microaggressions (Mercer, Zeigler-Hill, Wallace, & Hayes, 2011). Microaggressions are defined as "brief, everyday exchanges that send denigrating messages" and are "often subtle in nature and can be manifested in the verbal, nonverbal, visual, or behavioral realm" (Sue & Sue, 2013, p. 150). Nadal, Griffin, Wong, Hamit, and Rasmus (2014) researched racial microaggressions and the impact microaggressions had on influencing depressive symptoms and negative affect for individuals. Additional research has indicated the negative effect of racial microaggressions on individuals' psychological well-being (Burrow & Hill, 2012; Mercer, Zeigler-Hill, Wallace, & Hayes, 2011). As multicultural discourses have implemented research on microaggressions, researchers have recently explored how individuals with traditionally marginalized intersecting identities have been impacted by microaggressions. For examples, Lewis and Neville (2015) discussed gendered racial microaggressions and Nadal et al. (2015) examined intersectional microaggressions and the potential negative effects on health and education. This presentation will highlight the unique stressors faced by ethnic and minority women on the basis of their race and gender. Clinical implications for working with this population will be addressed as well as potential coping strategies for combating these stressors.

"I am not a Math Person": An Exploration of Math Anxiety and Strategies to Thrive

Presenter's Name: Ayanna Johnson
Classification: Graduate Student
Presentation Type: Poster Presentation

Math anxiety is defined as the avoidance or fear of numbers and math (Ashcraft, 2009; Ashcraft, 2002). This anxiety adversely affects math performance and achievement, but also impacts working memory, the ability to hold and manipulate information stored in short-term memory

(Ramirez, Gunderson, Levine, Beilock, 2013; Wigfield & Meece, 1988). Previous research suggests that individuals with math anxiety have difficulty remembering and mentally manipulating numbers to solve math problems (Maloney & Beilock, 2012). Math anxiety has become so commonplace that it has become acceptable for a person to declare "I am not a math person" or "I'm bad at math" (Ashcraft, 2002). Although math anxiety has not made its way into the DSM-V as a mental illness, it is a serious impairment that plagues millions of students who need appropriate strategies to manage this fear in order to be successful in the classroom and the math community (Ashcraft, 2002). This presentation will be a review of the research on math anxiety in children in grades Kindergarten through twelfth grade with a focus on the impact math anxiety has on cognitive abilities, emotional states, and students' attitudes towards math. Additionally, strategies for how teachers can support students with math anxiety will be provided.

MAKE THE CHANGE: Implementation of positive behavior interventions and supports in elementary urban institutions.

Presenter's Name: Jasmyn Ledford
Classification: Graduate Student
Presentation Type: Poster Presentation

This research presents a review of the literature on the effects of Positive Behavior Interventions and Supports (PBIS) with students demonstrating aggressive behaviors in urban elementary settings. PBIS is a system utilized school-wide to promote positive behavioral supports and interactions that transform the students' experiences in and out of the classroom. PBIS results in reduction of undesired behaviors and enhances the learning environment by supporting appropriate interactions and responses for all ages. While schools implementing PBIS have experienced positive social behavior among students, there is limited research on the use of PBIS in urban schools or in settings where there is a higher percentage of students with emotional behavioral disorders. The experiences that occur to early learners have an extremely high impact on behaviors that follow (Thomas, Bierman & Powers, 2011). Aggressive behavior is a major interruption in academic success, and can also affect the climate and culture of the school. Elementary school aged children are still developing habits and behaviors in academic environments. Examining inappropriate behaviors at this age provides an opportunity for development and techniques to identify ways for growth and improvement. Although research is often conducted on students exhibiting aggressive behavior, there is little research that specifically studies solutions for aggression in urban communities. Youth with low economic status tend to have more external life stressors that can lead to aggression within the school environment (Pouwels & Cillessen, 2013). These students, regardless of age, often have higher expectations and more responsibilities outside of the school environment in comparison to their counterparts. The implementation of positive behavior interventions and supports school-wide in elementary institutions has promoted reduction of aggressive behavior in students across the country. Children with extreme emotional and behavioral disorders in urban institutions are at a higher risk for demonstrating extreme aggressive behaviors regularly, which makes maintaining positive academic progress more challenging. The aim of this study is to identify the strengths of utilizing PBIS in urban elementary settings to reduce aggressive behavior and help increase successful academic connections and social interactions.

An investigation of perceived stereotype threat experience of African American students attending Historically Black Colleges and Universities or Predominately White Institutions for undergraduate studies

Presenter's Name: Stacey McDonald Lowe
Classification: Graduate Student
Presentation Type: Poster Presentation

This in-progress study is designed to examine whether degree of racial group identity, self-efficacy and academic performance are impacted by perceived stereotype threat experience. Whether there is a difference in the perceived stereotype threat experience of African American students by the type of school they attend is also of particular interest. One hundred fifty African Americans who have attended either Historically Black Colleges and Universities or Predominately White Institutions for undergraduate studios will be recruited to participate in this study. Those participating in this study will complete a self-report questionnaire regarding their perception of stereotype threat experiences within an academic setting, racial identity orientation, self-efficacy and demographic information. Quantitative data will be analyzed using statistical techniques including simple linear regression, one-way ANOVA and three–way factorial ANOVA. The findings will be discussed from the perspective of highlighting protective factors and identifying potential interventions to reduce the impact of stereotype threat.

OT and Teacher Collaboration to Improve Handwriting Performance in the Classroom

Presenter's Name: Julie Patterson
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Amarra Bland, Shaniel Francis, Briana Sterling, Chanele Williams

Background: Handwriting is a necessary skill for children to acquire as a foundation for academic success. Research indicates that elementary school teachers report inadequate instruction in their education degree programs on how to teach handwriting in the classroom (Donica, Lawson, & Zinn, 2012). While research also indicates that handwriting is an important skill for students to attain, there is not a consistent method of teaching the skill. Recently, the emphasis on academic work in the classroom has increased, while the focus on handwriting has declined (Berninger et al., 2006; Cahill, 2009). **Methods:** This study is a continuation of the previous IRB approved research project, "Response to Handwriting Intervention in Kindergarten to 1st Grade Children" IRB-14-PNAH-04, conducted in the 2014-2015 school year at a District of Columbia public charter school. The focus of this study will be on the collaboration between the OT and the teacher, including pre-surveys of current teacher attitudes and methods of teaching handwriting, OT modeling of evidenced based instructional methods, and post surveys to determine any changes in teacher attitudes and practices related to handwriting. **Results:** Results from the study are expected to indicate that collaboration between the OT and teacher in handwriting intervention in the classroom will enhance the teacher's knowledge and attitude to increase handwriting practice and instructional methods in the classroom. **Conclusion:** Once analyzed, the research study results are expected to indicate the changes in the teachers' attitudes, instructional methods, and practices related to handwriting.

Relevant Systems: UNIMIND

Presenter's Name: Alcine Shenick
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Coauthors: Michael Isom

The proposed entity Relevant Systems builds applications that integrate the intelligence of individual problem solving participants into a unified focus on systematic methods of resolution similar to that of a functioning hive mind. The organization's first project (Code Name: UNIMIND) will be an application that allows users to submit ideas or problems that need to be addressed in the real world. Those submissions become ranked, displayed, and reinforced to alert users of what other users value as a unified collective. Each problem or concept is submitted and tabulated by keyword reference (to the specific issue) that's aggregated among the user-base. The core mission of the project is to empower concise aggregates of target populations of various specialties, qualifications, and unique capacity to act on collaboratively, create, and experience the results of positive change in the areas issues. An example of how the application's purpose can be conceptualized in a 3-6-month project, where students majoring in materials science, industrial engineering, and government, or public administration can work on a target municipal issue at hand regarding waste management considerations, sustainability, and environmental footprint minimization, with respect to reduced budget considerations for the next fiscal year. Again, this is an example of what can be done, with the proposed application. Instead of only participating in society with what was heretofore limited capacity to have impact, now participation is much direct in that contributing individuals can take a hands on approach to resolution implements, and therefore, experience the benefit with the rest of society, at large.

Understanding the Minds of Emerging Geniuses: An Analytical Review of the Reading & Language Abilities of Children with Asperger Syndrome

Presenter's Name: Terranie Sims
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Asperger's syndrome (AS) is a pervasive development disorder that is often classified on the high-functioning end of the autism spectrum. Although children with Asperger's syndrome have unique characteristics that distinguish them from their normal functioning peers, no two cases are exactly alike, especially as it relates to their reading and language abilities. This non-empirical thesis presents a culmination of existing research on the array of Asperger symptoms, such as hyperlexia and Einstein's syndrome, and it explores how these symptoms are directly impacted by the psychological conditions of AS children. It also examines how these symptoms translate in the classroom setting and assesses the quality of existing methods that educators use to meet the needs of students with AS (i.e. fusing the social

and curriculum components of education and asset-based teaching techniques). There are a number of strengths and weaknesses found in the research presented, and based on those determinations, there are suggestions made for future research. The purpose of this work is to increase awareness of Asperger's syndrome and to inspire educators to approach students with AS and other developmental conditions as though they are simply different, and not deficient.

Community Violence Exposure and Internalizing-Externalizing Behaviors: Moderating Effects of Parental Involvement and Cultural Socialization

Presenter's Name: Blaire Thomas
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Blaire Thomas, Debra D. Roberts

Evidenced by reports of national crime as perpetrated by marginalized youth, and increasing rates of depression within this group, we can recognize that maladaptive psychosocial outcomes are not well understood in the research and larger communities. Furthermore, research in recent years has shown that community violence exposure (CVE) can contribute to and/or exacerbate internalizing-externalizing behaviors among these youths. On the other hand, recent research suggests that positive parental involvement such as cultural socialization can have a significant positive impact on youth outcomes. However, little is known about how these socialization practices can help to protect youth from the negative impact of CVE on outcomes such as depression and disorderly conduct. Therefore, the purpose of this proposed research is to investigate the moderating effects of parental involvement and cultural socialization on the harmful relationship between CVE and internalizing-externalizing behaviors. **Methods:** The sample will include at least 100 high school students of African descent in the Washington D.C metropolitan area. Students will complete self-report measures to assess variables of interest. A subset of these students will be selected to participate in focus groups to obtain qualitative data that will help to inform the quantitative data. Bronfenbrenner's ecological systems theory (1979) will be used as the theoretical framework for this study. Regression analyses and grounded theory will be used to analyze the quantitative and qualitative data, respectively. **Conclusion:** Results will be discussed within the context of enhancing our knowledge about the ways in which psychosocially toxic environments (e.g., violence, poverty, etc.) and health-promoting factors (i.e., cultural socialization) can interact to promote developmental outcomes among marginalized youth.

Identifying Best Practice Approaches for Custodial Grandparents Raising Children with Special Needs

Presenter's Name: Danun Thomas
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Kyleen Armstrong, Kristen James, Feiga Vorotinovfeiga, Elena Rodriguez, Danun Thomas, Joylynne Wills

This is a pilot study pending IRB approval. Social phenomena, such as drug abuse, HIV and incarceration, have caused an increase in the numbers of toddlers and school-aged children that are raised by grandparents. Changes in family structure have significant impacts on the quality of life of both the custodial grandparents and the children they raise (Fuller-Thomson, 2000). Custodial grandparents have higher stress and significantly more health problems. Grandchildren may be at risk for developmental, cognitive, neurological and/or behavioral problems (Kelley, Whitley, & Campos, 2011). This may be due to prenatal or early life experiences involving drug/alcohol exposure or neglect and abuse. (A.B. Smith & Dannison, 2008). There is a gap in information on the needs of custodial caregivers, especially those taking care of children with disabilities. There is limited information regarding occupational therapy intervention that can best address these populations. This research will identify the sources of the challenges that these grandparents face, in order to develop intervention strategies to increase their quality of life. This is a non-experimental mixed methods study consisting of a survey to be distributed to custodial grandparents. The intended population are senior citizens in the metropolitan area. This survey will identify challenges, needs, daily living skills, and community supports of custodial grandparents as they care for their grandchildren. Data will be analyzed using a Likert scale to identify the characteristics and needs of this population. The data will identify the contexts that are most stressful and inputs that respondents find most helpful for families.

Improving Howard University's Graduation Rates and Undergraduate Research Performance

Presenter's Name: Charles Verharen
Classification: Senior Faculty
Presentation Type: Oral Presentation

Background: Howard has had extraordinary success over its nearly 150 years. But its record can be improved in two ways: first, by improving its graduation rates; and second, by promoting student abilities to solve problems through undergraduate research. **Method:** The paper proposes two methods for improving undergraduate graduation rates and undergraduate research performance. The first method is taken from dedicated science programs at the University of Maryland/Baltimore and Xavier University in New Orleans. These science programs combine faculty oversight with a technique that has come to be called "near-peer tutoring." The second method modifies the Princeton University senior thesis requirement for all undergraduates. It sets up undergraduate research committees composed of graduating seniors and faculty members. The undergraduate research committees' task is to encourage students to choose their curricula in such a way as to lead to a senior thesis or project. In the best case, students will be motivated to produce publishable research papers or project descriptions, and to join faculty research teams that will include their names on professional refereed publications. **Results:** The results of the UMBC and Xavier programs are manifest. Modifying these programs for Howard students will require extensive Howard University research and development. The paper will articulate models for grant proposals to cover start-up costs. **Conclusions:** The author has first-hand experience with near-peer tutoring, both in his own courses and in the philosophy department. The U.S Department of Education FIPSE program offers $250,000 grants for proposals aimed at low-income and minority student success.

Malnutrition among Minority Women with Breast Cancer

Presenter's Name: Alfreda Woods
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Chimene Castor

Purpose: Malnutrition is a common result of patients that are receiving cancer treatments and poor nutritionally related behavior in breast cancer women is one of the contributing factors increasing and diminishing health in patients receiving treatment. The study aim is to gain an in-depth understanding and assess the nutritional status of minority women prior to cancer treatment (Surgery, Chemotherapy, and/or Radiation) with the goal to prevent malnutrition. **Methods:** The participants (N 50) will be recruited from the Howard University Hospital breast cancer clinic to participate in the study. The study will employ a mixed methodology of qualitative and quantitative for data collection to examine nutritional status of Black and Latino women pre/post treatment. The proposed study will conduct a survey, three-day dietary records and individual's interviews to determine nutritional status using the Health Belief Model and Social Cognitive Theory. **Results:** The anticipated result will provide critical data in the treatment side effects, such as nausea, vomiting, loss of appetite and neuropathy caused by chemotherapy; increased energy, shorten healing time from surgery and improved overall lifestyle by adopting and implementing healthy eating habits. The proposed results will provide data that stress the importance of a well-balanced, high protein, high fiber diet in preparation for and during cancer treatment. **Conclusion:** The study will provide effective nutritional information that can contribute to better quality of life, better tolerance of cancer treatments, shorten healing time after surgery. The findings will also contribution to weight maintenance, improve lean muscle mass and reduction of malnutrition.

Ethics, Law & Religion

Hegelian Constitutivism and the Shmagency Objection

Presenter's Name: Brandon Hogan
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

I argue that a Hegelian version of constitutivism will allow us to respond convincingly to David Enoch's "shmagency," objection to constitutivist strategies in meta-ethics. The constitutivist seeks to ground the norms of morality in the constitutive features of agency. Agents, the constitutivist argues, must adhere to certain moral norms if their bodily movements are to count as actions. Enoch argues that constitutivism cannot provide the whole story about moral normativity (or normativity in general) because we can intelligibly ask for reasons to be agents instead of shmagents (persons who are like agents but lack the constitutive features of agency). Interpreting the shmagency objection as an expression of alienation from morality, I argue that if we understand action as constituted by the aim of converting inner intentions to outer expressions and understand this process as essentially social, as Hegel suggests, we can overcome the alienation that is at the root of Enoch's objection.

The Effect of Abrahamic Religious Text on the Treatment of Animals

Presenter's Name: Rachel Kersey
Classification: Undergraduate Student
Presentation Type: Oral Presentation

This research examines the scriptural text of the three largest Abrahamic religions, Christianity, Judaism, and Islam. The texts in question are the Bible, the Torah, the Qur'an, and the Hadith. Through a thorough textual analysis of the creation stories within these texts, specific themes relating to life, human life, animal life, and hierarchy of life become apparent, and provided rich material for interviews. This research was conducted mainly through one-on-one interviews with people who identify as Christian, Jew, or Muslim to determine their views on the authority of scripture, modern application of scripture, personal application of scripture, and the differences in the ways humans and animals interact and how research participants believe humans and animals should interact. The combination of textual analysis and interviews yielded a wealth of information on the interplay between scripture and the lives of people of faith, while also leaving room for further research in the field.

The problem of Evil in relation to God.

Presenter's Name: Ria Melhotra
Classification: Undergraduate Student
Presentation Type: Oral Presentation

The paper evaluates the existence of God as well as different philosophers who explain why the problem of evil makes this problematic. Different theories are evaluated, as well as different solutions to the objections.

Is Hear Transplantation a No-brainer?

Presenter's Name: Assya Pascalev
Classification: Senior Faculty
Presentation Type: Oral Presentation

Recently, Italian surgeon Sergio Canavero announced that he would be able to perform a human head transplant by year 2017. Shortly after his announcement, the first volunteer stepped forward: Valery Spiridonov, a young Russian man suffering from Werdnig-Hoffman disease offered to be the first to undergo this novel procedure. The possibility for a full body transplant raises a number of scientific, philosophical and ethical questions. It also poses unprecedented challenges concerning the nature of the transplant and the personal identity of the resultant individual, her metaphysical and social status: Who is the donor and who is the recipient in a head-to-full body transplantation? Who will the resulting person be and how should that "new" person be treated - morally, legally and socially - given that she has the characteristics of two distinct, previously unrelated individuals, and possess both old and new physical, psychological, and social experiences that would not have been available without the transplant? Head transplantation challenges linguistic conventions and conceptual "part-whole" binaries, and calls into question the extant philosophical views on personal identity. The presentation examines critically the major philosophical and ethical challenges of head transplantation and identifies key social, policy and legal issues which need to be addressed in the debate on the medical, legal and moral permissibly of this revolutionary procedure.

A Caged Voice: The Battle Between Public Employees & Free Speech

Presenter's Name: Thais Ridgeway
Classification: Professional Student
Presentation Type: Oral Presentation

Free speech is the cornerstone of civil rights that has propelled movements and empowered communities to achieve social change. A movement without a voice is no movement at all. The right of an individual to vocalize questions, concerns, and opinions is qualified as free speech and protected by the First Amendment to the U.S. Constitution. This research project aims to identify one select circumstance where free speech of a citizen is strangled: the workplace. Challenges to speech of this nature qualify as constitutional tort claim actions. Constitutional tort claim actions are a subset of civil rights litigation overwhelming the local, state and federal courts. One example of a constitutional tort claim action can be the limitations of a public employee to address community concerns without fear of employer reprimand. For example, a school teacher (public employee) who vocalizes her discontent in a news article in the way the school board has chosen to spend taxpayer dollars. The Courts have not uniformly identified one way to "balance" the business interest of the employers with the rights of employees. The legal question is: under 42 U.S.C. § 1983, does the First Amendment and Due Process clause of the Fourteenth Amendment protect free speech of a public employee when an employer makes adverse employment decisions in retaliation of an employee's speech? In analyzing this legal question the focus will be on the Pickering-Connick balancing test to draw the line on when an employee can freely speak without threat of termination.

Humanities

Dance and Diplomacy

Presenter's Name: Addis-Asia Anderson
Classification: Undergraduate Student
Presentation Type: Oral Presentation

This study is to show how Soviet Russia used dance as a way to promote diplomacy throughout the twentieth century. The aspects explored are why dance was the medium for this attempt, how Russia accomplished this objective, as well as the result. A number of Russian dancers who played major roles in fulfilling diplomacy, like Mikhail Baryshnikov and their contribution during this era will also be magnified in this research.

The United States and Ussr Relationship During the 1980 Olympics

Presenter's Name: Stephen Baynes
Classification: Undergraduate Student
Presentation Type: Oral Presentation

This research aims to investigate the matter of the 1980 Olympics and its impact on not only the world of sports but politics and the relationship between the United States and the USSR. During this period the United States and the USSR were battling on all fronts from politics, to culture, economies, and principles. This research looks to show how the political, military and economic disagreements between the United States and the USSR played themselves out in the seemingly unlikely field of Olympic sports.

Redefining Intelligence: Education and the Value of Non-Traditional Knowledge in The Color Purple by Alice Walker and Beloved by Toni Morrison

Presenter's Name: Aisha Bowen
Classification: Undergraduate Student
Presentation Type: Oral Presentation

This paper explores the value of non-traditional knowledge being a crucial tool in young people's educational success and long-term self-sufficiency. Non-traditional knowledge constitutes as survival skills—self-protection, perseverance after failure, and self-confidence—people use as tools to become independent, educated, and confident. Firstly, this paper examines the experiences of the main characters in The Color Purple by Alice Walker and Beloved by Toni Morrison and how their negative experiences resulting from racism, classism, and sexism teach them survival skills that allow them to withstand physical and emotional pressures of poverty; sexual and physical abuse; cultural discrimination; and worthlessness as defined by society. This paper then examines how these characters demonstrate that non-traditional knowledge gained from one's environment, even a negative one, contributes to the dedication an individual needs in order to overcome adversity, obtain an education, and become a successful individual. After analyzing the experiences of the main characters with non-traditional knowledge, this paper then evaluates the potential value of non-traditional knowledge helping real life individuals who are discriminated against because off gender, race, and/or class to receive an education. Lastly, this paper explores how copious students in reality who deal with similar issues as the main characters in Beloved and The Color Purple but are not successful are missing a supportive "liaison" to help bridge the gap between informal and formal realms of knowledge, instill confidence in them, and help them realize their circumstances do not define them.

Black Girl Magic: Black Feminist Thought in Black Young Adult Fantasy Fiction

Presenter's Name: Savannah Bowen
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Young adult fiction is typically coming-of-age literature that spurs on and contributes to the development of young adult identity and consciousness. However, narratives in mainstream young adult literature often carry the values of Western society and thought and often prize the white experience over all others. The black characters in The Hunger Games are martyrs and oppressed field workers reminiscent of the slave era. In Harry Potter, the handful of explicitly black characters carry very little significance to the story's plot line. In all of these stories, black characters remain on the margins, while brave white heroes and heroines save the world. Fantasy fiction written for the black young adult, however, offers a counter narrative to those told by mainstream authors. Two such texts are Slice of Cherry

by Dia Reeves and Akata Witch by Nnedi Okorafor. In my research, I will argue that through the medium of the teen fantasy fiction genre, both Akata Witch and Slice of Cherry deconstruct gender binaries and racial stereotypes in order to promote a rearticulated black female identity. Through their examination of ideas of agency, aesthetics, and community, these two black young adult fantasy texts offer a compelling argument for the potentially critical utility of black feminist influences on the development of black girls.

Engaging the "Master's Tools": How Western Ideologies Complicate the Rhetoric of Protest and Resistance Literature

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

Whether writing about prisoners of the American penitentiary system or members of some larger cultural or racial group, author-activists act as intermediaries between their audiences and their subjects, and practice comparative rhetoric (Kennedy 1998) between the two groups, often, strategically employing the rhetoric of the audience's group. The American and Western European rhetorical tradition remains a highly privileged language practice within the global academic community. For as long as America and Great Britain continue to enjoy the international prestige left over from imperialist eras, non-white and non-Western people, whose own forms of rhetoric are equally complex and artful, will have to choose whether or not to abandon command of their own languages and adopt the rhetorical modes of white Westerners in order to be considered credible thinkers outside of their local language or rhetoric communities. However, to adopt the rhetoric and language is to inadvertently adopt the ideology inherent in both. Rhetoric scholar, James Berlin (1988), argues that our sense of reality is directly dependent on the rhetoric we use. Our sense of self, other, and community are social constructs specific to a time and culture, which are, in return reinforced by the language we use to describe them (488). The very rhetoric we use to describe our reality, the very language that black authors use to illustrate injustice, is inscribed with white privileging power structures that therefore define our experience and limit our expressive ability to define and combat justice within them. Employing rhetorical theory and analysis, cultural analysis methodologies, and textual analysis this research explores the ways in which the rhetorical choices Black author-activists, James Berlin, Wole Soyinka, and W.E.B. Dubois, make in their protest and resistance literature, Brothers and Keepers (2005), Of Africa (2012), and The Education of Black People (1973), respectively, are inadvertently influenced by the dominant discourse of their respective contexts. This research does not intend to trivialize the work that these texts and their authors have accomplished, suggest that the authors should have made different choices, or that their non-white, non-western subjects are incapable of comprehending and interacting with erudite English. This research does, however, explore the ways that white-privileging ideology-infused rhetoric complicates the readings of and, as a result; impact the persuasiveness of black-authored protest and resistance literature.

Isaac Asimov's laws of robotics: Implications for humanoids and artificial intelligence

Presenter's Name: Christian Bradley
Classification: Undergraduate Student
Presentation Type: Oral Presentation

The Three Laws of Robotics written by Isaac Asimov constitute a unifying theme of artificial intelligence in several science fiction short stories like "Liar," "Lucky Starr," "Moons of Jupiter" and "Evidence." Each story tests his Laws in different situations, thus accepting and refusing possible adaptations, variations and amendments. On the other hand, stories like "Robbie" and "Reason" featured implied Laws without their explicit mention. In several stories, Asimov defines the existence of a humanoid whose purpose is to serve and obey humanity; furthermore, he attempts to separate the robot and the human apart even though they optimally coexist as one being. Asimov addresses the problem of humanoids, also known as human robots, of growing more sophisticated. This suggests their eventual revolution and manipulation of human beings. For this reason, the Three Laws of Robotics were created to eliminate power shifts and domination between humanity and artificial intelligence. In rare cases, it is allowed for humanoids to break the Laws as little as possible. Unfortunately, this indirectly results in irreversible mental collapse for robots when they are conflicted about performing duties that they are unable to obey. Asimov foreshadowed ideas about artificial intelligence and their direct contact with humans in everyday life. In the present, significant advances in artificial intelligence are coupled with unintentional and unknowing harm directed towards humans. Asimov's short stories allude to the analyzing and researching of modern robots to avoid harm to humans.

A Crowdsourced Comprehensive Database of Rare Diseases Prevalent in African American

Presenter's Name: Frank Chen
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: F. Chen, K. Tang, K. Bazemore, S. Shami, H. Teferra, S. Aftab, S. Hakeem, G. Tanashian, A. Thompson, S. Atef-Vabid, S. Areda, A. Bedada, B. Abadejos, S. Anador, A. Johnson, B. Mathew, B. McCollum, K. Quach, I. Memon, K. Kangarli, E. Addo, S. Wang

A rare disease, also referred to as an orphan disease, is any disease that affects a small percentage of the population, specifically in the United States, any disease or condition that affects fewer than 200,000 people. There are more than 6,000 known rare diseases, and it is estimated that about 25 million Americans are affected by them (as of 2002). To facilitate development of therapeutics for rare diseases, the United States passed the laws of Orphan Drug Act of 1983 as well as Rare Diseases Act of 2002. However, there is a lack of recognition and funding for rare diseases due to the low prevalence and high cost of investment into developing a drug for a rare disease. Such diseases are more concentrated in African American populations. Orphan diseases were screened and cross referenced with a literary source for specificity to African Americans using ORPHA's list of rare diseases (http://www.orpha.net/consor/cgi-bin/index.php). The goal is to create a monitored database for others to contribute information and help expand the database. To address the challenges of the huge size of current diseases list, we adopt the modern and powerful approach, i.e. crowdsourcing. We solicit contributions from a large group of people, mainly via the online mode followed by strict data verifications. With this collaborative effort, the database will raise awareness and most importantly provide information in an efficient method. Currently there is a running list of orphan diseases specific in African Americans and with enough help the database will go live.

Redefining Black Womanhood: Exploring the Underprivileged Feminist in African American Literature

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

This thesis investigates how Zora Neale Hurston, Toni Morrison, and Pearl Cleage rearticulate popular culture's distorted images of black womanhood through their respective works of fiction "Their Eyes Were Watching God" (1937), "Sula" (1973), and "Flyin' West" (1995). This rearticulated consciousness responds to the historical exclusion of black women from positions of power in mainstream institutions that have led to the suppression of black women's interests in traditional scholarship and, consequently, the elevation of stereotypical images of black women in popular culture. Black women literary figures such as Hurston's Janie Crawford, Morrison's Sula Peace, and Cleage's Sophie Washington emerge as symbols of 20th century black feminist thought who redefine the norms of black women in literature. That is to say in acknowledging that sexism can be just as oppressive as racism, they criticize black men's blind commitment to patriarchy in which black men uncritically adopt white men's belief in both male dominance and the inherent inferiority of women. This project reveals that Zora Neale Hurston, Toni Morrison, and Pearl Cleage insist on self-valuation, self-definition, and self-reliance as tools for the empowerment of black women. Their literature suggests that while sexism grants black men authority within their homes, it does not grant them equal standing with white men in mainstream society. Overall, this thesis concludes that the redefining of black womanhood and the obliteration of sexist ideals in black relationships are prerequisites for the black community's collective success in their struggle for humanity in the United States.

Articulations of Black Masculinity via Black Female Bodies in African American Literature

Presenter's Name: Angel Dye
Classification: Undergraduate Student
Presentation Type: Oral Presentation

The purpose of this research is to examine the inextricable link between black female bodies and the construction of black male masculinity and identity with respect to sexuality and politics in selected African American texts and criticisms. I conduct close readings within The Bluest Eye by Toni Morrison, for colored girls who have considered suicide/ when the rainbow is enuf by Ntozake Shange, and Black Macho and the Myth of the Superwoman by Michele Wallace through the lens of Black Feminist analysis to examine the ways in which women's bodies function as objects through which men attempt masculinity. These texts are especially poignant because they serve to underscore the

multiple relationships and experiences that diverse sets of black women navigate in various time periods. Through these works the research presents evidence supporting three main modes of black female subjugation mobilizing articulations of masculinity. These modes are a) scapegoating, b) sympathy garnering (what I term the authors' attempts at humanizing male characters who violate women), and c) sexual and political marginalization. Essentially I argue that in literature black men's self-identity is dependent upon their use of these subjugating modalities. While this research is not interested in outlining a rigid binary of victim and victimizer within black male-female relations, it does seek to explore articulations of manhood in parental, romantic, and political literary contexts as well as to theorize possible new outcomes for black men and women aside from traditional gender roles and functions.

National Association of University Women Membership Strategies

Presenter's Name: Ashla Hill Roseboro
Classification: Graduate Student
Presentation Type: Oral Presentation

In 1910, the National Association of University Women (NAUW) was founded for African-American college educated women to serve their communities and develop networks with other distinguished women. These women used their education to empower people of color and women socially, politically, and economically. More women are graduating from college and NAUW leadership has encountered challenges of an aging membership, attrition, and inability gaining younger women. Understanding the membership strategies that were implemented by NAUW founder's and adoption of innovative approaches, can have value in attracting new members to NAUW, specifically women between the ages of 25-45. Reenergizing current members will effect changes in marginalized people of diverse races, gender, and class in the communities that NAUW serves. Non-governmental organizations were pivotal change agents in United States history to promote social, human, and economic rights for all people (Bakhtadze and Shengelia, 2014). National Association of University Women (NAUW) was founded in 1910 as the College Alumnae Club (CAC) of Washington, DC and is one of the oldest non-governmental organizations in the country. The association had a significant impact on communities to promote the advancement of women in higher education and training. As an educational organization, National Association of University Women (NAUW) had standards for membership of women who held at least a bachelor's degree from a worthy institution and they were invited to apply for membership (College Alumnae Club, 1939). NAUW is an organization that thoroughly considers the character of prospective members before they receive an application. The problem that is being studied is how NAUW remains relevant in attracting and retaining like-minded women using strategies that will increase a pipeline of younger women between the ages of 25-45 years old. Most of the current membership is composed of aging women who are over 50 years old. The organization endeavored to accomplish three purposes in the early years: 1) promote greater unity within the membership of women graduates, 2) reward incentives and opportunities to deserving individuals for their actions and growth, intellectually and socially, and 3) be influential and a vital part of movements that cultivate positive progress in the community. Today's members, including myself, still meet the standards that were established by the founders of the organization. These women provide proof of their college degree from an accredited institution and are invited by a member in good standing to apply for membership into NAUW. The current theme of the organization in 2015 is "Progressive women remaining relevant in a global society." Recommendations for future research will be doing a longitudinal, critical ethnography study that will include data collection and interviews. Field observations of National Association of University Women (NAUW) programs will be conducted. Semi-structured interviews of 25-50 women who have served in offices of NAUW and been members will be conducted. Some of the research participants will be observed during events or meetings.

The Direct Effect of Vicarious Trauma on Young Children: A Conceptual Model

Presenter's Name: Stephenie Howard
Classification: Graduate Student
Presentation Type: Oral Presentation

The US Department of Justice (2012) has identified exposure to violence among children as a national crisis. According to this report, two out of three children in the United States are exposed to violence, crime, abuse, and/or psychological trauma. This exposure to trauma is known as vicarious trauma wherein the child is not directly victimized. Vicarious trauma may also entail children observing the injuries sustained by the victim, witnessing the affective behavioral responses of the victim (DeVoe & Smith, 2002; Thornton, 2014) and/

or hearing the details of the traumatic event (McCann & Pearlman, 1990). These indicators of violence may represent a threat of safety to the child. Trauma occurs when the child's internal and external resources are insufficient to cope with threats to his/her safety (Van der Kolk, 1989). In fact, the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) indicates that "learning that [a] traumatic event(s) occurred to a parent or caregiver figure" can be traumatizing to young children (APA, 2013, p. 273). However, a direct link between vicarious trauma exposure and trauma symptomatology in young children has not been empirically validated in the literature. Even more, there is evidence to suggest a need to broaden this criterion of vicarious trauma. This presentation is divided into three sections: 1) a synthesis of the evidence is presented; 2) a causal model of vicarious trauma in young children is proposed; and 3) implications for treatment and child welfare policies and practice are highlighted.

An Epidemiologist Reads Lucretius

Presenter's Name: Alana Jones
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Throughout history, plague has shaped human evolution by its ability to both induce and impede genetic diversity. For example, the plague of Athens (430-426 BCE), arguably the most devastating epidemic of classical Greece, claimed the lives of a quarter of the population and consequently diminished its gene pool. Although the Greek historian Thucydides, the main source for this plague, discussed some social consequences of the Athenian plague, he primarily detailed the clinical aspects of the disease. About four centuries later, Lucretius, a first century BCE Roman philosophical poet, read Thucydides's description primarily from a macro-level sociological perspective. In the final lines of his epic poem On the Nature of Things, Lucretius made what was at his time the greatest epidemic in the history of the Greco-Roman world a metaphor for the inevitability of mankind's social decay without the help that his Epicurean philosophy provided. This presentation reads the plague section of Lucretius as a case study of modern epidemiology in ancient literature. In the allotted time, I will focus on three examples of epidemiological methods applied in Lucretius's interpretation of the plague: the public health implications of economic disparity; the role of climate in the occurrence of epidemics; and the social consequences of these deadly outbreaks. My discussion will integrate both classical and current ideas on plague in order to deepen our understanding of the fact that the significance of epidemics in human experience is as much social as it is scientific.

The Modern Mother: Redefining Race and Age in Contemporary Motherhood

Presenter's Name: Tahirah Nall
Classification: Undergraduate Student
Presentation Type: Oral Presentation

This study contributes to the feminist discourse of motherhood as it relates to rhetoric, age and race in the twenty-first century. Through the distinct frameworks of the postmodern feminist critique, black feminist criticism, ageism and the rhetoric of motherhood, have articles and advertisements in print media been analyzed in this study. Articles in the magazines Essence, More, O! and New York reveal the racist and ageist rhetorical framework used to describe mothers who fall outside of traditional societal parameters of the twenty to thirty-year-old white woman. Ageism in motherhood is a new phenomenon -- an ideology emerging as women wait to have children-- that manifests differently in media discourses surrounding all women.

Politics of Space in Superman Comics

Presenter's Name: Joel Rhone
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Fans and scholars alike concede that Superman remains among the most iconic American superheroes. Recent scholarship has attributed this to the figure's appeals to nostalgia, commercialism, and idealism. These discussions, however, so often hinge on the static points of the iterative Superman narrative (e.g. Alien from Krypton, relationship with Lois Lane, superpowers) that they tend to overlook the situational variables that facilitate new episodes. In fact, some scholars have dismissed new conflicts and resolutions entirely as they seem to revolve around Superman's defense of a particular status quo. A closer examination of two comic book series, the Phantom Zone and New Krypton, reveals a different, yet related, pattern--one that links the variety of ways in which Superman resolves conflicts. I will focus on how Superman, vowing never to kill, alternatively eliminates threatening rivals by confining them to remote spaces. Beyond confinement, these spaces also serve the purposes of surveillance, subjugation, and reformation for political

ends. Ideological implications are tied to several themes: Superman's power to punish; the political consensus which grants Superman sovereignty; and the function of Superman's use of symbolic space to resolve conflicts.

Women's Evolving Roles in Dystopian Literature

Presenter's Name: Clara-Grazia Romeo
Classification: Undergraduate Student
Presentation Type: Oral Presentation

The analysis of futuristic dystopian literature provides the rare opportunity to look at how the literary construction of the future to attempt to solve the gendered problems of the time in which it was written. By imagining a world in which the future structure of society differs from but clearly grows out of these works critiqued, one can understand the faults and real-world consequences of different gender ideologies in the time period that produced the texts. The dystopian novel serves as a platform to critique elements or changes in the society that the author resides in. Dystopian literature in particular offers a fiction way to understand the western society that produced the vastly different women characters. Furthermore it shows how views of sexuality and motherhood have evolved from the traditional mother/wife or mistress dichotomy to an adaptation of "masculine" independence and military power. This metamorphosis from the one-dimensional female restricted to domestic or sexual spaces of the 1940's to holistic stand-alone heroines of the present are analyzed through the texts 1984 by George Orwell (1949), The Handmaids Tale by Margret Atwood (1985), and The Hunger Games by Suzanne Collins (2008).

Black College Students in the 2016 Presidential Elections

Presenter's Name: Kai Sinclair
Classification: Undergrarduate Student
Presentation Type: Poster Presentation

Coauthors: Judayah Murray, Steven Ward, Alexis Buford, Adrienne Perkins

After President Barack Obama took office for the first time in 2008 and again in 2012, it became clear to the nation that young voters and minority voters were becoming two significant demographics in the polls. In the 2016 Presidential Election Campaign, it can be predicted that young and minority voters will hold a great deal of power and could swing the vote in any given direction if the majority gives one candidate its support. Given the particular power young black voters had in the recent elections, they have been heavily targeted in the 2016 presidential campaigns. This study will explore the ways in which these voters are being targeted through various mediums such as music, tours, or even social media and their effectiveness. One hundred undergraduate students who attend Howard University, a historically black university in Washington, DC, will be chosen at random to participate in the study. After viewing various tactics used by each political party, participants will be asked to complete questionnaires and/or surveys about their perceived effectiveness and willingness to vote for the candidate. The results of this study will determine which campaign tactics are most effective with black college students and how it affects whom they vote for.

Key Terms: advertisement, voting, politics, african-americans, college students

---

Bell hooks: A Critique of Black Media Representations in Popular Culture

Presenter's Name: Morgan Smalls
Classification: Graduate Student
Presentation Type: Oral Presentation

It is safe to say that the majority, if not all of bell hooks' work explores racism, sexism, and class relations (Bhavnani, 2001; hooks, 2000a). Martin's (1993) description of hooks as an African American critical cultural scholar who writes from a "decidedly feminist perspective" is the definition on which this paper operates (p. 40). In this paper, I review hooks' works (books, articles, interviews) regarding popular culture. I do so to identify certain characteristics and showcase how hooks emphasizes the need for alternative media representations via her critiques of film to challenge the representation of Blacks and women. In her critiques, hooks' goal is to examine and expose the perpetuation of sexist and racist images that permeate media and are reflective of institutionalized sexist and racist practices that are experienced in daily living. I also argue the relevance in and contributions that hooks' work has made to the field of communication studies. To that end, it is necessary to explore hooks' scholarly journey and highlight turning points in her youth that shaped her into a critical cultural scholar and feminist to showcase her definitions of feminism and racism, to provide specific examples of her film critiques, and to conclude with the present critiques and relevance of hooks' work. Despite the criticism of hooks'

scholarship, her critiques of popular culture, specifically film, are still relevant and needed in society to challenge systems of oppression.

Eloquence in the Discipline of Rhetoric: Kemetic Roots, Often Forgotten

Presenter's Name: Layla West
Classification: Undergraduate Student
Presentation Type: Oral Presentation

In his article, "Rhetoric as a Course of Study," David Fleming explores three definitions of rhetoric. Each definition situates the scholar, the rhetorician, in relation to the concept of "eloquence" in the past. A distant past. A past lost. I claim that this past is Middle Egyptian society, and the principle of eloquence is rooted in the concept of nfr. Further, his failure to claim the origins of this concept in Egyptian society places him in the tradition of racist erasure of African brilliance.

The "African-Aristocrat" in Egyptian Nights

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

Scholars have investigated the mystery of Alexander S. Pushkin's ancestry for centuries. A member of one of Russia's oldest aristocratic families, a descendant of Ibragim Gannibal, a native of northern Africa on his mother's, Pushkin became the nation's most esteemed writer. From poetry, to plays and to prose, Pushkin produced legendary works that upon closer inspection reveal a positive attitude towards both African and European ancestries of his lineage. My research examines how Pushkin inserts his self-image into his writing and discusses his complex heritage.

Physical Sciences & Engineering

Impacts of Silvern Nanoparticles Transformation on Pesuedomonas Aeruginosa GFP Biofilm Growth

Presenter's Name: Temitope Adegboye
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Yaolin Fennell, Patrick Ymele-Leki, Kimberly L. Jones

Silver nanoparticles (AgNPs) undergo transformations when released into the environment, and often the transformed NPs exhibit different behavior from the pristine analog. It is important to understand the influence of AgNPs transformation on its potential environmental impacts and provide more accurate information for risk asssessment. The goal of our study is to assess the different interactions of pristine and transformed AgNPs with biofilm and their impacts on biofilm communities. In this study, Pseudomonas aeruginosa GFP (ATCC® 10145GFP™) biofilms were subjected to different concentrations of AgPVP and Ag2S nanoparticles. We then examined the concentrations of residual NPs in biofilm by ICP-AES (Inductively Coupled Plasma Atomic Emission Spectroscopy) analysis. The morphological properties of P. aeruginosa biofilms were characterized by scanning electron microscopy and confocal microscopy. Furthermore, effects of AgNPs on biofilm growth was examined through cell viability studies (using microplate reader and live/dead assay). As shown in our preliminary results, transformed AgNPs exhibit reduced growth inhibition effects on P. aeruginosa biofilms development compared to its pristine form. This result could be explained by a lower uptake of Ag2S nanoparticles in the biofilms.

Scanning Probe Microscopy characterization of gold nanoparticles with application in LiFePO4 Batteries

Presenter's Name: Adewale Adepoju
Classification: Graduate Student
Presentation Type: Poster Presentation

Gold nanoparticles (AuNPs) have been synthesized and studied due to their promising application in nanomedicine and electronics. Our group has observed that the electrical conductivity of Lithium Iron Phosphate cathode materials for rechargeable batteries can be enhanced by adding AuNP. The incorporation of AuNP in the cathode material will extend the electrical percolation network and improve the C-rate of LFP batteries. AuNPs have optical and electronic properties that are tunable by varying their size, shape, or surface chemistry. Therefore, it is highly recommended and necessary to fully characterize AuNPs to help predict their behavior when used in battery cathode material. We characterize AuNPs using the Scanning Electron Microscopy (SEM), Atomic Force Microscopy (AFM), and Scanning Tunneling Spectroscopy (STS). Data on the size, shape, surface morphology, and electrical properties are presented.

Transient Fault Detection and Location Using the Method of Learning and Graphic Intelligence

Presenter's Name: Derrick Anang
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Hongsheng Li

Electric power systems experience a myriad of faults under varying conditions. Among these are cable faults which generally occur as a result of breakdown of insulation in the cables. This breakdown causes current to leak into, through and around the insulation. A great deal of research, as a result, has been carried out to effect prompt detection and location of these faults to improve power system stability and reliability. During the breakdown of insulation, energy exchanges occur resulting in transient states that are short-lived. These transient states are unfortunately left undetected some of which could lead to permanent faults. Most of the research carried out and classical methods proposed for fault detection are aimed at detection of permanent faults. The method proposed in this research, however, describes a simple, cost effective yet powerful approach for detecting and locating transitory, sub-cycle faults in underground cables using Artificial Neural Networks and Graphic Intelligence algorithms. This involves extraction of characteristic features from fault waveforms under varying fault conditions and studying them through the learning processes defined in Artificial Neural Networks (ANN). Graphic Intelligence algorithms, which are developed through this research, are then be applied to incoming detected fault waves. Through a liaison with ANN, estimations of fault location are given in terms of the resistance, R, and inductance, L, of the line.

Variation in Community Question Answering Systems

Presenter's Name: Anietie Andy
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Mugizi Rwebangira

Community question answering (CQA) systems, such as Yahoo! Answers are online systems in which users ask and answer questions in categories such as sports, entertainment & music, and travel. A CQA is a good medium to ask questions - that are either too complex to be answered by a single webpage or requrie a direct answer from other users presumably knowledgeable about the question. A common challenge with CQAs is that some questions are left unanswered because (I) the question is short and lacks relevant content (II) the question is not clearly expressed, and (III) the question is not appropriately assigned to a user that is able to answer the question. Reusing past resolved questions from within a CQA site to satisfy unanswered questions has been shown to be a good approach to reducing the percentage of unanswered questions. This approach identifies the most similar (content-wise), yet not necessarily identical past resolved question and decides whether or not to serve the answer to a past resolved question as an answer to the unanswered question . Most methods used to find relevant answers to community asked questions rely on measuring similarity of the question and answer. However, these methods have limitations. As we show, using cosine similarity metrics fails to find a large number of relevant answers. Using alternative representaions have their limits as well, as the vocabulary can be diverse and questions are often short. The contribution of this paper is to propose an alternative approach based on the recent successes in entity linking. We now have systems that can disambiguate entity names to a knowledge base (KB). Mathcing questions and answers based on these disambiguated entities does a better job at finding relevant answers than question/answer word similarity. We show this using a new dataset. Previous datasets were biased by only considering question/answers with high similarity. We have a dataset constructed in a less biased way, which includes many good answers that wouldn't have been included in previous datasets. The dataset used in this paper is from the sports and entertainment \& music question categories of Yahoo! Answers. We elected these question categories because of (i) the high recurrence of questions in these categories (20% and 17% respectively in sample data) (II) most questions in these categories contain at least one named entity (85% in sample data), and (III) the high occurrence of named entitiy variations in these question categories. This paper shows that in order to retrieve more relevant past resolved questions and answers to a given question with high precision, it is important to disambiguate named entities in the unanswered and past resolved questions.

Pascals triangle and symmetric, connected, noncrossing graphs

Presenter's Name: Nischal Baral
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Pascal's triangle is a triangular array of the binomial coefficients, and the numbers in the middle of the even-numbered rows form a series called the central binomial coefficients. We call this series B and the first few terms are B = 1 + 2z + 6z2 +… .The Taylor-McLaurin series $1/\sqrt{(1 - 4z)}$ generates B and is known as its generating function. Rewriting, we get, B2 = 1 – 4zB2. A key ingredient for this investigation is a group of infinite lower triangular matrices, each generated by two generating functions. The main subgroup of interest here is the Bell subgroup where the two generating functions. The main subgroup of interest here is the Bell subgroup where the two generating functions differ by an extra zero. Taking numbers in a knight move pattern, one right and two down, from the Bell subgroup of B gives us the next sequence which is generated by G where G2 = 1 – 4zG3. Here G counts the number of symmetric non-crossing connected graphs on 2n + 1 equidistant nodes on a circle. We let F generate the number of non-crossing connected graphs on n labeled nodes on a circle. To connect F and G we define prime connected graphs, generated by P, to count all graphs of F that have an edge connecting nodes 1 and 2. Then we derive various relationships between F, G, and P. The next sequence in this chain is defined by the functional equation N2 = 1 – 4zN4. The resulting sequence is the even indexed Catalan numbers. All these sequences generate lower triangular matrices and can be interpreted in terms of weighted trees.

Cybersecurity for Satellite Middleware

Presenter's Name: Elise Blackmon
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Portia Herndon, David Hill

In the past, satellites were unaccessible and mostly used by governments and large corporations. Today, satellites are

available for use by the general public and incorporated into our everyday lives. Satellites have many uses including monitoring weather, sending television signals, and sending signals to be read by navigation devices for directions. With the number of satellites increasing, the need for securing these satellites is also increasing. Historically, people have been convinced that they can trust companies to provide adequate security and protect their sensitive information from hackers. As exemplified by the cybersecurity incidents that have happened in the recent past, this is not always the case. Cybercriminals are constantly trying to gain access to sensitive or classified information, and they are often successful. In 1999, a group of computer hackers seized control of a British military communications satellite and changed the characteristics of channels used to convey military communications, satellite television, and telephone calls. This is just one example of why it is important to conduct research on satellite security to understand potential security threats and prevent cyber attacks. Our primary research method is to get an open source satellite application to function in our research lab and then work on targeting the satellite application with security tools to explore vulnerabilities. These vulnerabilities will then be used to prototype and evaluate defensive solutions.

Synthesis and Characterization of Some New Emetine Amide Derivatives for Studies in Prostate and Breast Cancer Cells

Presenter's Name: Nailah Brandy
Classification: Graduate Student
Presentation Type: Oral Presentation

Emetine, an isoquinoline alkaloid from the ipecac species, has shown interesting medicinal properties including anti-viral, anti-parasitic and anti-cancer activities. In efforts to improve the pharmacological properties associated with emetine, it has prompted researchers to synthesize analogs of this natural product. In our anticancer drug development studies, we are exploring the chemical modification of the N-2' position of emetine with the aim to synthesize compounds with improved efficacy but reduced host toxicity. A series of new emetine amide derivatives were synthesized in our research group and will be examined for activity against breast and prostate cancer cells. The design, synthesis and characterization of these novel emetine amide derivatives will be discussed.

Forecasting for Record Breaking Storms: A Case Study of Hurricane Patricia (2015)

Presenter's Name: Lauren Carter
Classification: Graduate Student
Presentation Type: Oral Presentation

Hurricane Patricia has been noted as the strongest and most intense hurricane on record. Occurring in the eastern Pacific, this storm was followed closely by the National Hurricane Center (NHC) and many forecasting models around the world. This study synthesizes observations, forecast discussions, and public advisory data to develop a theoretical review of how Hurricane Patricia was forecasted, and how forecasts could have been improved. Preliminary analysis suggests that this storm was poorly forecasted in terms of intensity, including both maximum sustained winds and minimum central pressure. The study includes a discussion of the scientific reasons for the inaccuracies in the forecast, and how future forecast models could be improved.

Raman Spectroscopy of Carbon Nanotubes and Tungsten Oxide for Energy-Storage and Sensor Applications

Presenter's Name: Daniel Casimir
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Coauthors: Raul Garcia-Sanchez, Prabhakar Misra

The primary aim of this research is to characterize graphitic and metal oxide nanomaterials through the use of Resonant Raman Spectroscopy at multiple laser excitations. Raman spectroscopy can help characterize the vibrational phonon modes of nano-materials. The Stokes Raman spectra of carbon nanotubes and tungsten oxide were recorded with a DXR Smart Raman spectrometer over a temperature range of 27-200 degrees Celsius. The Raman spectra of Single-Walled Carbon Nanotubes (SWCNTs) were recorded under heating as a function of increased laser power and were used to demonstrate the bond softening and resultant red-shifting of the various Raman peaks of SWCNTs. The thermal effects on the Raman spectra of these materials can be used for future applications related to energy storage (using carbon nanotubes) and for toxic gas sensing (using tungsten oxide).

Redesign of Open Roadside Drains for Pedestrian Safety on Selected Roads in Dar es Salaam, Tanzania

Presenter's Name: Anna Chambliss
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Flooding during the rainy season is a big problem in Dar es Salaam, Tanzania. Therefore large, open, road-side channels are built along the sides of the road to hold the excess amounts of water. Although necessary, these channels are a danger to pedestrian safety, in a city of over one million people, because there is no barrier between them and the sidewalks, or they take the place of sidewalks lining the road. This issue is most prevalent at two pedestrian generators: Mlimani City shopping center, and the access road connecting the University of Dar es Salaam to the busiest intersection in Tanzania, the Ubongo Junction. This study investigates various aspects in order to provide a solution improve pedestrian safety at these sites. The components of the study include the following: (1) evaluating whether the sidewalks are appropriate to accommodate pedestrian volume; and (2) recommendations for improvement and redesign of the site. Data collection consisted of observations of the sites, counting and mapping pedestrian and their movements during peak hours, recreation of the sites using 2D AutoCAD designs, and a review of literature on implementing pedestrian safety techniques and pedestrian flow to walkway width ratios. The preliminary findings of this investigation showed that the sidewalks were insufficient in width to accommodate the pedestrian volume utilizing them. The recommendations for addressing poor pedestrian safety measures are included a 2D AutoCAD draft of the sites with the open, road-side channels covered with a perforated material serving as an extended sidewalk, and other features such as zebra crossings and pedestrian crossing signals. Further research should explore cost feasibility, impact on flooding, and the economic impact of the proposed recommendations. This material is based upon work supported by the National Science Foundation under Grant No. HRD-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.

Unusual salt and pH induced changes in Polyethylenimine solutions

Presenter's Name: Preethi Chandran
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Coauthors: Kimberly Curtis, Danielle Miller, Paul Millar, Sawati Basu

Linear PEI is a cationic polymer commonly used for complexing DNA into nanoparticles for cell-transfection and gene-therapy applications. The polymer has closely-spaced amines with weak-base protonation capacity, and a hydrophobic backbone that is kept unaggregated by intra-chain repulsion. As a result, in solution PEI exhibits multiple buffering mechanisms, and polyelectrolyte states that shift between aggregated and free forms. We studied the interplay between the aggregation and protonation behavior of 2.5 kDa linear PEI by pH probing, vapor osmometry, and Dynamic Light Scattering. The multi-parameter studies revealed unusual aggregation and protonation properties which can be harnessed for biological and environment-sensitive applications.

Material Property Effects on Vivaldi Antennas

Presenter's Name: Skander Chaouch-Bouraoui
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Ang Yu

Background: This research is a part of a project for the forward-looking SIRE radar system with application in IED and landmine detection. The antenna subsystem is an important component of the SIRE radar. The material permittivity effects on Vivaldi antennas is a very important since it is related to the radiation efficiency. **Methods:** The software FEKO is used to simulate the Vivaldi antenna and characterize its impedance/reflection coefficient and radiation pattern. **Results:** Varying the relative permittivity gives interesting variation of the radiation pattern and the impedance. The impedance bandwidth has been obtained for different permittivity values and the radiation pattern has been calculated at different frequencies. **Conclusion:** This paper investigates the permittivity effect of the substrate for planar printed Vivaldi antennas. Using the methodology of parametric study with electromagnetic simulation, the antenna has been characterized. The results are to be applied

to the understanding of the radiation mechanism of the Vivaldi antennas in the SIRE transceiver subsystem.

This material is based upon work work supported by, or in part by, the US Army Research Lab (ARL) and the US Army Researcg Office (ARO) under Contract W911NF-1120039

Deep Defects in SiC as Solid-State Qubit Candidates: Electronic Structure Properties

Presenter's Name: Pratibha Dev
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Coauthors: Sophia Economou

Deep defects in semiconductors introduce localized states similar to molecular levels within the bulk materials. Such defects are one of the candidate systems being explored for quantum computing applications. The charged NV-center in diamond is the most-studied defect center, and has been used as a proof-of-principle structure for demonstrating the use of such defects in quantum technologies. Due to the challenges posed by diamond as host material for defects, there is an interest in exploring deep defects in alternative semiconductors such as SiC. In this density functional theory work, we study the negatively charged nitrogen-vacancy (NV) center in SiC and compare it with the charged silicon vacancy in SiC, which is also a deep defect center. Unlike the charged silicon vacancy that is a spin-3/2 system, NV-center in SiC is isoelectronic to the NV-center in diamond and is a spin-1 system. The calculated zero phonon line for the NV-center in SiC is in telecom range (~0.90 eV), making it a very good candidate for quantum technologies. This work elucidates the physics of these color centers at a quantitative and qualitative level.

Fabrication of Graphene-based Terahertz Metamaterials

Presenter's Name: Kahlil Dixon
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Metamaterials are artificial structures with engineered electromagnetic properties derived from the arrangement of metallic unit cells ("meta-atoms") and not the material's. The feature size of the unit cell is directly proportional to the wavelength of interest. Therefore, large gains in research and development of metamaterials have been made in longer wavelengths (mm to mm) due to well-established microfabrication techniques. Traditionally, these devices are designed as static systems with very little space to adapt in spatial dimensions or in response to external stimuli. Graphene metastructures have several advantages over traditional metallic structures including high carrier mobility, flexibility and tunability through application of a gate voltage or external field. A diverse set of graphene metamaterials structures have been proposed such as single-ring resonators, plasmonic hybrid structures and cut wires. Therefore, the objective of this research is to fabricate the theoretically proposed tunable graphene metamaterial terahertz (THz) devices with high amplitude modulation (up to ~80%) and tunablity (up to 400 GHz). We present the first step in the fabrication process, the design of a photomask. Using CAD software, we designed both asymmetric and symmetric metastructures. In the asymmetric design, a series of Fano resonances are expected in the transmittance spectrum, which is promising for applications in sensing. After this initial step, we performed conventional photolithography at Harvards Center for Nanoscale Systems. Using epitaxial graphene on SiC as the substrate, we exposed a pattern from the photomask and developed it onto the graphene device. We then deposited metallic metastructures on the surface of the graphene/photoresist with an electron beam evaportation technique. The final step was to remove all unwanted metal with a liftoff process. We fully characterized the metamaterials using Raman Spectroscopy and scanning electron microscopy. The next step will be to characterize the electromagnetic response using a home-built THz time domain spectroscopy system featuring electro-optic emission and detection. Lastly, we will then work to integrate these devices into systems for sensing and quantum electronics applications.

This work is supported by NSF Center for Integrated Quantum Materials and the Harvard Center for Nanoscale Systems NNCI Scholars Program.

Performance of Lithium Iron Phosphate (LFP) with modified cathode material

Presenter's Name: Mohamed Doumbia
Classification: Graduate Student
Presentation Type: Poster Presentation

Lithium iron phosphate (LFP) is a leading candidate for the cathode material to be used in rechargeable batteries. LFP

has many highly desirable characteristics which includes high energy capacity, low toxicity, slow self-discharge, no memory effects, high power-density and great cycle ability. However, one downside is LFPs intrinsically low electronic conductivity. Our goal is to improve electronic conductivity through the bulk material through the introduction of gold nanoparticles (AuNPs). Initial testing reveals that the addition of AuNPs modestly increases the charge/discharge rate of our batteries. Preliminary comparison data is presented for our batteries made with and without the inclusion of AuNPs in the cathode composition. Charge/Discharge cycle testing data will be shown for battery pairs made with and without the addition of AuNPs. Finally, further testing also shows that the LFP cathode material does not lead to energy capacity fading or other observable deleterious effects.

Power Optimization of Electro-Thermal Systems Howard University Phase II – On-Chip and On-Board Temperature-Current Distribution Monitoring System

Presenter's Name: Richard Farrell
Classification: Graduate Student
Presentation Type: Poster Presentation

The relationship between the current drawn by load and the ambient temperature of the enclosure creates a temperature condition that must be controlled for safe operation for the device. During the research and development of the device, a proper heat sink is provided to keep the eGaN transistor within datasheet limits. But, where the device is ultimately placed could throw off those heat sink calculations. It is also possible that during the design there is no useable data at that time to determine the overall encompassing profile for a suitable heat sink. The temperature-gradient profile must be known for the end use of the device. To take a simple look at the problem is to look at the basics of thermodynamics. Higher temperatures flow to areas of lesser temperatures [1]. If lesser temperatures do not exist, the higher temperatures cannot dissipate and are insulated into that immediate environment. As more heat is generated from the source (eGaN transistors), the ambient temperature will continue to rise; also, heating up all material mass in that insulated environment. This situation continues and either causes premature device failure or a fire. There is a minimum of two ambient temperatures of concern for an enclosed device such as a Buck regulator. The ambient temperature areas will be referred to as ambient temperature zone (ATZ). ATZ-1 is the immediate ambient temperature that is directly above the energized electronics, specifically above the eGaN transistors. ATZ-2 is immediately outside of the enclosure. Data sheets report maximum operating temperatures and responses from a reference of room temperature. The approach that I am taking is that the combined heat generation of all associated Buck regulator components are not taken into account when designing the thermal management for the eGaN transistors in ATZ-1. Nor, is the heat capacity of the enclosure, or the next ambient temperature outside of the case. For example: the TI Evaluation Module LM5113, it is required that a 200CFM fan be on at all times across the transistors; the user guide goes on to state that "maximum load current" may not be obtained if the ambient temperature is higher than average room temperature [2]. This goes to show the validity of the theory; if the ambient temperature were nearly equal to the heat being dissipated by the eGaN transistors, there would not be a temperature gradient for the transistor heat to dissipate into, causing a device failure due to overheating. In an electric vehicle, the Buck regulator very well may be located in another enclosure that is sectioned off from additional control circuitry, in the same vicinity. Then, there is the overall temperature in the engine compartment. Finally, the last ATZ would be the free air outside of the car. This last example that is being assumed creates 5 ATZ's. A more concrete example of the danger overlooking ATZ's would be the fire that occurred in the battery boxes for the Boeing 787 Dreamliner's [3]. With varying load demand cycling in an electric vehicle EV, there will be temperature cycles that are not as predictable as a static load on the eGaN transistors. The question becomes, how do we combine unknown ATZ's with eGaN load-heat relationships into a predictable warning classification table, so that the design engineer can choose the most efficient thermal management system? Thrust II is investigating a two-pronged approach. First, creating a diagnostic system capable of mapping the temperature-load profile of a Buck regulator (eGaN transistor). Second, to use MATLAB Simulink to input the temperature-load profile with other significant information (cubic area, heat capacity, air density, etc.) to produce such a classification table.

A thermal diagnostic system (TDS) has been developed to graphically map the temperature versus load demand. This data allows the creation of eGaN heat profiles to be developed for various programmable load/temperature cycling, simulating its end use responses. The data that is collected must be paired with ATZ's that the device will operate in. The TDS has the capability to zero in on a component or several individual components through its ability to move the infrared sensor in an x / y coordinate system. Using MATLABs' Simulink software, the capability has been programed to

allow the input of detailed information about the types of materials such as the heat capacity of the housings, the cubic centimeter of volume of associated ATZ's, relative humidity, and elevation above sea level. The combined information describes the maximum and minimum temperature gradients that would need to be maintained to keep the Buck regulator (eGaN transistors) within their designed optimum operating range. With this information at hand, it is hypothesized that the simulator will output the information necessary to design the lowest power consuming, dynamic thermal management design profile.

The Efficacy of Antioxidants in Preventing the Photodegradation of Collagen

Presenter's Name: Javon Ford
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Collagen is the main protein/connective tissue responsible for supporting the structure and integrity of skin; without collagen, the skin begins to sag or wrinkle. Though this process occurs naturally, the degradation of collagen is greatly accelerated by exposure to Ultraviolet-A (UVA) radiation from the sun. Many anti-aging creams and antioxidants are available on the market that purport to reverse/prevent this degradation. However, the efficacy of these products is questionable. Previous experiments have focused on the correlation between UVA exposure and collagen damage, but not on preventing degradation. This experiment aims to determine the effectiveness of Vitamins A, C, and E in preventing collagen photodegradation. This is done by implementing Fourier transform infrared spectroscopy and UV-VIS spectroscopy to analyze the structural integrity of collagen after prolonged UV exposure. The results of this experiment can be used to create formulations that reduce the sun's damaging effect on collagen and improve overall skin health.

Pattern Recognition Using Matlab Algorithms and Numerical Simulations for Large Databases

Presenter's Name: Raul Garcia-Sanchez
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Daniel Casimir, Prabhakar Misra

The goal of this project is to develop an algorithm for finding patterns in terrorism-related databases developed by the START DHS center at the University of Maryland. This research seeks to address missing data problems in START databases using pattern recognition neural networks. This generalized approach can be employed to any database that follows a format similar to those in START. In addition, this research uses cloud computing and high-performance computing clusters to significantly speed up the neural network training process, which can take a fairly long time when utilizing large datasets.

Wind speed comparison of Climate models, Reanalysis and Observations over North America

Presenter's Name: Sium Gebremariam
Classification: Graduate Student
Presentation Type: Oral Presentation

The performance of Global Circulation Models (GCMs) that participated in the Coupled Model Intercomparison Phase 5 (CMIP5) is evaluate by comparing model outputs with radiosonde observational datasets and reanalysis dataset over North America. We evaluated CMIP5 models in their ability to simulate wind climatology, seasonal cycle, interannual variability and trends at surface (10m), and at pressure levels ranging from 850 hPa to 30 hPa. Analysis of surface wind speed show that internal variability and initial condition have little influence on the surface wind speed. Difference in the surface wind speed between reanalysis and models may be associated with the uncertainty in the land surface characterization. Our results also show that CMIP5 models and reanalysis successfully reproduce the observed climatological annual mean zonal wind and wind speed vertical distribution. They also capture the observed seasonal wind fields vertical distribution, with stronger (weaker) wind during the winter (summer) season. Although CMIP5 models and reanalysis agree with the radiosonde observation in terms of vertical profile of interannual variability, none of them show statistically significant wind trends throughout the vertical profile. This indicates that detection of trends on local scale is challenging because of small signal to noise ratio problems. Associated with trends, the number of years required to detect a statistically significant wind trends using a radiosonde wind measurements is addressed here. Overall, it is found that the number of years needed to obtain statistically significant trend decreases with increasing pressure level, except for the upper troposphere.

Finding the Residual Resistance Ratio (RRR) of Materials and its Superconducting transition temperature.

Presenter's Name: Damon Gresham-Chisolm
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Narcrisha Norman, Sonya Smith

The Residual Resistance Ratio (RRR) is the ratio resistivity of a material at room temperature (293 K) and at a lower temperature such as 0 K. At 0 K a material is hypothetically known to lose resistance, even at 4 K, which is the temperature of Liquid Helium. The specific temperature when a material loses its' resistance is known as the Critical Temperature (Tc). At Tc some materials develop become Superconductive, e.g. the material loses its electrical resistance. The initial background for conducting the research is to complete a small Superconducting memory based on Josephson Magnetic Random Access Memory that is energy efficient and scalable to sufficient capacity for demonstration of practical problems on Superconducting small-scale computers. Copper with a very high RRR value will be required in order to have the thermal conductivity that will be needed. The objective is to design a visual or schematic method for calculating the RRR of copper sample and the superconductive transition temperature of other materials. Using Computer-Aided Design (CAD) for three dimensional visualization, and Computer-Aided Engineering (CAE) for low thermal analysis.

Investigation of Surface Enhanced Raman Scattering Activity in Silver-Coated Magnetic Nanoparticles

Presenter's Name: Marai Hayes
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Duncan Graham, Samuel Mabbott

Magnetic nanoparticles (MNPs) are a promising material for biomedical use. Under application of an alternating magnetic field, MNPs may exhibit heating, which can be exploited in biomedical applications as a means for drug delivery and localized hyperthermia. MNPs with the ability for surface enhanced Raman scattering (SERS) offer greater advantages due to the propensity for local heating upon laser excitation near the local surface plasmon resonance (LSPR) wavelength. Herein, three different types of MNPs were prepared and coated with silver to demonstrate SERS capable MNPs. The MNPs used were observed to have various sizes in the nano and micro dimensions. All uncoated MNPs were shown to exhibit no significant response in UV/Vis and SERS testing, while Ag@MNPs demonstrated SERS activity with LSPR wavelengths between 426-441nm. Overall, this work demonstrates methods for preparing various SERS active MNPs for potential use in biomedical applications.

Inverse Method of Electromagnetic Waves Problem and Subsurface Radar Cross Section

Presenter's Name: Ayobami Idubor
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Ayobami Idubor, Ang Yu, Mihai Dimian

Background: There are two common inverse problem in electromagnetics. The first problem deals with Maxwell's equation to retrieve effective constitutive parameters of materials using appropriate measurement for the reflection and transmission coefficients. The second inverse problem aims to detect and classify buried objects using electromagnetic induction. The focus of this research dwells on the second inverse problem as a means for landmine and IED detections buried in scattered locations. The purpose is to assist the performance improvement of the Synchronous Impulse Reconstruction radar developed by Army Research Lab. **Methods:** This research aims at solving electromagnetic inverse problem using SIPPI Matlab toolbox. The first part of the method will specifically solve inverse problem by determining a priori and posterior samples based on forward model established in SIPPI. Thereafter, this work will then examine a layered soil model using FEKO. We use flat terrain approximation, consider cylindrical shaped targets as the model of typical landmines and plane wave source. Monostatic RCS is the feature of the model to be extracted. **Results:** For the inversion part, the problem of first arrival travel time inversion using cross-hole ground-penetrating radar (GPR) data is addressed by inversion of such travel time data. This result has the potential to map subsurface moisture content. Such travel time data are sensitive to the subsurface variations in electromagnetic wave velocity, which is related to the dielectric permittivity, and strongly influenced by water moisture. **Conclusion:** Whenever a time varying fields induces a flow of current in an electrically conductive and magnetically permeable objects in close range, a secondary field is induced as a result of the and

induced current producing magnetic fields. By observing these secondary fields, it is possible to detect and categorize objects detected by using electromagnetic induction. With this technique, images of an unknown 3D object can be obtained based on indirect observations from outside of the object. Parametric study using FEKO gives estimation of the burial depth and illumination angle effects on the RCS of the target object. The relationship between the physical parameters of the landmine and its radar signatures is also examined. The results are helpful in developing landmine detection systems with forward looking capability. The methodology is advantageous for accumulating landmine Radar Cross Section (RCS) information in a cost-effective manner.

Microgrid Voltage/Var Control Optimization

Presenter's Name: Afoma Ihekwaba
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: James Momoh

The current distribution system has a lot of renewable energy resources(RER)penetration and load variations, these dynamics cause fluctuations in system voltage and reactive power levels in the grid and hence negatively affect the overall power system performance. The aim of this study is to provide an optimized real time voltage/var control in a micro grid system. The current approaches to solve this problem includes various heuristic techniques and the use of power electronics based flexible alternating current transmission (FACTS) devices. While these methods have presented encouraging results, the issue of an optimal voltage/var control that responds in real time to voltage and reactive power changes in the power system has not been addressed. In solving this problem, the approach used is firstly an offline study of the controls using matlab/SIMULINK and secondly using the OP5600 simulator to implement a real time simulation such that the control can respond in real time to fluctuations in voltage and/or reactive power. The OP5600 simulator is a digital simulator by OPAL-RT tailored for multiple real-time simulation applications. It enables online simulation of the micro grid system and rapid controls response in varying time step. The approach is tested on the laboratory based Howard University micro grid test bed which is made up of a photo-voltaic simulator, capacitor banks, battery, ac/dc converter, a programmable dc load, central generation unit and the OP5600 simulator which serves as the energy management center. The simulator also has input/output ports that functions as an interface for connection of user equipment, therefore facilitating a hardware-in-the-loop (HIL)simulation and testing. The two methods; offline and online, are compared to see which is more optimal. We have obtained the number of controls and which has been tested on the microgrid test bed. The novel contribution of this work is that with the online simulation of the controls and system, operational results can be achieved in real time reducing system losses. Secondly, customer satisfaction is achieved as the reliability of the system is improved and there will be minimal power interruption due to voltage or reactive power fluctuations. Future work includes the use of evolutionary programming technique to optimize the controls and a cost benefit analysis of the research work will be given. The results from this research, sponsored by DOE/NSF, is key to the implementation of the Howard University micro grid test bed on a much larger scale.

Geospatial Assessment of Residential an Work Sites for Cobb Collection Individuals

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

Due to the history of segregation in the Washington area it is likely that the populations of certain neighborhoods were mostly uniform in terms of ethnicity. There may have also been important geographic substructure by occupation as well, resulting in significant clustering of AAs from the CC individuals in the Washington DC region. Social status, occupation, education, and affluence may also have contributed to the selection of neighborhoods and worksites. Communities with lower socioeconomic status likely resided and worked in non-favorable neighborhoods with close proximity to pollutants and increased distance from major roads. The residential and work settings of 19th and 20th century Cobb Collection (CC) individuals resulted in increased levels of exposure to pollutants for some neighborhoods compared with others. Spatial analyses are used to understand the chemical and physical exposure dynamics of Cobb Collection individuals in the District of Columbia metropolitan area from 1920-1960 to environmental factors that could modify the gene expression patterns in 150 individuals. Specifically, this research looks for possible signs of community segregation related to disease status, ethnic background and occupation. The residences and worksites of CC individuals are mapped and the demographic, genomic,

and potentially epigenomic influences stratified horizontally across the Washington DC region. Historical maps of the District of Columbia and its surrounding areas dated to the mid-20th century will be obtained from databases of historical maps located in the National Archives as well as gathered from other peer reviewed sources. The CC has address-based residential and occupational information on each individual in the target population. These data will be used to provide a single reference location for each CC individual under study. Residences will be geocoded based upon the historical maps of the region, providing a latitudinal and longitudinal reference for each individual. The Cartesian plane of residences will be ingested into a spatially referenced database. This will allow spatial comparisons to be made for each residential point, the center for each residence (centroid) will be used, and at the level of neighborhood/ward. Previous studies of spatial clustering in urban areas have used spatial aggregation of geocoded data points to identify area level characteristics in studies of health patterns (25-28). ArcGIS 10.2 version (ESRI, Redlands, CA) is used to perform geocoding tasks

---

Validating a New Computational Approach to Studying Adsorption of Gases on Graphene

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

Graphene is a thin two – dimensional honeycomb lattice of carbon atoms. It is lightweight, flexible, 300 times stronger than steel, and harder than diamond. Therefore, graphene is a great material, technically and economically, for gas sensing. Molecular dynamics, a method that utilizes classical mechanics to predict the physical motion of particles in a system, is used to calculate the adsorption energies of different gases at different temperatures. The objective of this experiment is to apply the method of molecular dynamics, the LAMMPS computational approach, to study the adsorption of gases on graphene.

GENEVAR: a novel bioinformatics tool for population based testing of variants

Presenter's Name: Sarah Jones
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Lena Alston, Latifa Jackson

Understanding the root genetic causes of health disparities in African American populations is of significant medical interest. Using a systems biology framework nested in a informatics approach can help explore the genetic architecture of disease. Critically missing in current studies are ways to answer research hypotheses on how putative disease genes, variants or genomic regions vary in ethnic populations. In order to address how disease variants might be affecting different populations and thereby leading to disparities in health outcomes, we sought to compare genomic data across global populations. These polymorphism data include the HapMap Consortium (11 populations, ~10 million SNPs) and the Human Genome Diversity Panel dataset (51 populations, 650K SNPs) along with SNP data from the Indian/African Genome Supplements (10 populations, 2810 SNPs). GENEVAR is created as a database in which genomic data from publicly available resources is processed. The first level of data analytics is done by calculating the allele frequencies of SNP in each sampled population. Users select the geographic populations of interest from a checkbox style list of populations that are compartmentalized by geographic regions. We use Kolmogorov-Smirnov test generated p-values to identify whether there are significant difference between each population comparison. Results are graphically represented in heatmaps for each genomic region. We use mental health genomics as a test case to show the role that variation plays in human populations. This approach facilitates analytical discrimination be hypotheses with respect to ethnic origin and health genomics.

Structural Implementation to Relieve Traffice Congestion

Presenter's Name: Florantine Joseph
Classification: Undergraduate Student
Presentation Type: Poster Presentation

The Ubungo junction is known throughout Tanzania to have one of the worst traffic jams in all of the country. The study seeks to present a model for the implementation of structures for traffic control in selected area at Ubongo intersection in Dar es Salaam. This study address several aspects in order provide a paradigm for solving traffic congestion at the Ubongo intersection. Theses components include the following: (1) how effective Grade Separation structures are for traffic control; (2) Visuals for such structure for the selected area; and (3) list of necessary tools for the structure and recommendations for maintenance. Data collection consisted of detailed observation of the intersection and

a review of literature on grade separation. The findings of this investigation concluded in providing a framework for implementing structures for traffic control at the Ubungo intersection in Tanzania. The final recommendation for addressing traffic congestion at the Ubungo intersection included a 2D AutoCAD draft of a two way, four-lane highway tunnel. Further research should explore cost feasibility, economical effects, and environmental compatibility of the proposed highway tunnel.

Extratropical Cyclones and Their Uncertain Nature: A Case Study of the January 2016 Mid-Atlantic Winter Storm

Presenter's Name: Mussie Kebede
Classification: Graduate Student
Presentation Type: Oral Presentation

Extratropical Cyclones are powerful weather systems that cause the United States millions of dollars in damages, annually. These cyclones often have one or more frontal systems attached to their core of low pressure. They acquire their energy and grow through temperature differences on land or sea. These storms are often forecasted well ahead of time with multiple paths of travel mapped out. These paths are created by numerical models that take a plethora of initial conditions to generate a path and intensification prediction over time. My goal for this project is to use one of these numerical weather prediction models, called the weather research and forecasting (WRF) model, to provide my own adjustments to the initial conditions of the January 2016 winter storm that impacted the mid-atlantic for the purpose of measuring the differences in storm trajectory and strength and improving future predictions. Findings will be presented orally.

Growth of Boron Nitride for 2D Applications

Presenter's Name: Tewa Kpulun
Classification: Graduate Student
Presentation Type: Poster Presentation

Boron Nitride (BN) is an isoelectronic compound similar to carbon that is sometimes referred to as white graphene. It has several applications due to its great chemical and thermal stability. Because of the weak Van der Waals forces between it's layers it is a self lubricant which makes it preferable to graphene for certain applications, including but not limited to space applications. The main goal of this project was to grow BN on thin substrates using a horizontal chemical vapor deposition (CVD) system under high temperatures and pressures. Using diborane (B2H6) and ammonia (NH3) as the precursors, several attempts were made to grow BN on sapphire (Al2O3), silicon dioxide (SiO2), and silicon (Si). Also nickel surfaces of 150 A on silicon dioxide and silicon was employed. After growth, these samples were characterized using Raman spectroscopy, atomic force microscope (AFM), and the scanning electron microscope (SEM).

Mechanical Engineering: Analyzing the Affects of Growth and Manufacturing Methods on Sapphire and Silicon Nitride Wafers Material Properties

Presenter's Name: Kirsten Lovelace
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Sonya T. Smith, Narcrisha Norman

A major cause of failure for computer microchips is the mismatch in thermal expansion coefficient values of the substrate material. More importantly, the combustible growth methods of synthetic crystals and manufacturing processes' of semi conductive wafers tend to have an immense affect on the properties of these materials postproduction. In collaboration with Northrop Grumman, we have begun a material analysis of Sapphire and Silicon Nitride, which are theoretically closer in material property values than traditional substrate materials. Understanding the affects of these processes could significantly decrease thermal stresses, fatigue and premature failure within microchips. To facilitate testing this hypothesis, we sought to experimentally test wafers that have been manufactured and grown from the dominant methods in today's industry. The material properties of interest are the coefficient of thermal expansion, electrical resistivity and hardness. The three growth methods that will be evaluated are the: CZ, KY and HEM Methods, and the three manufacturing processes that will be evaluated are: RBSN, HPSN, and SSN. Wafers of the same size will be tested for the CTE using strain gauges and Kelvin Bridge circuit. The electrical resistivity will be tested using a four-point probe sample holder, and the hardness will be tested using a digital Rockwell Hardness Tester. The final results will likely reflect the variations of material property values amongst the different methods. This study will conclude that growth/manufacturing processes affect the properties of materials significantly, and that a need for consistency is prevalent for their reliability and sustainability during application.

Synthesis of Avicequinone C and Derivatives towards the Study of 5α-Reductase Inhibitory Activity (in silico)

Presenter's Name: Angelica Mack
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Wiranpat Karnsomwan

Androgenetic alopecia (AGA), a class of scalp hair loss, is one of the most common types of hair loss. AGA is caused by the overproduction of androgen 5α- dihydrotestoterone (5α-DHT), a more potent form of testosterone (T) converted by 5α- reductase enzyme (5α-R). Clinical studies have demonstrated that inhibition of 5α-R results in decreased concentrations of 5α-DHT with a concomitant increase in scalp hair. Thus, identifying enzymatic reaction inhibitors is the possible key for AGA treatment. Drugs currently on the market to treat AGA lack efficiency and breed side effects. Contrary, Avicequinone C has higher efficacy and lower cytotoxicity than other pharmaceuticals. It has exhibited 5α-reductase type 1 inhibitory activity, illustrating reduction of DHT production by human hair dermal papilla cell (HHDPC) based assays. Thus, we hypothesize that its derivatives will show comparable results based on scientific ciphering and observations, and further HHDPCs studies. In experimentation, Avicequinone C and its derivatives were examined by molecular docking. Using a HHDPC assay, hair cell culture was carried out, while three derivatives of Avicequinone C were synthesized and tested for inhibitory activity. Based on TLC results and NMR verification of the compound, the WNK-3 and WNK-4 syntheses, and our hypothesis were confirmed. We concluded from molecular docking studies that Dutasteride, 4-Hydroxycoumarin and Avicequinone C exemplified the best inhibitory activity when reacted with 5α- reductase enzyme type one, while Avicequinone C, WNK-1 and WNK-4 illustrated good inhibitory activity with 5α-reductase enzyme type two. Androgenic alopecia affects so many world-wide; thus, this research and its findings are very important to science and humanity. In future work, we intend to repeat column chromatography in order to get complete separation and yield a pure product for WNK-6. Furthermore, other derivatives of Avicequinone C can be docked and tested for 5-α reductase inhibitory activity.

Role of Landscape Position and Nutrients in Forest Carbon Storage

Presenter's Name: Erin Manaigo
Classification: Undergraduate Student
Presentation Type: Oral Presentation

An understanding of the carbon storage and cycling allows us to predict the flow of carbon dioxide into the atmosphere, and therefore predict the pace of global climate change. A carbon sink is a large carbon repository, where C usually has a long residence time. This study uses stable isotope analysis and biomass estimates to examine how landscape type affects carbon storage. This study took place on the 'ecological staircase' in Mendocino, California. The ecological staircase consists of several miles of land of various altitudes and plateaus that presents like a staircase. We compared biomass estimates from the pygmy forests on flat land and giant redwood forests on increasing sloping land. We also compared Sr isotope ratios to estimate each site's rock derived nutrients. We saw that one way the carbon sink is maintained is through rock nutrients being unlocked by erosion in sloping landscapes that ends up restoring nutrients pools. Thereby allowing plants to be more productive in hilly versus flat environments. This work has implications for unaccounted for carbon or, "the missing CO2 sink", and whether trees will continue to absorb human caused fossil fuel emissions. There are also policy implications for the budding carbon market, where businesses purchase and conserve land in order to balance their industrial CO2 emissions.

KEY WORDS: CO2 sink, landscape

Near-Field Information Transfer Between Half-Wave Dipoles on a Finite Ground Plane

Presenter's Name: Trey Morris
Classification: Graduate Student
Presentation Type: Oral Presentation

Background: In modern communication networks, antennas are mostly utilized for their far-field characteristics to link two distance points. In the history of their development, great care was placed into optimizing an antenna's long range gain without much interest in its near field activity. Starting from experiments done by another researcher in Europe's lead, the investigation was undertaken in order to compare theoretical calculations from the proper-time electromagnetic theory pioneered at Howard University. **Methods:** A research collaboration was formed between Howard's Electrical and

Computer Engineering as well as Penn State's Department of Electrical Engineering. A finite ground plane was constructed from a copper clad dielectric sheet that had a monopole antenna placed at the center of said sheet. By grounding the copper sheet, a dipole antenna was created and its near-field was analyzed with an identical monopole. With this setup, a series of 6 distances between the two antennas were swept with a network analyzer to record the signal propagation between the two points. **Results:** S12 parameters were recorded across the frequency spectrum range of 1 MHz to 1 GHz. Of primary interest was the change in phase and the attenuation factor of the system as the distance between the two antennas was sweep between 0.1 to 0.6 wavelengths of the resonant frequency. **Conclusion:** Resonant electromagnetic structures were able to be constructed in accordance with predictions made by the proper-time electromagnetic theory for low-loss information transfer.

Chemical and Microbial Transport and Evolution by Mineral Dust Particulate and Implications to Health and Food Security

Presenter's Name: Vernon Morris
Classification: Senior Faculty
Presentation Type: Oral Presention

Coauthors: Ebony Ropere, Everette Joseph, Mayra Oyola, Serenella Linares, Nick Nalli

Howard University led a series of maritime field experiments aboard the NOAA class 1 research vessel, the Ronald H. Brown, and most recently aboard the NATO Alliance. This multi-year, international and multidisciplinary campaign is the first and only mission led by an African American principal investigator or an HBCU aboard NOAA's premier research vessel, and one of the longest-standing missions (ten years to date) that NOAA supports for atmospheric sciences. This field campaign is known as the AERosols and Ocean Science Expeditions or AEROSE (http://ncas.howard.edu/research-programs/aerose/). The AEROSE project has generated the most comprehensive data set of complementary atmospheric and oceanographic observations aimed at characterizing the impact and microphysical evolution of Saharan dust aerosols transported across the Atlantic Ocean (Morris et al. 2006). AEROSE uniquely provides NOAA with a multi-year, in-situ trace gas, aerosol, and meteorological measurement product in both near-real-time (full-resolution) and gridded data. It is also the most extensive collection of in situ measurements of the Saharan air layer (SAL) and associated African dust and smoke outflows over the tropical Atlantic Ocean allowing NOAA scientists and collaborators to explore and improve model prediction of aerosols and aerosol-influenced processes, validate satellite observations, and for the improve retrieval algorithms (Nalli et al 2011). This presentation will provide a brief overview and history of the project and then highlight scientific results and student training associated with chemical and microbial transport and evolution observed over the tropical Atlantic.

Reflectance Based Detection of Oxidizers in Ambient Air

Presenter's Name: Robert Neblett
Classification: Undergraduate Student
Presentation Type: Oral Presentation

As a result of the increased use of peroxide-based explosives (PBEs) in criminal and terrorist activities, there is an increasing demand for technologies providing detection of chemicals related to these materials. Vapor detection is a common approach for identification of illicitchemical activities, but has not been applied with significant success for detection of improvisedexplosive devices (IEDs). A recent colorimetric approach described detection of hydrogenperoxide vapor to part per billion levels. Paper towels are used to support the indicatorcompounds, providing cellulose microfibril networks that can be modified with the Ti(IV) oxocomplexes. Reaction of these complexes with hydrogen peroxide results in a transition fromcolorless to bright yellow, with peak absorption around 400 nm; this change is specific tohydrogen peroxide. The work of this effort was in combing these indicators with a prototypereflectance-based sensor system. The sensor system provides red green blue (RGB) color value output at 5 second increments allowing for real-time monitoring of the color changes. The combination provides a simple, cheap method for detection of hydrogen peroxide vapor and demonstrates the feasibility of using this approach for real-world sensing applications.

Secure Data Provenance for Internet of Things (IOT)

Presenter's Name: Ebelechukwu Nwafor
Classification: Graduate Student
Presentation Type: Poster Presentation

From controlling a light bulb by the use of a mobile device to having a smart fridge which alerts a consumer when they are out of groceries, the concept of internet of things (IoT) offers immense benefits by making devices a lot smarter.

With the vast amount of devices interconnected, there exist potential security and privacy issues. According to an article published by Rapid7, a leading provider of security data and analytics, it was discovered that certain vulnerabilities exists in select brands of baby monitors which allowed attackers unauthorized remote access to these devices whereby they can remotely view live video feeds. In this research, we propose a secure data provenance system that ensures trust for nodes connected in an IoT network. Devices (things) connected in IoT are embedded systems which require a more lightweight and efficient algorithm than general-purpose or even mobile devices. This requirement is attributed to the constrained memory and computing capabilities that most of these devices possess. A major issue arises in ensuring that data is properly secured and disseminated to various entities contained in an IoT network.The vast amount of data generated from IoT requires a certain level of trust which can only be achieved through data provenance.Data provenance ensures data transparency between information disseminated across a network. It leads to the enforcement of more appropriate security measures in mitigating current or future attacks.

Computational study of fluid flow within the vestibular system

Presenter's Name: Marie-Urlima Okeke
Classification: Graduate Student
Presentation Type: Poster Presentation

Background: This work studies the fluid flow within the vestibular system, developing a computational model of the vestibular system that relates eye movement to fluid displacement within the system. An experimental method was also developed for verifying the results of the model. The vestibular system is a collection of organs that play an important role in the day-to-day function of humans. Without a properly function vestibular system, activities such as driving, walking, or even reading become very difficult. The vestibular system is responsible for sensing linear and angular motion, as well as gravity. **Methods:** The vestibular system consists of five organs, three semicircular canals (SCCs) and two otolith organs. The fluid motion within the SCCs and the otolith organs is modeled differently. The endolymph displacement in the SCCs is modeled as a torsion pendulum using a 2nd order ordinary differential equation. The otolith organs consist of three layers, the gel, mesh and otoconia layers. Each layer is modeled as a viscoelastic material, using the forced wave equation. The computational model will be verified experimentally using the VALUS, a rotating platform. Participants will be secured in a cab mounted on a rotating platform and their eye movement will be recorded during rotations using video-oculography goggles.

Dynamic Response of AA2519-T8 Aluminum Alloy under High Strain Rate Impact Loads.

Presenter's Name: Adewale Olasumboye
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Gbadebo Owolabi, Akindele Odeshi, Rahaman Abu

AA2519 aluminum alloy, like others in the AA2000 series, is a heat-treatable alloy, with copper as the principal alloying element. Its excellent ballistic characteristics and less susceptibility to stress corrosion cracking (SCC), combined with other properties, qualify it as a prime candidate for armored vehicle and aircraft applications. In this study, the strain rate effects on the evolution of dynamic failure of AA2519-T8 aluminum alloy, supplied by NASAR, were investigated under high rate impact loads. The effects of specimen configuration on deformation and strain distribution along the material were also studied with a view to assessing the suitability of each specimen for the high-rate testing methods and to determine specimen size and shape effects on the yield and failure strengths of the alloy. Different specimen geometries with varying aspect ratios were tested using an integrated split-Hopkinson pressure bar (SHPB) and digital image correlation (DIC) system. The microstructural analysis of the deformed specimens was also carried out under optical microscope (OM) with a view to determining the formation of adiabatic shear bands (ASBs) and influence of impact strain rate on shear strain localization along the bands in AA2519 aluminum alloys. Results showed that the dynamic behaviors of the various specimens vary slightly with strain rate and impact velocity, with smaller cylindrical specimen showing overall moderate suitability for determining yield and failure strengths of the alloy under high rate impact loading condition. Results also established that the two testing techniques agree closely, with the DIC providing better full-field data and visualizations on the material deformation history. The DIC deformation-time history showed distinct areas of non-uniform strains, which may indicate the potential sites of ASB formation. OM images revealed the formation and growth of ASB, a precursor to dynamic material failure in the alloys, over the chosen range of impact strain rates.

Climatology analysis of cirrus cloud in United State

Presenter's Name: Kafayat Olayinka
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Siwei Li

Cirrus cloud play an important role in the atmospheric energy balance and hence in the earth's climate system. The properties of optically thin clouds can be determined from measurements of transmission of the direct solar beam. The accuracy of cloud optical properties determined in this way is compromised by contamination of the direct transmission by light that is scattered into the sensors field of view. With the forward scattering correction method developed by Min et al., (2004), the accuracy of thin cloud retrievals from MFRSR has been improved. In this study, we do statistics studies on cirrus clouds properties based on multi-years cirrus cloud measurements from MFRSR at ARM sites and HUBC site. The site locations include mid-latitude, tropics and North-pole regions. Through the statistic studies, temporal and spatial variations of cirrus clouds are investigated.

Mannobiose-mannobiose Interactions, using Atomic Force Microscopy.

Presenter's Name: Komitige Perera
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Saswati Basu, Preethi Chandran

Carbohydrate-carbohydrate interactions (CCIs) are a relatively newly recognized form of biological interactions. CCIs play a role in wide range of biological processes such as fertilization, embryogenesis and cell development. In this study, we measured the interactions between α-1, 4-mannobiose moieties (disaccharides of mannose sugars) using the force spectroscopy (FS) mode of an atomic force microscope (AFM). Mannobiose are widely being used in the design of therapeutic agents. The presence of mannobiose may help the drug agents to target the cells that express mannose receptors (dendritic cells) as well as reduce the drug-induced cellular toxicity. In nature, mannobiose is found on the surfaces of various microorganisms and may play a role in host-pathogen interactions and biofilm formation. This research may impact the fields of drug design and biofilm engineering. We covalently attached mannobiose to thiolated linkers and functionalized on Au-coated mica and Au-coated AFM probes as self-assembling monolayers. The interactions between mannobiose-mannobiose were systematically probed under various conditions (presence of H2O, NaCl, free mannobiose). The specificity of mannobiose-mannobiose interactions was verified by measuring the interactions between the linkers alone. The interactions between mannobiose and concanavalin-A (lectin) protein were measured to verify the exposure of mannobiose on the AFM surface. Preliminary experiments detected strong mannobiose-mannobiose interactions in the range of 200-800 pN. The majority of measured forces were multiples of ~200pN, indicating that the detected forces are due to non-random, specific interactions. Further characterization of the mannobiose-mannobiose interactions is underway. In future research, we aim to study the role of mannobiose interactions in the self-assembly of mannobiosylated nanomaterial.

Cheminfomatic Modeling of CXC Chemokine Receptors

Presenter's Name: Terry-Elinor Reid
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Oral Presentation

Coauthors: Jie Xia, Xiang Wang

Chemokine receptors are a branch of rhodopsin family of cell surface receptors comprised of seven-transmembrane domains, which are coupled to G-Protein-Coupled Receptors (GPCRs) to initiate signal transduction event. The chemokine receptors are subdivided into four classes; CX3CR, CXCR, CC and XCR. To date, seven CXCR subtypes (CXCR1-7) have been discovered. Chemokine receptors play a physiologic role in immune surveillance, immune response, metastasis, leukocyte trafficking and are associated with inflammatory response, infection, cardiovascular disease and cancer. CXCR4 has gained increasing interest as a drug target due to it's implication in multiple diseases including HIV and cancer. Hence, CXCRs are viable targets for drug design and development. The objective of this project is to conduct cheminfomatic modeling studies of the entire CXCR family to identify novel and subtype selective inhibitors. We conducted multi-tiered QSAR modeling studies at the following levels; binders vs. non-binders, and strong binders vs. non-binders. This approach provided a valuable collection of tools for various high-throughput screening (HTS) needs. Our strategy has generated robust and predictive QSAR models for CXCR 1 through 4. With these rigorously developed models we are able to conduct HTS of large chemical libraries to identify novel, CXCR subtype selective antagonists. The top CXCR4

hits identified had been sent to Millipore labs where FLIPR assay was conducted to profile the compounds for agonist and antagonist activities. We confirmed experimentally multiple CXCR4 antagonists of novel chemical scaffolds with medium inhibitory activities.

Optimization of Power Quality Control for Micro grid based Renewable Energy Systems

Presenter's Name: Dayne Robinson
Classification: Graduate Student
Presentation Type: Poster Presentation

This paper develops an advanced control scheme that optimizes the power quality control options for micro grid based renewable energy systems. DGs are typically connected to the grid using power electronic converters which produce harmonics and distortion which has not yet been adequately addressed using classical analysis tools and techniques. Problems on the power grid due to poor power quality includes voltage sag and harmonic distortion of sinusoidal current and voltage wave-forms which reduces the transfer of power. Symptoms occurring from voltage sag include damage to equipment, and unreliable data in test equipment while the effect of harmonic pollution includes the overheating of motors and incorrect operation of process control equipment. The economic implication of poor power quality is the cost of premature failure of equipment poor quality of production, downtime and loss of revenue. Methods such as trial and error control using offline studies and classical Proportional Integral Derivative (PID) control have been attempted but have failed to provide adequate results for real time applications that minimize the cost of controls. The micro grid test bed will use MATLAB/Simulink models tested with dynamic time-steps using (HIL) real time simulation. The implementation involves defining disturbances such as imbalance between voltages and different load types and power electronics converters implemented and tested using a micro grid test bed at Howard University which produced optimized results using HIL technology for real time simulation along with advanced PID control. Hardware-In-the-Loop allows accurate simulation of fast-switching power electronic devices which requires the use of incremental time-steps to solve and validate system equations. So far the results of experiments are encouraging and display a high degree of accuracy when compared with previous offline studies. We have done analysis and tested our model on a medium sized micro grid system. The results have shown an increase of over 80% in the accuracy of the power quality controls over the traditional methods based on different time steps. The research is encouraging and future work will include large scale systems and new optimization techniques to improve power quality indices. The benefits of improved controls are reductions in consumers' electricity bills, enhanced reliability and lifetime of equipment, elimination of unplanned outages, reduction of lost production and increased revenues.

We would like to acknowledge the DOE for funding this research through a grant to CESaC.

Key words: Micro-grid, Power Quality, Hardware-In-the-loop (HIL), Real Time Simulation, Optimization, Control

---

The impact of lightning on intensity forecasts using the HWRF model: Idealized Tropical Cyclone

Presenter's Name: Keren Rosado
Classification: Graduate Student
Presentation Type: Poster Presentation

The National Oceanic and Atmospheric Administration (NOAA) created the Hurricane Forecast Improvement Project (HFIP) in 2010 with the ten-year goal of improving tropical cyclone intensity and track forecasts by 50% for days one through five. Part of this goal is to improve forecast of the tropical cyclone rapid intensification. In order to contribute to this goal, we have investigated the role of lightning during the life cycle of a tropical cyclone using the HWRF hurricane model. The hypothesis is that an improvement in the forecast of lightning will lead to corresponding reductions in the HWRF hurricane model intensity bias. This research is designed to address the following two questions: "How well does the HWRF model forecast lightning spatial distributions before, during, or after tropical cyclone intensification?" and "What is the functional relationship between atmospheric moisture content, lightning, and intensity in the HWRF model?" In order to address these questions a lightning parameterization called the Lightning Potential Index (LPI) was implemented into the HWRF model. A 120 hours simulation of two Idealized tropical cyclones e.g. Idealized tropical cyclone and Idealized tropical cyclone with lightning parameterization has been conducted to evaluate the evolution of the spatial distribution of lightning location and density. Output from the Idealized HWRF tropical cyclone has been analyzed and compared to an Idealized HWRF tropical cyclone with lightning parameterization. Preliminary results from this investigation had shown: the correlation between lightning and intensity changes exists; the potential for

lightning increase to its maximum peak hours prior to the idealized tropical cyclone reach it maximum speed. Results from this investigation will gave us a better knowledge of the mechanism behind lightning as a proxy for tropical cyclone steady state intensification and tropical cyclone rapid intensification forecast, consequently, move a step closer to achieving NOAA's goal of reducing the intensity error by 50% for days one through five.

Column study of nanomaterial attaching efficiency on porous media

Presenter's Name: Hossein Safa
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Shauna-Gaye Campbell, Kimberly Jones, Yaolin Fennell, Malaisamy Ramamoorthy

Understanding the factors that result in the nanoparticles transport behavior in environment is an important factor in predicting the environmental impacts. The prediction of the mobility of nanoparticles in soil will ultimately provide valuable data for proper risk assessment of nanomaterials. In this study, the deposition of transformed and pristine silver nanoparticles (AgNPs) to natural heterogeneous silica was investigated under different environmentally relevant conditions, such as ionic strength, pH and natural organic matter (NOM) concentration. Our results show that transformed nanoparticles (Ag2S) were more mobile than their pristine precursors (AgNPs). And the deposition of both nanoparticles on collector surfaces was interfered by the presence of NOM and high pH values. In the contrary, the increase of ionic strength enhanced nanoparticles deposition.

Upper Air Research at the Howard University Beltsville Campus

Presenter's Name: Ricardo Sakai
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Oral Presentation

Coauthors: Belay Demoz, Everette Joseph, Vernon Morris, Demetrius Venable, William Stockwell

The Howard University Beltseville Campus (HUBC) is located approximately 12 miles NE of downtown Washington, DC, in the State of Maryland on 110 acres in suburban Maryland (39.05°N, 76.88°W, 53m). For the past fifteen years, it has hosted a myriad of meteorological, chemical, and remote sensing sensors to monitor the surface and upper air. Scientific interests include analysis and measurements of upper air using radiosonde, Raman lidar, wind sodar, and micro-wave radiometer, micrometeorology at the surface layer using a 30 m instrumented tower, air chemistry with emphasis on pollutant trace gases and aerosols, solar and terrestrial radiation studies, and rainfall. The HUBC location and facilities provide not only a unique niche for student training and education, but also a platform for interacting with a broad variety of other scientific agencies and organizations such as the National Oceanic and Atmospheric Administration (NOAA), National Air and Space Administration (NASA), Maryland Department of Environment (MDE), National Geospatial Intelligence Agency (NGA), and GCOS Reference Upper Air Network (GRUAN). In this presentation a synopsis of selected research projects will be shown. For instance, the planetary boundary layer study and the evolution of surface ozone concentration relationship during NASA DiscoverAQ project on Summer 2011 are going to be discussed. Current efforts on understanding the formation the planetary boundary clouds over HUBC and an update on the ongoing GRUAN and ozone climatology projects are going to be presented.

Vulnerability Analysis of a Circuit Layout to Hardware Trojan Insertion

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

While the horizontal integrated circuit design process is extensively practiced, untrusted foundries can impose significant threats on the security of final products. A carefully-inserted extra circuitry as a Hardware Trojan in a circuit layout can interfere with circuit functionality under very rare circumstances with inconsiderable footprints. In this paper, we introduce a novel layout-level vulnerability analysis flow to evaluate the susceptibility of a circuit layout's regions to hardware Trojan insertion. We also present several metrics based on a circuit layout to quantify the possibility of hardware Trojan insertion in a specific region of layout. Results of applying our flow to several benchmarks have revealed considerably high vulnerability of circuit layouts to hardware Trojan insertion. Furthermore, several Trojans are implemented and inserted in layout regions with different vulnerabilities to evaluate the effectiveness of our new metrics. Our novel layout-level vulnerability analysis flow makes it possible to quantitatively determine the vulnerability

of different implementations of a circuit and analyze the susceptibility of each corner of circuit layout to different types of functional Trojans.

The Effects of Atmospheric Chemistry on Projected Ozone Concentrations in Response Emission Control Strategies in the South Coast Air Basin

Presenter's Name: Emily Saunders
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: William Stockwell, Eric Fujita, David Campbell, Rosa Fitzgerald, Robert Pereara

Los Angeles's South Coast Air Basin (SoCAB) continues to experience ozone concentrations that exceed the National Ambient Air Quality Standards (NAAQS). Future control strategies include reductions in the emissions of nitrogen oxides (NOx) and volatile organic compounds (VOC) either separately or together. Air quality simulations were made with the Regional Atmospheric Chemistry Mechanism, version 2 (RACM2) in a chemical box model. These box model simulations are used to evaluate changes in the ozone concentrations in response to varying reductions of NOx and VOC. The modeling shows that ozone formation was VOC limited in the SoCAB for the base year 2008. Simulations made for the future year in 2030 predict a 10-20% higher peak ozone levels in the western and central basin compared to the 2008 base simulation. The simulations show that reductions in VOC or NOx emissions alone will not be the most effective ozone control strategy. Rather, reductions in both VOC and NOx emissions are likely to be more effective in the SoCAB.

Processing and Fabrication of Diamond FETs For High Power - High Temperature Applications Using HFCVD- Grown Diamond

Presenter's Name: Amirhassan Shams Ansari
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Aaron Jackson

Semiconductors are the key elements in modern computers and electronic devices. Silicon devices are found to have degradation and weaker performance during at high temperatures. One of the recent candidates for electrical devices is Diamond which has interesting semiconductor properties. It has a high thermal conductivity, breakdown field, and carrier velocity. These outstanding characteristics can be promising for Radio Frequency (RF) and high power applications. In addition to that, diamond large bandgap (~5.5 eV) makes diamond an appropriate material for high voltage operations. During last decade there are many advancements emerged on growing single and poly-crystalline diamonds which are a key toward powerful diamond devices. However, due to specific and complicated growth equipment and conditions, making diamond devices is still a very interesting topic in electronics. In this research, we make diamond Field Effect Transistors (FETs). FETs are the building blocks of any electrical system. The aim of this research is to obtain promising device metrics (i.e. electrical properties such as drain current, gate voltage, and I-V curves) by the changing the growth conditions, fabrication process, and device design.

An investigation of Peak and Valley-Avoiding Dyck Paths

Presenter's Name: Bishwa Silwal
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Sequences like Pascal's Triangle appear in different fields of science and mathematics in many different contexts. We investigate a way of altering the rules of Pascal's triangle to generate the sequence 1,2,4,9,22,56,146,388,1048… and determine a rule for its generating function. From this, we then investigate the sequence in the form of different lattice paths, especially Dyck paths avoiding certain peaks and valleys, and trees. We then discuss its Riordan Array representation along with its A-sequence and B-sequence. Finally, we investigate some similarities between the sequence and the Catalan numbers and develop a Catalan representation of the given sequence.

Nonlinear Bending Dynamics of a Semiflexible Filament in 3D Brownian Fluctuation

Presenter's Name: Jyothirmai Simhadri
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Preethi Chandran

Biopolymers like collagen, actin, microtubules, and aggrecan play a structural role in cells and tissues. They

are considered semiflexible polymers because their bending stiffness is on the order of, and resists, the Brownian forces that randomize their conformation. The study of the collective dynamics of semiflexible assemblies has come to prominence because it underlies the physics of force-transmission and mechanotransduction in cells and tissues. Chandran and Mofrad (20091) had proposed modeling a two-dimensional semiflexible filament as a string of beams that bend continuously under Brownian forces. This idealization not only captures the high-order nonlinear bending of the filament, but it does so at reduced computational cost compared to the string-of-beads idealization or Finite Element simulations. In this presentation we show how the string-of-beams formulation translates to predict the three-dimensional bending of a fluctuating filament with fourth-order continuity in each bending axis. The formulation is validated by comparison against Finite Element simulations of filament bending under similar forces.

Reference: [1] Chandran PL, Mofrad MRK. Rods-on-string idealization captures semiflexible filament dynamics. Physical Review E 2009;79:011906.

Introduction to Kinetics through an Experiment Based Learning Education App

Presenter's Name: Simone Stanley
Classification: Undergraduate Student
Presentation Type: Poster Presentation

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

Chemical kinetics studies the rates of chemical reactions. It governs the production of almost all industrial processes, including manufacturing, pharmaceuticals, healthcare, petrochemicals, and food production processes. The purpose of this study is to develop an experiment based smartphone application (App) to introduce this fundamental engineering principle through an interactive learning environment for High School students and first year engineering students. The study relies on thermochromics pigments and their ability to change color with changes in temperature. It designs the necessary experiments to build a reliable and repeatable application that predicts temperature based on the color of the thermochromic dyes and various concentration solutions. We will then create relevant lessons plans that take advantage of the App to teach chemistry, data analytics and engineering principles. Once completed, this study will produce a novel educational tool to introduce STEM principles to students at the pre-college level.

Atmospheric Ozone and Ultraviolet B Radiation Coupling Impact on Sensitive Crops Production, at Beltsville, Maryland

Presenter's Name: Lekealem Taku
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Ricardo Sakai

Over the past decades, annual average background surface ozone concentration [O3] and ultraviolet 'B' radiation are two major surface atmospheric factors that have been increasing by yearly leading to stresses such as phytotoxicity and phototoxicity in vegetation and human respectively. Due to the fact that both atmospheric factors have similar impact on vegetation, lots of research studies have been carried on individual factor on vegetation exposure limit, without considering the pairing impact on vegetation. The objective here is to perform statistical analyses on the 8 hour ozone concentration and UV-B daily mean values, measured over a 10-year period during vegetation growing season (2005 – 2015). This approach would provide significant information of the stressors levels and the frequency of ozone and UV-B level that would impact vegetation during growing seasons. This could be used for policy making for O3 control in order to minimize the stressors impacts. Corn and soybean's sensitivity threshold limit acquired from experiments are used as a baseline for the trend analysis. The ozone critical level of damage for both soybean and corn are 40 ppb 10 ppb, respectively, and for UV-B are 13 kJ/m2/d and 10 kJ/m2/d, respectively. Corn and soybeans are typical crops grown at the USDA (United State Department of Agriculture), Beltsville, metropolitan, where the UV-B data are collected and ozone data is collected by MDE (Maryland Department of the Environment) at Beltsville.

AIDS Related Kaposi Sarcoma Presenting as Protein Losing Enteropathy

Presenter's Name: Belen Tesfaye
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Kibreab Angesom, Stuart Horwitz

Introduction: KS (Kaposi Sarcoma) is a low-grade vascular tumor associated with HHV-8 infection. The epidemic form, or "AIDS-related KS," is an AIDS-defining illness and was the most common HIV-associated malignancy in the era before highly active antiretroviral therapy (HAART). Incidence has dropped post-HAART. Risk factors for KS include low CD4 count, high HIV viral load, and male-to-male sexual contact. Visceral KS can involve any organ but predominantly affects lymph nodes, lungs, and the GI tract. Visceral involvement in the absence of skin findings is rare. GI-KS is often asymptomatic, but nonspecific complaints such as nausea, vomiting, abdominal pain, and dyspepsia do occur. Cases of hemorrhage, perforation, obstruction, diverticulitis, appendicitis, intussusception, and protein losing enteropathy (PLE) have been reported. Treatment is mainly with HAART but systemic chemotherapy with Daunorubicin, doxorubicin, and paclitaxel can be used in if lesions are extensive, rapidly progressive, or involve viscera. C**ase presentation:** We report a case of a 19 year old homosexual male with recent diagnosis of HIV/AIDS who presented with bloody diarrhea, nausea, dysphagia, vomiting and anasarca. His labs were notable for an albumin of 0.9mg/dl and a CD4 count of 35 cells / mm3. EGD and colonoscopy showed disseminated violaceous nodules in the esophagus, stomach, small bowel and colon. Histopathologic examination of the all lesions demonstrated extensive KS spindle cells, extravasated red blood cells, and inflammatory cells. Furthermore, immunohistochemical staining for human herpes virus 8 (HHV-8) revealed uptake in nuclei of the spindle cells consistent with a diagnosis of KS. Patient was a poor candidate for chemotherapy due to poor performance status and eventually family opted for comfort care. Patient died with in 01 mo of initial diagnosis. **Conclusion:** PLE is a rare complication of KS and is due to a nonspecific loss of plasma proteins from the intestines due to mucosal injury or increased lymphatic pressure. Enteral protein loss can be demonstrated by measurement of the alpha-1 antitrypsin clearance preferably in the absence of diarrhea and GI bleeding as both falsely increase clearance. Low serum albumin is common in AIDS and may be partially explained by malnutrition, chronic disease, and other comorbidities; however, PLE is likely under diagnosed in this population. PLE should be considered in any AIDS patient with hypoalbuminemia, especially when GI symptoms are present and when loss of albumin is not attributable to cardiac, renal, or hepatic disease or to malnutrition.

Fabrication and Transfer of Aligned Carbon Nanotube Films on Desired Substrates Tochukwu Uyanne, Thomas A. Searles (Faculty Advisor)

Presenter's Name: Tochukwu Uyanne
Classification: Undergraduate Student
Presentation Type: Poster Presentation

We are investigating the fabrication and transfer of aligned carbon nanotube (CNT) films with a current emphasis on the transfer of these films onto substrates. The goal being to transfer the CNT films onto copper sheets to create electrodes. Fabrication is done via vacuum filtration. This method when coupled with differential pressure filtration, has lead to the development of highly aligned CNT films. We are currently investigating a wet transfer process to remove the filter membrane and transfer the CNT films onto a desired substrate. The current focus is aimed at transferring these CNT films on to silicon wafers. The next step being to transfer the CNT films on to thin metal (copper) sheets so as to use to the properties of the carbon nanotube films to enhance the properties of the metals. This copper – carbon nanotube coupling will then be used to build batteries, terahertz sensors and modulators, better conductors etc. The applications of this research are wide and varied ranging from communications to medical imaging.

Characterizing the Impact of Aerosols on the Distribution of Water in the Troposheric Column During the Monsoon Season in the Philippines

Presenter's Name: Karretta Venable
Classification: Graduate Student
Presentation Type: Oral Presentation

The Republic of the Philippines (RP) possesses a complex topography and extensive regional urban air pollution that may influence precipitation variability. Within the country, precipitation variability induces localized extremes in rainfall intensity creating pronounced floods and droughts. Cloud and precipitation formation depend upon the availability and physical properties of particulates suspended within the atmosphere and the distribution of water in the atmospheric column. Therefore, it is important to examine the impact of local and regional pollutants on the distribution of water in the atmospheric column and precipitation variability within the archipelago. The data obtained in this study is taken from the years 2001 to 2010 during the Western North Pacific Summer Monsoon (WNPSM). Monthly averaged Level-3 MODIS (Moderate Resolution Imaging Spectroradiometer) Terra global

data retrievals and the Tropical Rainfall Measurement Mission version seven (TRMM V7) precipitation data during June through December are employed. MODIS cloud retrieval and aerosol properties include the mean atmospheric water vapor, mean cloud optical thickness (in the liquid and ice forms), mean cloud effective radius (for liquid and ice forms), the mean cloud water path (in the liquid and ice forms), precipitable water, aerosol optical depth, and angstrom coefficients. This study aims to identify zones of frequent extreme rainfall occurrences and shifts in seasonal precipitation trends. This investigation seeks to determine whether relationships exist between urban aerosols, cloud optical properties, and precipitation variability in equatorial regions.

Nitrogen and boron doping of HF-CVD diamond

Presenter's Name: Amber Wingfield
Classification: Graduate Student
Presentation Type: Poster Presentation

Doping diamond for the production of nitrogen-vacancy (NV) centers has recently come to the forefront as a potential candidate for quantum computing. In a similar light, boron doping in diamond has become of interest due to its potential to improve electronic applications. Growth and doping of diamond can be achieved by way of employing hot filament chemical vapor deposition (HF-CVD). Thus, understanding how dopant concentration is effected during diamond growth is of interest. Therefore, the focus of our current research is to separately determine nitrogen and boron incorporation in relation to diamond growth conditions. This will allow leverage into determining the relationship between nitrogen concentration and NV-center incorporation, as well as, determining the relationship between boron incorporation and activated boron concentration. Prepared silicon and silicon carbide substrates are placed into a HF-CVD environment with conditions set for diamond production. Within this environment, the substrates are doped with nitrogen or boron and subjected to varying growth conditions, such as pressure and flow rate changes. Secondary ion mass spectroscopy (SIMS analysis) is then conducted to provide insight on how nitrogen and boron concentration changes occurred during growth.

Impact of Electric Vehicle Charging Stations on Distribution Network Voltage Regulation in Washington, D.C.

Presenter's Name: D'Angelo Woods
Classification: Graduate Student
Presentation Type: Oral Presentation

The adoption of electric vehicles (EVs) in the District of Columbia (DC) is expected to increase as we approach the next decade, keeping pace with the projected 44% increase in worldwide energy consumption into 2040. This increased adoption of EVs will undoubtedly have an impact on the voltage regulation capabilities of DC's distribution network. The subsequent integration of charging stations by residential and commercial customers will prove to be a challenge for electric utility providers as they seek to maintain the reliability and robustness of the overall distribution network system. The Open Distribution System Simulator (OpenDSS) is an open-source software program designed to simulate utility distribution systems for distribution planning. For this research, load data from Washington, DC's electric utility provider will be input into OpenDSS to identify, establish, and model a load profile for customers in areas that are considered to have high potential for EV adoption. Once the model is built, the no-load, (base case) scenario will be simulated to observe how the system behaves under normal and vehicle-charging conditions. A preliminary simulation was run using a radial test feeder from the Institute of Electrical and Electronics Engineers (IEEE) and has yielded some significant results. Among these results were a 2% increase in total percent losses for the distribution network and a nearly 10% increase in transformer losses when EV charging stations were added to the model distribution network feeder.

Electrical Conductivity Enhancement of LiFePO4 Battery Cathode with Gold Nanoparticles

Presenter's Name: Sharah Yasharahla
Classification: Graduate Student
Presentation Type: Poster Presentation

Lithium Iron Phosphate (LFP) is a promising candidate for producing the next generation of rechargeable batteries. LFP has many useful qualities such as; great thermal tolerance, high energy density, and excellent life cycle performance. Unfortunately, a significant disadvantage to using this material continues to be its low rate capability which establishes how fast a battery can be charged and discharged. Our group's

approach to surmounting this disadvantage is through the use of gold nanoparticles (GNP) to enhance electrical conductivity in the cathode. Coin cell batteries were fabricated with the incorporation of GNPs in the cathode material to expand the electrical percolation network and battery charging comparison tests were done. Preliminary data showed that batteries made with GNPs charged roughly twice as fast as those made without.

Subsurface imaging of autofluorescent polymer composites

Presenter's Name: Hessam Yazdani
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Dispersing a sufficient quantity of fillers such as carbon nanotubes (CNTs), carbon blacks and metal nanopowders within a polymer matrix results in a composite that typically offers improved properties compared to the host polymer in pristine form. The extent of this improvement, however, depends not only on the concentration of the filler but also on the quality of its dispersion. Therefore, the precise characterization of the filler dispersion in a composite is essential in establishing a complete understanding of its behavior. The term dispersion generally refers to the nearly-uniform distribution of individual fillers in a matrix. However, this definition needs to be adjusted for nanocarbons that possess an inherent thermodynamic drive to create physical entanglement with neighboring particles. This entanglement tendency is especially strong due to the generally high aspect ratio and flexibility of CNTs. Therefore, a dispersion state described as "uniform" or "good" for individual particles in the aggregate scale might be a misleading or inaccurate description for their dispersion state in micro- or macroscale systems. In this regard, distinction is made between nano-, micro- and macroscopic dispersion. This presentation introduces a methodology to quantitatively assess the three-dimensional dispersion of CNTs within a composite material in situ and on different length scales. Different imaging techniques are used including laser scanning confocal microscopy (LSCM), scanning electron microscopy and transmission electron microscopy. Polyvinyl chloride is used as the polymer matrix which is mixed with 0.5 wt.% multi-walled CNT using four different mixing methods; i.e. probe sonication, bath sonication, batch mixing and mechanical stirring. Similarities in the dispersions from different mixing methods are quantitated using the Pearson product-moment correlation coefficient.

Parametric Effect on Vivaldi Antenna Elements and Arrays

Presenter's Name: Ang Yu
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Oral Presentation

Background: The Vivaldi antenna is a wide band, compact, and low cost element finding its applications in radar and radio telescope systems. In particular, the Army Research Laboratory (ARL) developed Synchronous Impulse Reconstruction (SIRE) radar, with an array of Vivaldi antennas as receiver, for landmine detection purposes. This paper provides an account of parametric effect on Vivaldi elements and arrays' performance to assist the design and optimization of SIRE radar antenna subsystem. **Methods:** Electromagnetic full-wave simulation is an important tool for antenna analysis and design. The parametric study performed in this paper is carried out through the software package FEKO, based on Method of Moment. Vivaldi elements and arrays are described by multi-parameter models. Our focus is the investigation on geometric parameters of the model, including the feeding and radiating structures. **Results:** The performance of the Vivaldi element and array are characterized by their impedance and radiation patterns. The impedance is mainly determined by the feeding structure which is composed of a strip-line to slot-line transition. The widths of the strip-line and the slot-line are important but may be specified a priori. Another two important parameters are the diameter of the slot-line cavity and angular size of the strip-line stub. It is observed from simulation that for the model operating in the frequency range of 2.25~5 GHz the sizes of the cavity and the stub can be chosen with several trials leading to the best impedance result. When the frequency is lower, a smaller cavity and a larger stub may yield better result. The most important geometric parameters that affects the radiation pattern are the length of the radiating structure and the height of the aperture. **Conclusion: W**e analyzed the impedance and radiation characteristics of the Vivaldi antenna element and array by electromagnetic simulation. Several important geometric parameters have been investigated to establish models that operate in a manner that is consistent with the SIRE radar antenna subsystem.

Social Sciences

Returning Home: A Cross-Cultural Analysis of the Experiences of Displaced Victims of Hurricane Katrina

Presenter's Name: Terri Adams
Classification: Senior Faculty
Presentation Type: Oral Presentation

Coauthors: Carolyn Stroman, Michelle Dovil, Anjerrika Bean

The Hurricane Katrina disaster was one of the worst natural disasters to impact the nation in modern times. The disaster led to the displacement of well over 400,000 residents in New Orleans, uprooting their family life, community ties, social networks, and work life. While some sources report residents returning within less than a month after Katrina's landfall, thousands of others lived outside of the city limits for months and some for years after the disaster. This project explores the lived experiences of the returnees of various racial and cultural backgrounds, examining the challenges faced while they were displaced, their reasons for returning, and their homecoming experiences.

VooDoo, Santeria, and Obeah: Exploring the role of spirituality and religion in psychotherapy

Presenter's Name: Nancy Ajaa
Classification: Professional Student
Presentation Type: Poster Presentation

The United States remains a popular destination for those in other countries who seek to escape their current circumstances and aspires to live in a country, which promotes better opportunities (Rogers-Sirin, Ryce, & Sirin, 2014). Globalization and migration has become apart of the natural rhythm and heartbeat of the American society with immigrants being the fastest growing subgroup of the U.S population under the age of 18 (Reardon-Anderson, Capps, & Fix,2002). As migrants come to the U.S with hopes and dreams of establishing a better life, they also bring their culture, beliefs, and religion. Spirituality plays an imperative role in the lives of many of our patients, it is critical that psychologists receive training in distinguishing a healthy from an unhealthy spirituality or religion. The objectives of this poster presentation are to explore the role of spirituality and religion in psychotherapy; the necessity of integrating religion and spirituality in psychotherapy, and recommendations on how professionals can successfully and effectively merge the two.

Black Consciousness: David Walker to Steven Bantu Biko

Presenter's Name: Omar Akbar
Classification: Graduate Student
Presentation Type: Oral Presentation

This project will examine the paradigm of Black Consciousness as it was developed by David Walker under the conditions of 19th century antebellum society, and chattel slavery culture in the United States, in comparison to the evolution of Black Consciousness in the 20th century as presented by Steven Bantu Biko under the conditions of Apartheid in South Africa. The emphasis of analysis will be placed on the original manifestos written by David Walker and Steven Biko. The research project will also establish a critical analysis of the specific paradigms of Black Consciousness, and Black Collectivism, and the social and cultural context by which these ideologies appear in history. The project will examine primary sources from the 16th, 17th, 18th, 19th, 20th centuries. The research methodologies to used in this project include sub-altern, psycho-
historical, cultural history, archival research methods, and anthropological methodologies.

The Internal War: The Impact of Developmental History on the Involvement of Non-Resident African American Fathers in the Lives of Their Children

Presenter's Name: Rasheeda Ansari
Classification: Graduate Student
Presentation Type: Poster Presentation

The number of African American children living without their biological fathers is steadily increasing. However, our knowledge of the involvement of African American non-resident fathers in the lives of their children is severely lacking. Given the drastic changes that have occurred within the American family structure since the 1960s and the rising number of non-resident father families in the African American community, studies are needed that assist social work practitioners and policymakers with understanding the

lived experiences of these men and the various factors that both positively and negatively influence their involvement with their children. The purpose of this mixed methods study was to determine, through quantitative methods, those factors (developmental history, parenting self-efficacy, child age, child sex, parental relationship status, parenting self-efficacy) that best predict father involvement among a sample (N=110) of non-resident African American fathers. Through qualitative methods, this study also explored how the predictors identified as statistically significant contributed to (i.e., support and/or impede) father involvement using a subsample of participants (N=8) from the quantitative phase. This poster presentation will present the results of this study, emphasizing those findings which underscored developmental history—or the father's relationship with his own father—as an important factor in understanding the parenting behaviors of non-resident African American fathers. Through this presentation, Research Week attendees will realize the sobering challenges these men face in overcoming past childhood trauma, internal struggles, breaking generational cycles of fatherlessness, and meeting the demands of fatherhood. The need for therapeutic and mental health interventions that are designed to assist non-resident African American fathers with addressing the emotional pain and trauma that often impedes their involvement with their children will be discussed and implications for policy, practice, and research will be offered.

Mindfulness Polarizes Certainty in Moral Decisions more for Impersonal than for Personal Dilemmas

Presenter's Name: Imer Arnautovic
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Imer Arnautovic, Lloyd Ren Sloan, Amanda ElBassiouny

Background: State mindfulness may reduce detailed, emotionally constrained, cognitive judgment through several possible alternative processes. (Chambers, Lo, & Allen, 2008; Ortner, Kilner, & Zelazo, 2007; Shapiro, Jazaieri, & Goldin, 2012). The moral judgment literature has shown that individuals are less likely to sacrifice one person for a group in emotionally salient personal dilemmas, than in impersonal dilemmas (Greene et al., 2004, 2001). The literature in certainty suggests that certainty can be increased by considering the completeness of information, as well as merely perceiving that one has processed information to a great extent (Barden & Petty, 2008; Rucker, Petty, & Brinol, 2008). Would mindfulness inductions (state mindfulness) polarize participants' certainty in making decisions to - remotely versus physically - sacrifice one person to save an entire group? **Methods:** Ninety-seven mindfully induced (versus not) undergraduates made moral dilemma choices requiring deadly personal versus impersonal action and indicated their decisional certainty and morality judgments. **Results:** Participants showed that they were less willing to sacrifice another to save groups in personal, versus impersonal, deadly dilemmas. This effect on certainty judgments was strongly polarized by the mindfulness induction wherein participants were much more certain of impersonal dilemma choices and much less certain of personal dilemma decisions than in the control condition. **Conclusion: S**tate mindfulness may moderate nuanced cognitive processing of moral content.

Effects of Mindfulness, Life Satisfaction, and Stress on Physical Health amongst Minority Populations

Presenter's Name: Vanessa Battiste
Classification: Graduate Student
Presentation Type: Poster Presentation

This presentation specifically aims to investigate three potential protective factors that may affect physical health amongst minority populations: mindfulness, life satisfaction, and stress levels. The presentation will explore the effects of mindfulness, life satisfaction, and stress on physical health. The present research has the potential to assist in building the current body of knowledge by exploring the usefulness of mindfulness and life satisfaction on health outcomes amongst an ethnically diverse population. Providing an outlook on the effects of mindfulness, life satisfaction, and stress levels on physical health, will contribute to advancing information on protective and risk factors that affect the quality of life amongst minority ethnic populations.

Do Washington D.C. Residents Receive Fewer WMATA Metrorail Benefits than Suburban Commuters While Paying More of the Cost?

Presenter's Name: Jasmine Boatner
Classification: Graduate Student
Presentation Type: Poster Presentation

WMATA Metrorail ridership has been steadily declining in recent years. Although ridership has decreased, operating costs have not. This budget imbalance has led to increased jurisdictional subsidy support, with Washington D.C.

paying the brunt. With D.C. Residents paying more taxes for the Metrorail, do they also receive more benefits from the Metrorail system? The data reveals WMATA Metrorail demand does not exhibit perfect price inelasticity, indicating Metrorail rides are not essential goods. Furthermore, survey data reveals significant deviations between expected ride time and actual ride time, with the percent deviation decreasing with miles. This indicates Metrorail time savings could be overstated for short trips. For District residents who commute short distances, alternative modes of transportation might be more cost effective and faster than WMATA Metrorail.

The Quality of Mental Healthcare on Historically Black University Campuses: A Web-based Comparative Study

Presenter's Name: Amanda Bonam
Classification: Undergraduate Student
Presentation Type: Poster Presentation

The practice of seeking professional mental healthcare has long been stigmatized and avoided in the African-American community. The aim of this study was to determine the quality of the mental healthcare services provided through university counseling centers to historically Black college and university students. This research compared the type and quality of on-campus counseling center services offered at four predominantly white universities to those offered at four historically Black universities by analyzing each university's counseling center website according to standards set out by a 2012 college survey report on mental health by the National Alliance on Mental Health. The study concluded that the types and quality of mental healthcare services at predominantly white universities were superior to those offered on historically Black college and university campuses. Future research should explore ways in which mental health outreach can be increased and better targeted to Black university students.

Baby Hair And Afros: A Meta-Analysis Of The Relationship Between Hair And Self-Esteem In African American Women

Presenter's Name: Jaedyn Bonner
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Background: Self-perception and body image are primary contributors to one's self-esteem. Aspects such as skin complexion, physical features, and even hair are deemed as factors that play a role in self-perception. A previous study entitled, "I Am Not My Hair: Self-Esteem And Hair Politics Among African American Women", shows a relationship between hair and self-esteem in African American women, through a critical analysis of literature related to this topic. **Methods:** This study is a continuation of the findings of the previous study's literature. Through the method of a meta-analysis of the statistical data presented in the literature, the relationship between hair and self-esteem in African American women will be further supported. **Results:** It is hypothesized that the results of the meta-analysis of the statistical data presented in the previous study will be consistent with the study's conclusion, further suggesting that a relationship between hair and self-esteem in African American women is present, and therefore should be a topic of research interest. **Conclusion:** It is hypothesized that the conclusion of this study will support the relationship of interest, and that these findings will spark further conversation and research regarding this topic. A hopeful outcome of this study is a positive influence on Black women's self-esteem.

Who Benefits from Charter Schools in DC?

Presenter's Name: Francisco Brady
Classification: Undergraduate Student
Presentation Type: Oral Presentation

The aim of this research is to determine which populations are directly benefiting from the increase in educational choice in the form of Public Charter Schools (PCS) in the District of Columbia. Since 2012, the DC Public Charter School Board has approved 12 new charter schools, and three in 2015 alone. The rapid expansion of Charter Schools in the District calls for serious research on the efficacy of the schools and an examination of the populations they serve. Our research aims to investigate where the enrollment base is located in relation to these charter schools, and whether they reflect the demography of the area in which they are located. Comparisons will be made with Traditional Public School demographics, as well as comparing achievement metrics, home addresses will be used to determine where children are coming from and how far they travel for school. To achieve this we have requested access to the Office of the State Superintendent of Education Statewide Longitudinal Education Data Set. Combining this information with demographic and income data from DC government, we can analyze both residential and educational patterns in DC neighborhoods. These results have implications on self-sorting of students and preferences

for or against their Traditional Public School options, when given the choice to attend a PCS. Demographics in DC are changing rapidly, pushing out lower income and minority residents, our research aims to answer the question: Are PCSs creating segregation in the DC School system? And what are the effects of this population sorting?

Socialization of Ethnicity

Presenter's Name: Angela Carter
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Socialization factors act as different lenses through which people perceive themselves. Sociological forces gradually mold identity thus causing it to gravitate further away from phenotypic objectivity. In parallel of archival and current data shows an elevation of the importance that socializing factors such as class, race, and education has on development of identity. Ethno-centered demographic questions allow people to self ascribe to a particular race. Often racial identity reflects how a group is perceived by society. Underlying socializing factors could contribute to connotative disparities surrounding particular ethnicities. Thus, studies of the influence of these factors may help in understanding the identification process of ethnicity. The study evaluated possible contributing factors of the self-descriptive terms people of African descent employ. Demographic variables were utilized in a multinomial regression analysis to predict the sum of ethnic labels. Two hundred and fifty-six female students completed demographic and ethnic labeling questions. The research engaged a multilevel discussion of the paradigms of socialization that contribute to the ethnic identification process of people of African decent choosing to self-identify with the option of African- American instead of Black.

Physical Fitness and Health in Overweight (African American) Women

Presenter's Name: Amara Chukwunenye
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Keri Kirk, Denee Mwendwa

Background: Many women believe that to be physically fit is to be thin or to fall into their pre-designated health bracket. The purpose of this paper is to challenge these socially constructed positions with regards to women's health (specifically African American women) when it comes to weight and physical fitness. This paper examines SES factors, history of African American health pertaining to food choices and generational obesity. **Methods & Aims:** Through secondary research, scholarly articles, and selected social media posts, this paper aims to show that despite correlations between health and SES factors which support that women cannot be overweight and healthy, it is in fact possible that a woman can be overweight and still be physically healthy. A woman does not have to be thin to be happy and healthy. **Results:** Scholarly reports are noticing that some overweight black women see themselves differently from what society portrays as the unattractive, unhealthy overweight woman. There is also an uprising of positive social media posts concerning overweight healthy women but there is still a huge concern discussed in scholarly reports with the fact that overweight women pose a risk to their health in the long-term. **Conclusion:** Further discussion and research is needed on this topic because there is a lack of discussion on physically active and healthy overweight women. It would be beneficial for future researchers to analyze the long term health of physically active and overweight women along with other factors that lead to them being healthy.

Frazier, Moynihan and The Negro Family

Presenter's Name: Shannon Coombs
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Despite the past research on the The Negro Family: A Case for National Action by Daniel Patrick Moynihan little has been studied about the author's influences in deeming black family matriarchy as "pathological." The overall image that emerges from mainstream media is that Moynihan was the originator of the matriarchy crisis theory. This study recovers the forerunner of black family and matriarchy criticism, renowned sociologist E. Franklin Frazier. Upon examination of Frazier's works, it becomes clear that the pioneer of studying African American social life held a similar conclusion of black matriarchal family pathology. In showing the connection between Daniel Patrick Moynihan and E. Franklin Frazier, this research highlights the forgotten impact of Frazier's legacy on social and political thought.

African Women Judges in International Courts: Internationalizing the Domestic?

Presenter's Name: Josephine Dawuni
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

A growing number of African women have been serving on international tribunals as judges. To date, five African women have served as judges at the International Criminal Court (ICC). The ICC has been hailed for it's near gender parity on the bench, a novel development in international courts. At the regional level, the African Court on Human and Peoples' Rights (AfCHPR) based in Arusha Tanzania, appointed a former Supreme Court judge from Ghana, Justice Sophia Akuffo as the first female President of the Court in 2006. Yet, as at December 2015, there are only two women out of a total of nine judges on the AfCHPR, a situation which does not reflect the legal stipulation for a gender balanced court as provided for in the Protocol to the African Charter on Human Rights on the Rights of Women (the Maputo Protocol). This paper seeks to analyze these developments of African women "peace-brokers" in their roles as judges. Further, it investigates if, and how the presence of these women judges are impacting both domestic and international courts they serve on.

The Troublesome Road: Educational Outcomes for Children in Foster Care

Presenter's Name: Audrey Devost
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Nere Ayu

Foster care is defined as a system in which an adolescent has been placed into a group home, or private home of a state-certified caregiver, the placement of the adolescent is usually arranged through the government or a social-service agency. Children within this system face unbelievable challenges, beginning with being pulled away from an unsafe living situation and growing up separate from their family. According to the United States Department of Education, approximately 400,000 children and youth are in foster care at any given time. Some foster children move from house to house as they grow up, which sometimes requires them to change schools. This makes it hard for kids to stay on track with their general education. National research shows that children in foster care are at high-risk of dropping out of school and are unlikely to attend or graduate from college. However, a positive K-12 education experience has the potential to be a powerful counterweight to the abuse, neglect, separation, and other barriers these students experience. In light of these observations, the present exploratory study has two central aims: 1) to examine barriers (i.e., frequently changing households and schools) that children and adolescents in the foster care system face that could influence their educational experience; and 2) to investigate the impact of novel educational environments on psychosocial adjustment among these youth. **Methods:** Approximately 70 subjects will be selected from a larger study that sought to examine the roles of psychosocially toxic environments and parental socialization practices on the psychological and social adjustment of youth in foster care. Each participant completed a self-report questionnaire that contained variables of interest; and they also participated in small discussion groups that provided qualitative data. Both quantitative and qualitative analyses will be used to address the central aims of the study. **Conclusions:** Results will be discussed with the long term goal of identifying possible solutions toward improving educational outcomes for foster children.

Struggle to Democracy in contemporary Russia

Presenter's Name: Anthony Driver
Classification: Undergraduate Student
Presentation Type: Oral Presentation

To examine the struggles and challenges Russia has faced from its communist government to democracy. Particularly in comparison to the United States. I want to examine constitutional differences and the execution of government, with special attention paid to voter id laws, voter turnout, and voter disenfranchisement. I also want to look at diplomatic relations between the US and Russia after the 1980 & 1984 olympics where more than 30 nations boycotted the summer games. What role did democracy play in this, and what voice did the citizens of Russia and the US have in this decision.

What Does She Have to Do With It? The Role of Mothers and Grandmothers in the Involvement of Non-Resident African American Fathers in the Lives of Their Children

Presenter's Name: Shana Edwards
Classification: Graduate Student
Presentation Type: Poster Presentation

The number of African American children living without their biological fathers is steadily increasing. However, our knowledge of the involvement of African American non-resident fathers in the lives of their children is severely lacking. Given the drastic changes that have occurred within the American family structure since the 1960s and the rising number of non-resident father families in the African American community, studies are needed that assist social work practitioners and policymakers with understanding the lived experiences of these men and the various factors that both positively and negatively influence their involvement with their children. The purpose of this mixed methods study was to determine, through quantitative methods, those factors (developmental history, parenting self-efficacy, child age, child sex, parental relationship status, parenting self-efficacy) that best predict father involvement among a sample (N=110) of non-resident African American fathers. Through qualitative methods, this study also explored how the predictors identified as statistically significant contributed to (i.e., support and/or impede) father involvement using a subsample of participants (N=8) from the quantitative phase. This poster presentation will present the results of this study, emphasizing those findings which underscored parental relationship status as a significant predictor of father involvement. Through presentation and discussion of the lived experiences of these men, Research Week attendees will gain a more in-depth understanding of the role of women, specifically mothers and grandmothers, in the promotion of positive father involvement. Implications for policy, practice, and research will also be presented.

The Effects of Culture on Persistence in STEM education for African-American High School Students

Presenter's Name: Tierra Ellis
Classification: Graduate Student
Presentation Type: Poster Presentation

Culture is essential to all aspects of life. Culture relates to one's consciousness of self, values, norms, language, communication, beliefs, attitudes, practices, time consciousness, and appearance; it guides our learning and behavior. Formal education settings were not initially intended to serve culturally diverse students (Colbert, 2010). This lack of attention to cultural diversity may have led to disproportionate educational outcomes for racial/ethnic minority students, particularly in STEM fields. Exposure to STEM in a culturally responsive way may foster persistence in African-American students towards the environmental sciences. The NOAA Center for Atmospheric Sciences (NCAS) partners with District of Columbia public schools through the Adopt-A-School to engage high school students in science activities to foster interest in STEM and increase the likelihood of these students pursuing STEM fields in college. This literature review will examine African-American students' persistence in STEM fields. The goal of this new culturally responsive approach is to enhance the current Adopt-A-School intervention for students as they pursue and persist in STEM-related fields. Theoretical frameworks will be presented to guide the discussion that addresses the importance of incorporating a culturally responsive perspective to broaden participation in STEM serving underrepresented minorities.

Behavioral Assessment in a rural community in Lagos State Nigeria – A pilot study.

Presenter's Name: Nkechi Enwerem
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Coauthors: Priscilla Okunji

Background: Chronic disease such as hypertension, diabetes are often preventable by adopting healthy life styles. Early detection, improved diet, exercise, tobacco and alcohol cessation are behavioral interventions that can be used to reduce the risk of these chronic diseases. About 415 million people have diabetes in the world. In Nigeria, more than 1.56 million cases of diabetes were reported in adult population of 20-79 years in 2015. **Objective:** The goal of this study is to screen the lifestyle behavior of an adult population in a rural community in Lagos state, Nigeria. **Methods:** A community based descriptive cross-sectional study. Thirty adults 20 years and above were recruited from a free medical outreach program organized for the community. Data were collected using a validated structured Behavioral Assessment Questionnaire. The model used for this study is the Health Promotion Model. Data collected were analyzed using the IBM SPSS version 22 statistical software program. **Results:** 87 % exercise at least twice a week. 90 % include fiber in their diet. 97 % have reduced their consumption of alcohol. 90% have reduced their intake of sweets. 80 % read the food labels. 67 % avoid fried foods. 83 % consume low fat diet. 83% attend annual health check-ups. **Conclusion:** Our studies showed that over 70% of the respondents are at the Maintenance state-of change. The remaining 30 % are at the Pre-contemplation stage, where respondents have no

intention to change and often have no awareness that there may be reasons to consider behavior change.

African-American Students' Human Papillomavirus (HPV) Vaccination Decisions

Presenter's Name: Janel M. Gill
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Cassandra Shivers, Angela P. Cole-Dixon

Background: HPV is the most commonly contracted sexually transmitted infection in the US. HPV infection is the leading cause of cervical cancer (CDC, 2015). African-American women are more likely to die from cervical cancer than their Caucasian counterparts (Vidal, Smith, Valea, Bentley, Gradison, Yarnall, ... & Hoyo, 2014). There are three HPV vaccines available: Cervarix, Gardasil and Gardasil-9. Gardasil-9 was developed in response to recent findings (Vidal et al., 2014) that show Gardasil and Cervarix do not protect against the types of cervical-cancer causing HPV commonly contracted by African Americans. Given the recent availability of this more effective vaccine, needed are investigations of the factors that influence African-Americans' HPV vaccination decisions. This study addresses the following research question: What are the roles of cognitive appraisals and individual differences in need for closure in African-American students' HPV vaccination decisions? **Methods:** Participants were African-American Howard University undergraduates who completed electronic surveys including questions about vaccination status; self-efficacy; cognitive appraisals of the vaccine's costs, benefits and efficaciousness; potential barriers to vaccination; comfort with vaccines; demographics; and Kruglanski's Need for Closure (NFC) scale. **Results:** Data from 116 female participants were subjected to a sequential multinomial logistic regression. It revealed significant effects of NFC, efficacy beliefs and cost-benefit analysis on vaccination status after controlling for comfort with vaccines and potential vaccination barriers. **Conclusions:** Our data suggest need for closure, efficacy beliefs and cost-benefit analysis are factors African-American female students' use to make HPV vaccination decisions. Implications of these significant findings will be addressed in the proposed presentation.

Some Things Are Never Forgotten

Presenter's Name: Jerald Gooden
Classification: Undergraduate Student
Presentation Type: Oral Presentation

The film Zulu Love Letter follows the life of Thandeka (played by Pamela Nomvete Marimbe) and the aftermath of her witnessing a police execution. Following this Thandeka, who is pregnant, is beaten so badly that her unborn daughter is ultimately permanently deaf and mute. The majority of the story takes place in the present time where Thandeka is a journalist with writer's block who can't shake her personal demons, nor the gnawing sense of guilt that alienates her from her family (California Newsreel). I believe that Zulu Love Letter effectively shows the power that trauma can hold over a person's life through Thandi and Me'tao's struggles within a modern South African context. With the thesis as the foundation, this paper will examine the following three research questions:

A. How significant of an impact does trauma induced from the apartheid era have on the modern Black South African?

B. How successful has the police force transitioned from apartheid to modern times?

C. How impactful was the closure following the repeal of apartheid to the affected Black communities?

I conclude that the TRC had very little impact on the process of reconciliation, especially within the context of the film. The completion of this paper made me realize how much social and political commentary Zulu Love Letter was able to produce within a one hour and 40 minute movie about two mothers and their daughters. Some could argue that film's viewpoints are hypercritical and grim, but it would be difficult to argue with the film's potency.

Promoting Non-Resident Black Father Involvement in Schools, Increasing Black Student Achievement, and Advancing Equity in Education

Presenter's Name: Brittanee Gourdine
Classification: Graduate Student
Presentation Type: Poster Presentation

While non-resident father households are a growing phenomenon within American culture, this particular form of family is most prevalent among African Americans. Today,

more than half of all African American children live without their biological fathers (U.S. Census Bureau, 2012; as cited in The White House, 2012). Teacher education programs must be prepared to respond to the sweeping changes that have occurred within the structure of African American and American families overtime by designing courses that provide knowledge on how to engage both resident and non-resident parents. Physical absence from the home should not equate to non-resident parents being overlooked or excluded from the educational process. While many Black fathers may not be physically present within the homes of their children, their presence and active participation within schools remains critical to their academic success. Research suggests that father involvement in schools has a unique positive influence on children's school outcomes above and beyond that of mothers (Nord, Brimhall, and West, 1997). Therefore, to promote the academic success of Black children, greater efforts need to be made on the part of the educational system and teacher preparation programs to encourage and support the involvement of non-resident Black fathers in the educational process. This poster presentation is designed to make the case for the promotion of increased non-resident Black father involvement in schools and will offer strategies and recommendations for how to effectively engage these men in the education of their children. Implications for Black student achievement and equity in education will also be presented.

Family Demographics and Approaches to the Creative Process

Presenter's Name: Bre'Shae Grandberry
Classification: Undergraduate Student
Presentation Type: Poster Presentation

This study is designed to examine the relationship between family demographics and the approaches (planned/ associative) to the creative process. The demographics were clustered into five subgroups: 1. parent education 2. family income 3. socioeconomic status 4. community type (rural/ urban) 5. previous art experience. A demographic questionnaire was used to obtain the aforementioned measures. The creative process was measured by the Approaches Creativity Process Questionnaire (ACPQ). We hypothesized that people with low levels of parent education, family income, socioeconomic status, previous art experience, and who live in rural communities will all have similar approaches (planned) to the creative process. Those with high levels of parent education, family income, socioeconomic status, previous art experience, and those who live in urban communities are anticipated to show similar approaches (associative) to the creative process. Focusing on family demographics in relations to creative processes in this study enhanced our understanding of how and why people differ in the creative processes, adding to the growing body of literature.

The Influence of Alcohol Use and Religious and Spiritual Struggle on the Usefulness of Spirituality in Helping to Persevere at a Challenging Task

Presenter's Name: Alexis Grant
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Research has shown that adolescents (ages 18-25) use substances (alcohol, tobacco, marijuana, and illicit drugs) more than any other group in the United States (SAMHSA, 2013). For decades, it has been well documented that religion serves as a protective factor against drinking behaviors (Brown, Salsman, Bretchng, and Carlson, 2007; Cole, 2015; Gomes, de Andrade, Izbicki, Almeida, & de Oliveira, 2013; Fletcher & Kumar, 2014). However, the various ways in which religion functions as a protective factor is in need of further investigation. While religion does help to combat substance use behaviors, adolescents tend to experience more religious/ spiritual struggle than the general population. It is important to explore the interaction of these phenomena (religiosity/ spirituality, degree of alcohol use, and spiritual struggle). This study investigates this relationship using an experimental framework with an African American sample. 213 participants were presented with a spiritual prime, and then were presented with an unsolvable anagram task. The hypotheses were that participants who received a spiritual prime would persist longer at an unsolvable anagram task than those who did not receive the prime; participants who experienced somewhat to a lot of spiritual struggle would persist for a shorter amount of time than those who were experiencing a little bit of spiritual struggle; participants who were at low risk of alcohol abuse would persist longer than those who are at medium to high risk; those who were at a high risk for substance abuse will also experience a high amount of spiritual struggle.

Male Teachers in an Urban Environment: Efficacy and Commitment and the relationship with Preparation Pathways.

Presenter's Name: Oral Grant
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Kimberley Freeman, Ph.D

Unlike other professions (i.e., medicine, law, and electrician), there are many different pathways (traditional versus alternative routes) for prospective males to enter the teaching profession. Teacher preparation programs require extensive research attention in order to standardize the definition of teacher quality. Additionally, teacher preparation programs can influence male teachers' disposition in the field. Self-efficacy and commitment are factors that should be considered to address the teaching abilities of perspective male teachers in order to develop effective teacher preparation. These teacher characteristics may be as important as teacher content knowledge and instructional practices. The purpose of this study is to employ a quantitative cross sectional survey, which is intended to gain an overall understanding of the level of teacher commitment and teacher efficacy of males within the teaching profession and whether these two constructs are influenced by the teacher education program/ pathway taken by these teachers. The sample includes male teachers that have taught in New York City Public schools. Participants were administered the New York Teacher Characteristics Survey which encompass a self-efficacy and teacher commitment questionnaire. This study illuminates the relationship between teacher preparation, teacher efficacy, and teacher commitment for males in the teaching profession.

A Restorative Yoga Pilot Study for African-American Breast Cancer Survivors

Presenter's Name: Danyella Greene, M.S.
Classification: Graduate Student
Presentation Type: Poster Presentation

BACKGROUND: Data support that yoga is helpful in ameliorating symptoms among cancer survivors. However, compared to Caucasians, African Americans (AAs) are less likely to be yoga users. Study goals were to: 1) determine the feasibility of implementing an 8-week restorative yoga (RY) intervention among AA breast cancer survivors (AABC), 2) examine group differences in study outcomes at follow-up, 3) examine participant yoga program satisfaction. **METHODS:** 33 AABC were randomized to a restorative yoga group (n=14, mean age = 54.9) or a waitlist control group (n=12, mean age = 52.6). Yoga group participants were requested to attend 8 weekly 75-minute RY classes. All participants completed questionnaire assessments (demographic and psychosocial) at baseline and 8-week follow-up. Participant satisfaction was assessed at follow-up. **RESULTS:** Participants in the yoga group reported significantly lower depression scores (M=4.78,SD=3.56) compared to the control group (M=6.91,SD=5.86) ($p<.01$). There were no group differences in fatigue, sleep or perceived stress. After completing the study, yoga participants rated the program as quite useful (M=6.5, SD=.97) (range 1 (not at all) to 7 (very). Average attendance of yoga participants was 61%. Qualitative data were reported highlighting benefits of the study as well as suggestions for future research. **CONCLUSION:** This preliminary data suggests potential benefits of restorative yoga among AABCS.

Is Pan- Africanism Still Alive in the Era of Globalization? Exploring the Case of Ethiopians and African- Americans in Washington DC?

Presenter's Name: Kamau Grimes
Classification: Graduate Student
Presentation Type: Oral Presentation

Background: Pan- Africanism, a concept first articulated by the African Diaspora in the first quarter of the twentieth century catalyzed the decolonization of Africa. In the United States this movement of intra-racial solidarity inspired many Black Americans to reject the term Negro replacing it with Afro-American. As a result, the millennial generation, irrespective of their personal affinities towards Africa, has grown up as African- Americans. Despite the historical successes of Pan-Africanism most Africans and African- Americans have not embraced a Pan African identity. Given the large African-American and African immigrant population, Washington DC is ideal for a case study inquiring into the viability of social, economic, and political Pan- Africanism. Over the last thirty years the Ethiopian community, the largest African immigrant community in DC, have become a visible group shaping the culture of the metropolitan area. Since 2013, Addis Ababa and Washington DC have been sister cities, so by highlighting Ethiopians and African- Americans the results will be useful for all African descendants. **Methods:** The researcher will use a qualitative approach incorporating archival data and participant observation. **Results:** Largely, the Ethiopian and African- American communities are not

Pan- African minded, although a small subculture of Pan-Africanism exists within both communities. **Conclusion:** As successive generations of Ethiopians are born here the cultural gap will shrink between the two groups, opening the **p**otential for more Pan- African cooperation.

Improving health and behavioral health care outcomes for persons who engage in sex work.

Presenter's Name: Jamal Hailey
Classification: Graduate Student
Presentation Type: Poster Presentation

The topic of sex, and subsequently sex work is a taboo area of discussion in the United States. Albeit taboo, sex and sex work services are intricately interwoven in individuals' personal lives, as well as economical lives for many. Sex remains salient and is an underlying need behind the thoughts and decisions of many. These thoughts often guide individuals' interactions with others and shape how we view the world. For many people, engaging in sex work (defined by the World Health organization, 2002 as the "provision of sexual services for money or goods") is a sustainable, and key source of economic power. However, the legality of sex work in some areas of the U.S. forces sex work underground. This hidden exchange creates a culture of secrecy and triggers feelings of shame (the feeling of worthlessness, powerlessness and exposure) around sex work. These feelings of shame are exacerbated as sex workers attempt to engage in health care systems and are confronted with microaggressions from clinicians and other behavioral health workers. Microaggressions are thought to have an adverse impact on clients in healthcare settings; disrupting the therapeutic alliance which is central to positive treatment outcomes (Owen, et al, 2014). Although clinicians and other behavioral health workers strive to be open to all forms of consensual sexual expression, the shadow of cultural shame and judgment around individuals who engage in sex work is impossible to avoid completely. Too often providers may be unaware of how their personal preferences, practices, and politics around sex work may impact the services they provide. To mitigate these feelings of shame and facilitate access to services and improve treatment outcomes, awareness and competence are needed to reframe how clinicians and other behavioral health workers engage this vulnerable population.

Arab Americans' Representation in American News Media

Presenter's Name: Noor Hameededdin
Classification: Graduate Student
Presentation Type: Oral Presentation

The American news media has too often resorted to using stereotypes to represent Arabs. This representation affects not only Arabs but also Arab Americans in the United States. In modern societies, media presentation is an essential tool to build national identity and include all diverse people within the social and national fabric. This study investigates how Arab Americans perceive their representation in the American news outlets and how it may affect them. In addition, the research looks at the way Arab Americans see the coverage of Arab countries in U.S. news media. It also explores other sources from which Arab Americans generally acquire news and how they evaluate such sources. Through in-depth interviews with thirteen adult Arab Americans from the Washington, D.C., metropolitan area who consume American news media, the study finds that Arab Americans are aware of their limited representation in Americans news and that news from Arab regions has been utilized to portray Arab American citizens in the same negative stereotypical light to the general public. It also reveals, by common consent, that American news media perceivably marginalizes Arab Americans not only in covering stories but also in portraying their point of view about stories from Arab regions. Research participants believe that collaborative efforts between Arab Americans, media organizations, and policymakers would provide adequate media representation not only of Arab Americans but also other marginalized American ethnic groups in the United States.

Keywords: News media, media representation, minorities, Arab Americans.

The Role of Vaccine Efficacy in Individuals' Ebola Vaccination Intentions

Presenter's Name: Jillian Hamilton
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Cassandra A. Shivers, Janel M. Gill, Angela P. Cole Dixon

Background: Ebola has been referred to as one of the world's most deadly pathogens by the World Health Organization's Director General Margaret Chan. This is evidenced by the

thousands of cases and deaths that have occurred in Guinea, Sierra Leone, and Liberia alone -- the three countries hardest hit by the outbreak. Containing the outbreak became top priority, leading to accelerated Ebola vaccine development. Potential vaccines are currently undergoing human clinical trials. Those being testing in Guinea have shown great promise, suggesting that an Ebola vaccine may become available soon. Given the danger posed by this health threat, it is important to understand what factors will influence people to get vaccinated. This study examines the effect of people's beliefs about a potential vaccine's effectiveness against Ebola (i.e., vaccine efficacy perceptions) on their vaccination intentions, should a vaccine become available. **Method:** Participants will be Howard University undergraduates (data collection is underway). Participants will complete an electronic survey that includes questions about their Ebola vaccination intentions and vaccine efficacy perceptions. **Results:** A simple linear regression will be used to examine the effect of vaccine efficacy perceptions on individuals' Ebola vaccination intentions. **Conclusions**: Previous health behavior research has identified vaccine efficacy perceptions as an important determinant of individuals' willingness to be vaccinated against various health threats. It is expected that the results of this study will be consistent with previous findings and show that more favorable perceptions of the vaccine's efficacy lead to greater intentions to be vaccinated, once a vaccine becomes available.

The Influence of Perceived Discrimination on Emotional Coping

Presenter's Name: Chrycka Harper
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Aaron Dass, Christian Mallett, Nomi-Kaie Bennett, Monique Major, Denee Mwendwa, Jules Harrell

Research shows that racism and discrimination negatively affect the health of ethnic minorities in the Unites States. Higher levels of perceived discrimination are linked to increased risk of negative health outcomes, such as cardiovascular disease, cancer, and depression (DeLilly 2012; Monk 2015). Upon examining emotional states in an African American sample, Mwendwa et al. (2013) found an association between experienced hostility and inflammatory markers of cardiovascular disease. In order to cope with discrimination, African Americans use emotion to adapt to their environment and influence how they perceive their racialized experiences over time (Winston, 2009; Mangum, 2010; Utsey et al., 2000; Jones, 2003). However, the literature does not show how levels of perceived discrimination influence African Americans' use of emotion to adapt and cope. The purpose of this proposed study is to examine the relationship between perceived discrimination and autobiographical memories of race. The study hypothesizes that there is an association between higher levels of perceived discrimination and emotional recall of negative memories of race. The methodology would include a measure of participant heart rate variability and blood pressure, a visualization exercise of emotionally-charged experiences, and the administration of the Jackson Heart Study Discrimination instrument. Data analysis will include qualitative coding. Potential findings from this study may inform how researchers and practitioners help patients process and emotionally cope with extreme levels of discrimination in a racialized society. Understanding behaviors of emotional coping can lead to better physical and mental health outcomes.

Exploration in the Day of a Digital Footprint: A Critical Review of "Digital Footprint: Assessing Risk & Impact" by the Department of Homeland Security

Presenter's Name: Kimberly Harper
Classification: Graduate Student
Presentation Type: Oral Presentation

Background: This paper explores the trail of a digital footprint's day. A digital footprint is at risk to online criminal activity. Cyber crime has been identified as one of the biggest threats to the national security of the United States. The Department of Homeland Security (DHS) is charged with securing the nation from threats and provides advisory on protecting the digital footprint in the document, "Digital Footprint: Assessing Risk & Impact." A critical review of the document will be provided. **Methods:** Provide a detailed trail of one day of a digital footprint against a critical analysis of the DHS advisory, "Digital Footprint: Assessing Risk & Impact." The trail of the digital footprint will be used to analyze the documents procedures and to predict outcome and results. **Results:** The results present detailed analysis and evaluation on the content and concepts delivered by DHS advisory. Strengths and weaknesses of the documents text are reviewed and recommendations are provided where necessary. **Conclusions:** The trail of the digital footprint can be used by nefarious cyber actors in cyber crime activities.

This paper has sought to deliver a detailed critical analysis on DHS's procedures for mitigating risk and threats to the digital footprint. Recommendations have been provided to create a more secure online experience.

New Year, New Me

Presenter's Name: Faith Harrison
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Oftentimes, African-Americans in history have been thought of as victims of their times. But this rhetoric stems not only from the obvious factor of overt racism and societal exclusion, but also from deeper hindrances such the unavailability of resources, both antidotal and technological. Science has advanced immeasurably in the past decades. If one were to go back to an era such as the Great Migration, it could be concluded that, had those people lived in these times, they're opportunities could've been greatly expanded. The Cobb Collection, the only skeletal collection presiding at an HBCU, contains individuals born from the year 1860 to 1959. A great bit of information is available about some of the individuals, making a present-day adaptation of their life quite feasible. To draft these biographical, futuristic sketches, both qualitative and quantitative methods of research will be applied. Firstly, the familial, geographical, and medical history of each individual selected will be gathered and reviewed. Additionally, current medical and societal trends related to the information collected will be explored and recorded. Lastly, all data gathered will be compiled to generate realistic, contemporary sketches of the lives of the sample group.

Spiritual Pathways to Healing: A Culturally Sensitive Approach to Addressing Racial Violence Among People of Color

Presenter's Name: Nichole Hawkins
Classification: Graduate Student
Presentation Type: Oral Presentation

Recent deaths related to police brutality and racism has magnified the continual presence of covert and overt racism in the United States. The brutal circumstances surrounding the deaths of Eric Garner, Michael Brown and Sandra Bland have provoked a vast proliferation of emotional responses including; anger, rage, sadness, grief and fear. These traumatic events have re-opened the psychological wounds rooted in the historical context of racism in America. Additionally, the continual vicarious exposure to racially related death has had a traumatic impact on people of color. According to Carter, racial trauma can be defined as the physical and psychological symptoms that people of color experience after exposure to stressful experiences of racism (Carter, 2007). These symptoms include; hypervigilance, headaches, insomnia, body aches, memory difficulty, self-blame, confusion and shame (Bryant-Davis; Ocampo, 2005; Carter 2007, Carlson, 1997; Helms, Nicolas, &Green 2010). The repetitive exposure of people of color to racially related death disqualifies their experiences from being categorized as mere post-traumatic stress. The ongoing traumatic exposure can evoke more chronic states of psychological injury that may be more resistant to traditional treatment. The direct witnessing or vicarious exposure to racial trauma can have an existential impact on individuals by abasing their identity, self-efficacy and sense of purpose. Those desirous of impacting positive change in the negative cycle of racial violence must take into consideration the covert factors that contribute to its prevalence as well as advance a holistic treatment modality which may include spirituality as a key component. For decades, spirituality has been a sector least explored in the field of psychology due to it's unclear definition. However, in recent years researchers have defined spirituality as the individual's feelings of connectedness to self, the human community and a higher power or force (Keller et al., 2013). According to Gillum, Sullivan & Bybee (2006), spirituality can have a protective impact on individuals following exposure to violent traumatic events. Additionally, research suggests that spirituality results in greater psychological well-being, increased self-esteem, life satisfaction and decreased depression (Gillium et al., 2006). In a study conducted on inmates, prisoners that reported greater levels of positive religious coping, reported fewer symptoms of depression and were less likely to report a desire for a hastened death (Allen et al., 2013). Spirituality has been used as a tool for socialization and coping amongst African Americans. Many spiritually-based practices have been a source of resiliency for people of color including; prayer, praise, worship, meditation, forgiveness and confession. Incorporating spirituality would provide a culturally sensitive approach that will address a circumference of factors that contribute to the cycle of racial violence. Utilizing spirituality in the therapeutic process may better provide people of color with a means of coping with systematic racism that continues to threaten their sense of identity, purpose and overall well-being. This study hypothesizes that individual's engaged in spiritually-based group therapy will report less symptoms of

racial trauma. This study also hypothesizes that individuals engaged in spiritually based group therapy will have healthier self-esteem and sense of self-efficacy.

Cultural and Academic Socialization: The Effects of Parental Involvement on Student School Performance among African American Youth

Presenter's Name: Alysa Herrera Taylor
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Coauthors: Alysa Herrera Taylor, Kelli Hill, Debra D. Roberts

Background: Research suggests, parenting practices that fulfill adolescents' psychological needs of competence, autonomy, and relatedness, increase school engagement, which promotes positive adolescent outcomes (Wang & Sheikh-Khalil, 2014). A commonality found among African American families is the unique integration of cultural socialization as a form of home learning (Baker, 2013). Cultural socialization is used to prepare children to recognize how their race and ethnicity may influence how they are treated within the larger society. African American parents are more likely to engage their children in discussions about cultural heritage, and participate in cultural events compared to non-African American parents (Baker, 2013). When assessing academic achievement, it is important to examine how children's social emotional experiences aid in school investment and motivation (Blake & Darensbourg, 2013). The goal of this research study is to assess the influence of parental involvement on students' academic achievement, focusing on aspects of socialization. **Methods:** A pre-existing data set was used from a larger study designed to assess the direct and indirect effects of various factors, including cultural socialization, on youth outcomes. Data for this study were extracted to include a sample of approximately 100 elementary and middle school students who completed self-reported questionnaires that measured the variables of interest. **Results/Conclusion**: Preliminary findings suggest that cultural socialization is a significant predictor of outcome variables. Based on proposed analyses additional results will be discussed within the context of increasing our understanding of parental influence on student academic performance.

Black Towns and Settlements West of the Mississippi River, 1880-1935

Presenter's Name: Davlyn Hollie
Classification: Undergraduate Student
Presentation Type: Oral Presentation

The identification of black settlements in the United States had its prevalence before the Civil War. For three centuries, the coalition of African Americans in one state or town placement signified their use to create a community that promotes economic fulfillment and success. As further explained, when African Americans lived in a community setting, they were able to uplift the race and prosper. The purpose of this research paper is to examine the communal structure of Black towns settled west of the Mississippi and its influence on African American culture between 1880 and 1935. The sources used in this essay are secondary sources written by historians who have researched the popular black towns. Also included are primary sources such as newspaper articles, speeches, and journals. The primary sources are set in the following towns: Nicodemus and Hill City, Kansas; Langston City, Oklahoma; Boley, Oklahoma; and Allensworth, California. Many of these cities were selected because of their location and the existence of information successfully archived.

Love Me: Exploring the Relationship between Self Esteem and Social Media Usage

Presenter's Name: Chiamaka Ikpeze
Classification: Undergraduate Student
Presentation Type: Poster Presentation

This is an exploratory study investigating the effect of self esteem on social media usage. Other variables such as weight gain or loss, gender, hours spent studying, communication preference and hours spent watching television are also investigated. A distinction is made between online friends via Facebook and followers via Instagram and Twitter for significant reasons. No present sociological theory explains the difference in influence between having online friends versus online followers. Furthermore, further theory building based off the collaboration of social capital theory and social compensation theory may produce form this study. A nonexperimental survey research design was employed for this research study. The sample consisted of 1091 Howard University Students (n=1091). There were 415 males (38.2%) and 671 females (61.8%). In addition, all five classification levels were represented in the sample with the distribution as follows: freshman (n=219, 20.2%); sophomore (n=236,

21.8%); junior (n=324 29.9%), senior (n=266 24.6%) and graduate or professional students (n=38 3.5%). Systematic data collection and SPSS software were employed. Results found respondents with the lowest self-esteem index have the highest percentage of users who spend forty hours or more on social networking cites (19.1%) and a significant coefficient correlation of -.112. However, the variables "Hours Spent Studying," "Number of Social Networks Participate," "Number of Friends or Followers on Social Networking Sites" and "Communication Preference" all had greater standardized correlations to the dependent variable than the key independent variable.

The Effect of Confidence in Past Performance on Future Performance

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

Coauthors: Elizabeth Jenkins, Jamie Barden

Background: Research on stereotype threat has shown that cultural minorities may perform poorly when a negative group stereotype is activated prior to a performance (Aronson et al., 1999). Additionally, Clark and colleagues (2015) recently found that the activation of negative, self-relevant stereotypes after a task can also have a negative impact, in this case leading individuals to feel more certain that they performed poorly (i.e., stereotype validation). The current research hypothesized that confidence in one's perceived performance has an effect on future performance. **Methods**: To test this hypothesis, each participant completed two sets of difficult math questions. After the first math test, participants indicated whether their performance was strong or poor and how confident they were in that assessment. The second math test measured whether confidence in strong or poor performance had an impact on future performance. **Results**: Participants with high confidence in their strong performance on the first test performed better on the second test. Conversely, students with high confidence in their poor performance on the first test performed worse on the second test. However, participants with low confidence in their strong or poor performance on the pre-test did not perform significantly better or worse on the post-test. **Conclusion:** Overall, the data suggests that there is an effect of confidence in past performance on future performance. And this, expands our understanding of the meta-cognition of confidence on critical performance outcomes.

Depression, Adiposity, and Cognitive Functioning in African-American Men and Women

Presenter's Name: Victor Jones
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Olga Herren, Keri Kirk, Denee Mwendwa, Clive Callender, Alfonso Campbell

Background: African Americans bear a disproportionate burden of accelerated cognitive decline when compared to their ethnic counterparts. However, the mechanisms contributing to this disparity remain poorly understood. Although scarce, burgeoning literature has consistently recognized depression as a significant predictor of cognitive decline in African Americans. Obesity is an independent risk factor for cognitive decline and is a disease that also disproportionately impacts the African-American community. There are gender differences in the manifestation of depression in this population. In addition, African-American women are heavier than their male counterparts. However, there is scant literature examining if these differences impact cognitive functioning in African-American men and women in unique ways. Therefore, the current study examines the influence of depression and adiposity on cognitive functioning and determines if this relationship varies by gender. **Aims:** The current study attempted to address the following questions: 1) does dispositional depression predict cognitive functioning? 2) is the relationship between dispositional depressive qualities and cognitive functioning moderated by waist circumference (WC)? and 3) does this relationship differ between males and females? **Methods**:A community-based sample of 185 African Americans completed the Trail Making Test (processing speed, cognitive flexibility), Stroop Test (inhibition), Wisconsin Card Sorting Test (abstract reasoning, set shifting) and The NEO-Personality Inventory Revised. WC and blood pressure were also obtained. **Results:** Hierarchical regression analyses showed significant associations between dispositional depression and performance on the Trail Making Test A (TMT A) (B= .17, p=.02) and Stroop tests (B=-.24, p=.001) after controlling for age, gender, systolic blood pressure, and education. There were also significant interactions between WC and dispositional depression when only considering males, such that at a WC of 98 cm or above, greater dispositional depressive qualities were associated with poorer TMT A (B=1.00, p=.01) and Stroop performance (B= -1.03, p=.00). Results suggest that dispositional depression may be a risk factor for deficits in processing speed and cognitive inhibition in African Americans, particularly obese

males. **Conclusion**: Consideration of depressive dispositions should be included in assessing cognitive health and determining courses of treatment. In African-American men who report these qualities, research and practitioners alike must be mindful of the amplifying effect of adiposity on this relationship, especially in those who are obese.

Colorism Influences African Americans' Perceptions of Stereotypic Traits and Attractiveness

Presenter's Name: Adea Kelly
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Lloyd Sloan

Colorism within the African-American ethnicity has been shown to influence attitudes towards individuals varying in skin tone. This study consisted of 45 undergraduate students at Howard University with a mean age of approximately 20. Participants completed a questionnaire assessing their feelings and attitudes towards African American individuals varying in skin tone and estimated the traits those individuals possessed. Results from this study indicate that today's African American students do exhibit beliefs somewhat associated with old colorism notions, and that while lighter skinned individuals were rated as more attractive, their trait ratings were mostly less favorable than were those of darker skinned African Americans. The negative relationship between attractiveness and some inferred personal traits may suggest that modern colorism may be a product of more current cultural or media impacts and several alternatives are considered.

Under and Overrepresentation of African Americans: Subgroups of Juvenile and Criminal Justice System Involvement Among Child Welfare System Youth

Presenter's Name: Karen Kolivoski
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Coauthors: Jeffrey Shook, Sara Goodkind

Background: Research demonstrates a relationship between child welfare system (CWS) involvement and subsequent juvenile justice system (JJS) and criminal justice system (CJS) contact, all of which are disproportionately represented by African Americans. This study fills existing gaps by identifying subgroups related to JJS and CJS contact. Also addressed are predictors of group membership (e.g., demographics, child welfare characteristics, and experiences in mental health and drug and alcohol systems) and how these subgroups differ on race. **Methods:** Using administrative data from a CWS out-of-home placement sample of 794 individuals ages 12-22 in a large, urban county in Pennsylvania, group-based trajectory modeling was utilized to identify subgroups on JJS/CJS contact. Additional analyses examined differences between the groups and multinomial logistic regression examined predictors of JJS/CJS group membership. **Results:** We identified five subgroups with JJS/CJS contact: (1) No/Low (70.7%), (2) Early Age (5.9%), (3) Late Adolescent/Adult (7.9%), (4) Short-Term/High (7.8%), and (5) Chronically Involved (7.7%). A significant difference for race was found across groups ($p < .001$). The No/Low group had the highest proportion of Caucasians. The Chronically Involved group had the highest percentage of African Americans (86.9%). **Conclusions:** Results show that prevention and early intervention efforts need to be made to interrupt the pathway from the CWS to JJS and CJS, especially for African American youth. This study supports the need to better understand the heterogeneity of CWS youth as related to the JJS and CJS along with the need to address race, system involvement, and context in greater detail.

"Party and Bullshit": When Black Rage Meets Commodification

Presenter's Name: Ashley Lewis
Classification: Graduate Student
Presentation Type: Oral Presentation

Black rage, which is defined as the "uncontrollable rage" that results from Blacks' historic encounters with systematic racism, marginalization and oppression, is a phenomenon that has been discussed in great detail and with great fervor in both academic and literary scholarship. These same discussions illuminate the efforts of marginalized Blacks to mitigate this rage within their traditionally excluded communities, through the creation of Black counter-hegemonic subcultural art, music and style. However, the counter-hegemonic content within Black subcultures that Black rage inspires becomes subject to depoliticization, and codification once they become commodified in an effort to make them more marketable for mainstream consumption. This paper explores one such instance, specifically the commercialization of the revolutionary poem "When The Revolution Comes" by The Last Poets and how after commercialization, their

iconic line about "partying and bullshitting" literally became about actual partying and bullshitting--- or the prioritization of trivial recreational activities over serious revolutionary business.

From Heart Rate Variability to Personality: A Multilevel Understanding of Individual Differences During the Creative Process

Presenter's Name: Monique Major
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Kelly Banks, Shonta Newsman, Bre'Shae Grandberry, Mariah Sims, Brandy Younge, Damon Williams, Gillian Finley, Jaedyn Bonner, Brittany Ketchup, Donaija Smith-Butler

Background: Creativity is a defining feature of what it means to be human (see Chavez-Eakle, 2012) and despite the many advances in our understanding of creativity there are still unanswered questions. The purpose of this study is to integrate existing theories, literature, and conceptualizations related to creativity and develop an empirical strategy for identifying individual differences within the creative process. Specifically, the relationship between cardiac autonomic nervous system activity, absorption (trait and state), and the strategy a person uses to create art is being investigated. **Method:** Female college students in this on-going study completed a trait absorption scale, responded to questions about their demographic background and previous experience with the arts. In a second session, a group of participants were randomly assigned to a study where they created four works of art using clay, colored pencils, or painting electronically on an iPad. Simultaneously, their cardiac activity was monitored during the art activities. A second group of participants, only created drawings using colored pencils. After the creative tasks in both studies, the participants completed the Approaches Creative Process Questionnaire (ACPQ, Major & Harrell, 2013) and the Experience Creativity Questions (Nelson & Rawlings, 2009). **Results:** Preliminary results suggest that there are cardiac changes between the initial resting period and the art-making activity. Trait and state absorption are moderately associated with using an associative strategy for creating art**. Conclusions**: The findings from these studies will be discussed as well as the implications of this research for the intersecting disciplines of the arts and psychology.

Breaking the Mold: A Critical Analysis of Black Women's Perspectives on Feminism (from 1960-1990)

Presenter's Name: Sadiyah Malcolm
Classification: Undergraduate Student
Presentation Type: Poster Presentation

While it is common knowledge that Feminism is not, and has not historically been an all-encompassing fit for Black women, there has been much dispute surrounding the various perspectives that have emerged amongst Black women concerning the Feminist movement, and the ideology of Feminism, at large. In essence, though the general consensus that the ideology does not serve Black women exists, not all Black women have held the same beliefs and perspectives on the ideology. In effect, in this paper, I will examine the disparate attitudes of Black women towards the concept, and the reasoning as to why Black women felt that this movement was not in their overall best interest, or did not serve all, or perhaps any, of their needs. To do so, I will explore the meaning of femininity and the function(s) of women in the Black family, (as well as that of their white counterparts) to unearth the fundamental differences that negate the utopian idea that Feminism is a sweeping ideology that impartially advocates for all women. Through my analysis, I seek to shed light on the varied perspectives of Black women concerning the ideology of Feminism by presenting the historical, social, and cultural frameworks that underpin the attitudes of these women. I will probe their critiques and responses to the ideology of Feminism, as evident in not only the writings of various Black women, but also through the emergence of the consequential ideologies of political, social and economic advocacy that Black women have created, adjusted and embraced in Feminism's stead.

Demographics, democracy and communication: Local-global connections in a dramatically changing U.S. landscape

Presenter's Name: Abbas Malek
Classification: Senior Faculty
Presentation Type: Oral Presentation

Coauthors: Carolyn Byerly

If the last few presidential elections in the U.S. are any indication of the future for American democracy, voter participation reveals a less than positive picture. For example, the percentages of registered voters who actually vote declines almost every year. One recent PEW survey (June

2015) ranked the participation of the American public in the last (2012) presidential election 31 among the 34 Western democracies – higher only than Japan, Chile and Switzerland. Only 55% of eligible voters had cast ballots, down from 58% in 2008 and 60.4% in 2004 (PEW, 2015). This is alarming for a democratic nation! This trend, however, varies among different demographic groups, with race and immigration figuring into the American political landscape. U.S. voter profiles demonstrate a gradual decline of participation by Caucasians (75.5% in 2004, 73.4% in 2008, and 71.1% in 2012), who have represented the historical majority in the U.S. Conversely, among non-White ethnic and racial minority groups the pattern shifts: African-American (11.6% in 2004, 11.8% in 2008, 12.0% in 2012) and Hispanic (8.1% in 2004, 9.5% in 2008, 10.8% in 2012) voter participation increasing. These new voting blocs reflect a significant shift in US demographics and signal the coming of a non-White nation by 2060 with a markedly different political sensibility (Colby & Ortman, 2014, p. 25). In addition what might appear to be a national phenomenon is in many ways international in its origins. The rising rate of Hispanic residents in the US reflects both a flood of immigration from Mexico and Central America in the last decade, as well as high birth rates among Hispanic residents already living in the U.S. In some metropolitan areas, African immigrants also account for many new political actors, and evidence indicates that citizens and non-citizens alike are demonstrating and otherwise voicing their views on federal immigration and other policies that affect them (Heim, 2015). Our paper will examine the transformation of the U.S. public sphere through these shifts in demographics and political communication. Using news stories, online blogs and websites, government reports, other documents, and recent research, a) our paper will identify major issues arising in U.S. politics and shaping a new multicultural public sphere, as well as (b) attempt to define what constitutes the multicultural public sphere. This second point requires us to examine the theoretical assumptions underpinning the U.S. public sphere in a digital age increasingly dominated by new media technologies. Are the new media changing the way politics are voiced by an increasingly diverse public, or just a continuation of the same old system – a system, in fact, formed by companies that are owned and managed primarily by a White male oligopoly (Byerly & Valentin, in press). The research for this paper is part of a larger project in political communication being conducted by researchers at two universities.

Racial Identity's Role in Moderating Adverse Childhood Experiences and Maintaining Resting State

Presenter's Name: Christian Mallett
Classification: Graduate Student
Presentation Type: Poster Presentation

The Bioecological Model of Human Development purports that the environment impacts human biology. Unfavorable experiences in childhood can impact health. However, perception plays a role in how the environment affects us, and self-identity shapes how we perceive experiences. The present study will examine if racial identity moderates the impact of adverse childhood experiences on activation of the parasympathetic nervous system. More specifically, if higher frequency and severity of adverse childhood experiences lead to decreases in respiratory sinus arrhythmia (RSA), do dimensions of racial identity strengthen that relationship? The Cross Racial Identity Scale and Adverse Childhood Experiences Scale will be used in the study. Additionally, an ECG and ICG will be used to measure the physiological data. Participants will include African-American undergraduates between the ages of 18 to 30-years-old. The present study has implications to suggest how identity may translate to resilience, coping, and maintaining resting state, which could assist in developing community programs, influence policy, and help therapists provide competent treatment.

Ostracism's Damage to Critical Social Needs is Reduced by Forewarning, Particularly for High Honesty/Humility Victims

Presenter's Name: Ingrid Mood
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Dominique Hubbard, Adea Kelly, Joanna Smith, Lloyd Sloan

Ostracism and racism have detrimental effects on mental and physical health (Rucker, et. al., 2013), producing depression, anxiety, anger and guilt. This research examines particularly important clinical traits (Hexaco Personality Inventory Revised) as moderators of the impacts of ostracism and race on an individual's social needs damage. 138 African-American HBCU students were forewarned, or not, that upcoming co-players' were racist and then were ostracized or included by African-American or White Cyberball co-players. Immediately and again 5 minutes later, participants completed measures rating their social needs and moods

satisfaction/damage. Participants also completed the Hexaco PI-R, a strong measure of clinically significant personality traits. Ostracism damaged social needs, but forewarning diminished that damage with White (but not Black) coplayers, suggesting anticipatory reconstrual of causes for subsequent ostracism. Ostracism's negative impacts were lowest for high Honesty-humility and high Conscientious participants suggesting that hypothesized clinically significant traits may buffer negative mental health outcomes.

How Does Personality and Socioeconomic Status Affect Future Expectations

Presenter's Name: Jasmine Morris
Classification: Undergraduate Student
Presentation Type: Poster Presentation

This research project focuses on the the relationship between personality type and socioeconomic status with future expectations in African American adolescents. It focuses on the big five personality traits and their correlation with future expectancies based on their perceived environment. There is some consensus that the core of personality can be subsumed in five traits (Caspi, Roberts, & Shiner, 2005): emotional stability, extraversion, openness, agreeableness, and conscientiousness (McCrae & Costa, 1999). Experiences growing out of socioeconomic status may shape the expression of personality dimensions. Current research argues that gaining a better understanding of these variables is particularly important with respect to adolescent populations, who make pivotal life and career decisions during this phase of life (Akos, Konold, & Niles, 2004; Turner & Lapan, 2005). The use of research examining a large population of African American adolescents on the rise in a multiphase study, is essential in addressing negative future expectancies in youth based personality and socioeconomic status.

Gender Specific Emotional Trajectories: A Linguistic Analysis of Written Trauma Narratives

Presenter's Name: Jennifer Myers
Classification: Graduate Student
Presentation Type: Oral Presentation

Background: Research has shown that exposure to trauma memories is beneficial for emotional processing and expression. While previous studies have examined emotional expression through linguistic patterns in written trauma narratives, gender differences have yet to be fully explored. Aim: The present study aims to examine gender differences in emotional expression and its implications in the clinical setting. **Method:** Twenty-nine community recruited trauma-exposed urban residing minority participants (mean age = 27, 43% male) participated in four 30-minute writing sessions. All participants met full DSM-IV PTSD diagnostic or subthreshold PTSD criteria. Subjective Units of Distress (SUD) were assessed on a 0-100 scale 4 times during each session. Narratives were analyzed using the Linguistic Inquiry Word Count (LIWC) for changes in rates of negative affect word usage. Examples include "sad" words (e.g. "crying", "grief", "sad") and "anger" words (e.g. "hate", "kill", "annoyed"). **Results:** Results revealed a significant interaction effect for gender and writing session on "anger" words, $F(2, 15) = 3.297$, $p = .040$, $\eta 2 = 0.237$ and a trend for "sad" words $F(2, 15) = 4.974$, $p = .088$, $\eta 2 = 0.171$. Males demonstrated an increase in "anger" words, while females demonstrated an increase in "sad" words from the initial to final writing session. There was also a moderate, negative correlation between session 3 and 4 "sad" words and SUD scores $r(18) = -.472$, $p = 0.048$. **Conclusion:** These findings reveal gender specific linguistic patterns of emotional expression in trauma narratives. Gender differences in emotional trajectories warrant consideration in clinical settings and for further research.

The Truth Behind the TRC: A Study of the TRC's Failures, Shortcomings, & Denial of Civil Society

Presenter's Name: Udodilim Nnamdi
Classification: Undergraduate Student
Presentation Type: Oral Presentation

South Africa's post-apartheid Truth and Reconciliation Commission (TRC) is often applauded as one of the most successful transitional justice mechanisms ever created. However, the TRC's legacy of delivering accountability for perpetrators of apartheid and reparations for victims has come into question amidst the 20th anniversary of its first hearing. Scholars fear that the TRC's institutional failures have lead to the persistence of impunity for those responsible for human rights violations under the apartheid system. Many argue that as a result of political interference in the transitional justice process, the victim population's justice and accountability beliefs are often neglected when formulating the transitional justice mechanism. The Constructivist theory states that civil society organizations serve as connective tissue that local populations utilize to transmit their social purposes while localizing norms. This

study hypothesizes that because South African civil society was not integrated into the transitional justice process, issues such as land reform, reparations, and criminal prosecutions for those denied amnesty were not a focal point of the TRC's mandate. This qualitative study contains data obtained from a collection of interviews of transitional justice experts, civil society leaders, and local South Africans conducted while in South Africa through the YAALI fellowship. An analysis of these interviews demonstrates that political expediency was prioritized over the desires of South Africa's civil society during the transitional justice process. These political compromises occurred to the detriment of apartheid victims who testified before the TRC in hopes of receiving reparations and retributive justice. Due to the lack of influence of civil society organizations when developing the TRC's mandate, the TRC has failed to address the structural and systemic causes of the socioeconomic inequality created by South Africa's apartheid system. This study seeks to complicate our understanding of what successful reconciliation looks like and strives to reinforce the importance of civil society and a victim-centered approach to transitional justice.

Effects of Cultural Socialization on the Relationship between Discrimination and Academic Esteem among African American Elementary School Students

Presenter's Name: Tierra Patterson
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Tierra N. Patterson, Debra D. Roberts

Given the persistent academic achievement gap, there has been increasing interest in the impact of discrimination on academic outcomes among minority students. Researchers have also found that culturally focused parental socialization practices can have a positive influence on child outcomes, including academic success. However, little is known about how these factors combine to promote positive youth outcomes within the context of a hegemonic sociecity. Therefore, this research proposes to investigate the effect of cultural socialization on the relationship between discrimination and academic-esteem among African American elementary school students. **Methods:** The subjects consisted of approximately 100 African American students in the second through fifth grades in a northeastern urban city. Participants were administered a questionnaire that included scales measuring racial discrimination, cultural socialization, academic achievement, academic-esteem, and demographic variables. Regression analysis will be conducted to investigate the relationship among these variables. **Conclusions:** Results will be discussed to increase the understanding of the moderating effect that cultural socialization has on the relationship between discrimination and academic-esteem among African American elementary school students.

The Impact of Message Tailoring on Consumer Attitudes

Presenter's Name: Tiani Perkins
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Tiani Perkins, Ciara Hill, Jamie Barden

Background: Black buying power in the US has increased from $318 billion in 1990, to $1 trillion today, causing advertisers to spend $2.64 billion to appeal to Blacks (Alexander, 2011). Evidence shows that minority consumers respond more favorably to advertisements that are tailored to their minority group, but the mechanism is unclear (Grier and Deshpande, 2001). **Methods:** Using a 2x2 experimental design, Black participants were randomly assigned to two of four conditions: matched or mismatched race, and strong or weak arguments. For matched or mismatched race, we used grocery stores. The grocery store that matched their race was named "Lamar's" and advertised African-American foods, while the non-matched store was named "Luka's" and advertised Polish foods. These images were accompanied by strong arguments (store-wide sale held every week) or weak arguments (store-wide sale held every decade). Both were in favor of the store. Self-reported attitudes and behaviors toward the store were the key measures. **Results:** The effect of argument quality on attitudes and behaviors was greater when the store matched rather than mismatched to the participant's race. This shows that participants applied more thoughtful and elaborative processing when considering the matched store, providing clear evidence of mechanism for race-matching effects. For marketers, this shows that positive effects for race matching require strong arguments for the product.

Bigger than Banning the Box: Analyzing the responsibility of the State employing restorative justice

Presenter's Name: Keadrick Peters
Classification: Graduate Student
Presentation Type: Oral Presentation

We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness", according to the Declaration of Independence (1776). Albeit black and brown men, women, and children were not considered equal on the onset of America, today all Americans are legally sanctioned as equal and have full access to the pursuit of happiness. Coupled with the legal protection for all Americans to be treated equal, America has elected, Barack Hussein Obama, the first African American president. President Obama's historic election espouses the declining significance of race and the unequal treatment of black Americans. However, one does not need to look far to discover the contemporary racial caste system which is fostered through the criminal justice system. Even after those incarcerated are released, especially black Americans, the reintegration back into society is thwarted by their criminal record with access to jobs, housing, and education. Consequently, the Obama administration and other lobbyists groups are advocating for the removal of all criminal history questions on job applications. The removal of criminal history question on applications provide a victory for criminal justice reform initiatives. At the same time, criminal justice reform requires extensive measures facilitated through the state (government) implementing restorative justice philosophy. Restorative justice is an approach to justice that focuses on the needs of the victims and the offenders, as well as the involved community. This contrasts to more punitive approaches where the main aim is to punish the offender, or satisfy abstract legal principles. The purpose of the research study investigates the dialectical relationship between white supremacy, capitalist economy, state, and restorative justice philosophy. In particular, this research study employs an exploratory qualitative research methodology, coupled with bridging the gap between the roles of the political economy (US government and capitalism) and cultivating a restorative justice philosophy beyond removing a question from applications. The findings reveal as a result of historical and contemporary systems of exploitation, restorative justice philosophy implementation are precarious on white supremacy, capitalist economy, and the state providing a continuation of services. Equally important, the findings indicate black Americans' material reality of race will persist under capitalist economy and therefore restorative justice philosophy cannot be equally employed to previous offenders based on race and class. I hope this contribution will assist, inspire, and avoid further exploitation of the working class; especially those people of color.

Post Traumatic Slave Syndrome (PTSS): An Analysis of the Internalizing and Externalizing Behaviors in the African American Community

Presenter's Name: Tianna Richardson
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Poster Presentation

Socially African American's are often urged to end the discussion on slavery as if it has not had a lasting impact on the 21st century African American community. This literature review will integrate clinical research with theoretical literature to investigate the psychological and behavioral consequences of half a century of slavery on the African American community. A deeper look will be made into the relatively new theory of Post Traumatic Slave Syndrome (PTSS), which suggests that the institution of slavery combined with the thereafter presence of racially charged oppression, have had a continuous and lasting impact on the psychological state and behavior of African Americans. We will focus on the relationship between this trauma and internalizing/externalizing behaviors, taking into consideration the potential buffer of cultural socialization.

Keywords: cultural socialization, trauma, post traumatic slavery syndrome, internalizing behavior, externalizing behavior, African American

Perceptions of Safety and its Gendered Differences: An Exploratory Analysis of Severe Weather Reactions

Presenter's Name: Shadya Sanders
Classification: Graduate Student
Presentation Type: Oral Presentation

Residents of the United States are likely to see a wide variety of weather hazards throughout the year, and each weather phenomenon comes with its own warning method, and subsequent protective action, if any. In the previous five years alone, nearly 3,000 residents have lost their lives in a weather related situation. Many of these fatalities could have been prevented, and millions of dollars in lost productivity and property damages saved. While technology has advanced and forecasting becomes increasingly accurate, the understanding of the public's reactions to and understanding of weather information has not yet reached its potential. The goals and wishes of the public varies greatly and is consistently changing, so it is necessary to explore what these differences are in order to understand the direction meteorological forecasting needs to take. Residents of the United States

are incredibly diverse, and gender is just a single point of differences residents hold. Previous research has shown differences in fatality rates during hurricanes and tornadoes, as well as the likelihood of taking protective action. A mixed methods approach is used combining meteorological forecast analyses as well as a sociological approach utilizing focus groups, interviews, and survey responses. This exploratory analysis will provide crucial first steps at the gendered differences held relating to feelings of safety during a severe weather situation.

This research is funded by NCAS, NOAA Center for Atmospheric Research at Howard University.

Confidence is Key: The Impact of Parenting Self-Efficacy on the Involvement of Non-Resident African American Fathers in the Lives of Their Children

Presenter's Name: Keon Savory
Classification: Graduate Student
Presentation Type: Oral Presentation

The number of African American children living without their biological fathers is steadily increasing. However, our knowledge of the involvement of African American non-resident fathers in the lives of their children is severely lacking. Given the drastic changes that have occurred within the American family structure since the 1960s and the rising number of non-resident father families in the African American community, studies are needed that assist social work practitioners and policymakers with understanding the lived experiences of these men and the various factors that both positively and negatively influence their involvement with their children.This presentation will present the results of a mixed methods study that examined various factors that influence the involvement of non-resident, African-American fathers in the lives of their children. Emphasis will be placed on exploring the findings which underscored parenting self-efficacy as a significant predictor of father involvement. Through presentation and discussion of the lived experiences of these men, presentation attendees will gain a more in-depth understanding of the concept of self-efficacy and its application to fathering. Participants will also obtain an understanding of various strategies that can be utilized in practice to strengthen the efficacy beliefs of these fathers, thereby increasing their level of involvement and improving the well-being of their children and families. Implications for policy, practice, and research will also be discussed.

Another look at the evaluation of relationship training programs

Presenter's Name: Benoit Schmutz
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Coauthors: Haydar Kurban

In the early 2000s, two large-scale relationship education programs, targeted towards low-income urban couples expecting or already having children, were launched by U.S. Department of Health and Human Services: the "Building Strong Families" (BSF) project in 2002 and the "Supporting Healthy Marriage" (SHM) intervention in 2003. Their common goal was to improve the quality and durability of the relationship between (future) parents, in the hope of positive externalities on the next generation. Taking advantage of a carefully conducted experimental design, several teams of researchers have tried to assess the short-run (about a year) and medium-run (about three years) effect of these programs. Overall, they showed that neither BSF nor SHM had a quantitatively significant impact on most relationship and educational outcomes and therefore, that this type of intervention was unlikely to be cost-effective. We argue that the data has not been used as thoroughly as it could have in previous studies, and needs reexamining. The reason is threefold: first, because they largely drew their inspiration from the psychology literature, those studies have focused on the construction of multi-sided relationship quality measures based on the aggregation of large series of questions. As a result, they had to resort, either to a drastic selection (which was, itself, unlikely to be random) of a sample of respondents who had answered all the questions, or to byzantine data augmentation processes where the missing answers were inferred statistically from other answers and individual characteristics. As far as we are concerned, we plan to use the simplest possible measures, which will only be based on the answer to single questions, such as whether the two respondents still reside under the same roof. These variables will be more straightforward to interpret, and, more importantly, they will allow us to use larger samples, improving the representativeness and the precision of our results. Second, previous studies did not specifically pay attention to the subtle couple dynamics involved in this type of intervention. For example, they chose the convention whereby the relationship was deemed good only if both members of the couple agreed to declare that is was. However, the data shows that this convergence in views is far from always occurring, either because one

of the members failed to answer the question, or, more interestingly, because both respondents did not interpret their current relationship situation similarly. We believe that a lot of insight may be gained from putting the emphasis on these discrepancies. For example, it will allow us to discuss whether exposure to the program may have an impact on a declaration bias, whereby respondents would be inclined to lie on their current relationship status for fear of being judged has having "failed" the program. This interest in behavioral changes associated with pure selection into the program, rather than with the content of the program itself, resonates with existing research interested in interpreting the observed differences between "intent-to-treat" –the impact of being selected into the treatment group- and "treatment-on-treated" –the impact of receiving the treatment. Finally, no study has ever tried to run a joint analysis of both BSF and SHM programs, because, at the time of their study, the different research teams who had been involved in the crafting of the intervention only had access to the data from their own project. A few years have passed and both datasets are now available to researchers, allowing us to compare the features of the programs on at least two dimensions: first, the program was much heavier in the case of the SHM intervention: training sessions lasted several months, compared to a few weeks in the case of the BSF project. This allows us to study potential nonlinearities in treatment intensity. Are returns decreasing, or, conversely, is there a minimum exposure level to this kind of treatment before observing any impact? Second, and even more interestingly, the targeted populations differed along a crucial dimension: their marriage situation. While BSF targeted unmarried couples, SHM focused on married ones. If we can show that the belonging to either category cannot be explained by differences in observable characteristics, a joint analysis of the two samples will offer a unique perspective on the role of an unobserved dimension of heterogeneity: individual propensity of being married. If we can show that the effectiveness of relationship training programs is largely driven by selection upon this unobservable characteristic, this will cast doubt on the ability of this type of public policy to alter intimate behavior.

The relationship between Metabolic Syndrome and Executive Functioning in African Americans

Presenter's Name: Kanesha Simmons
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Denee Mwendwa, Olga Herren

Cardiovascular disease is ranked as the number one cause of death in the United States. There has been an influx of research investigating the influence of negative health outcomes on neurocognitive functioning. Several diseases have been identified as having a negative impact on neurocognitive functioning. African Americans are disproportionately impacted by CVD risk factors compared to any other ethnic group (Waldstein, 2000; Williams, 2000). Due to the fact that CVD risk factors are much more prevalent in African Americans, if can be postulated that African Americans' brain health is disproportionately affected as a result. Executive functioning refers to the ability to make purposive, autonomous behavior, which include self-monitoring and planning (Lezak, 1995). The research investigating the Metabolic Syndrome (MetS) and neurocognitive functioning in African Americans remains an untapped field of information. The current study is in interested in investigating the relationship between MetS and executive functioning in African Americans. Two hundred-sixteen (n=216) African Americans participated in the study by completing a full health history and neuropsychological assessment battery (Stroop Color Word Test, Wisconsin Card Sorting Test, and Trailmaking A and B). Preliminary Pearson's correlation results demonstrated significance between factors comprising the Metabolic Syndrome and the measures assessing executive functioning. In addition, a computational tool for path analysis-based moderation analysis, PROCESS, will be conducted to determine the impact of MetS on executive functioning.

The Infusion of Criminal Justice-Related Content in Graduate Social Work Education

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

Coauthors: Karen Kolivoski

Social workers need to be prepared to work with clients who have experiences related to the criminal justice system, even though they may focus on other fields of practice/specialties in their graduate education (e.g., mental health, family and child welfare). This poster presentation will examine published literature on the infusion of criminal justice-related content (e.g., police brutality, mass incarceration, delinquency) within social work education. Prior research has examined the incorporation of criminal justice-related social work field placements and graduate social work coursework into social

work programs. Yet, little attention has been given explicitly to the integration of criminal justice content in social work education. This poster presentation will assess these trends in social work education and provide implications for further developing social work education to meet the growing needs of all social workers to effectively address the needs of populations affected by the criminal justice system. To accomplish this, it will also outline a research agenda for pertinent issues that need to be examined. For example, research has not assessed social work graduate students' perspective of criminal justice content within social work education, nor has it assessed what specific areas of criminal justice are focused on in the social work curriculum.

'That's not real India' Responses to portrayals of women in Indian Soap Operas

Presenter's Name: Indira Somani
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Coauthors: Marissa Doshi

This study examined the portrayal of women on Indian soap operas through content analysis. Quotes from in-depth interviews of 100 Asian Indians (50 couples) from five major metropolitan areas: NY, D.C., SF, Chicago and Houston, who watch Indian television (imported from India) via the satellite dish or cable, were used in this study. Researchers uncovered specific themes, such as, "Portrayal of women, Affection and Joint Family" and analyzed these themes against the theoretical framework of cultural proximity. The authors explained that the role of the Indian woman being created in Indian serials, did not reflect the image of the Indian woman the participants remembered when they migrated to the U.S. in the 1960s. The image of the Indian woman that was being portrayed was that of a "vamp" or someone manipulative and not family-oriented.. Therefore, the cultural proximity of the Indian soap operas was disrupted by the negative portrayal of the Indian woman to a particular generation of Indian immigrants in the U.S. The participants appreciated the image of a modern Indian woman, as long as she still maintained traditional values.

Key words: Cultural proximity, Indian diaspora, Indian immigrants, soap operas, television

---

Personality Assessment for College Students Path to Company Fit and Satisfaction

Presenter's Name: Jeva St.Fort
Classification: Graduate Student
Presentation Type: Poster Presentation

In traditional West African countries, a person's life project is inscribed in the name he or she carries. It is believed that every individual comes into this life with a special destiny. The names are programmatic (or indicative) where it describes the task of their bearers and establish a continual reminder of the responsibilities that are waiting up ahead (Some', 1994).

In western view culture, a person in college chooses their own path based on individual interests, capital driven or market foreseen their field, and status- centric motives. This creates an environment where people are more interested in job security than in finding a fulfilling career path. Unfortunately, what awaits many after crossing the graduation stage is not only student loan debt, but the challenge of securing any job. Even worse is the possibility of securing a job that does not satisfies a person values and interests. Due to person's lack of job satisfaction or company fit businesses, are experiencing high turnover rates. This study employed a newly-developed model based on four categories that determine the best optimal work fit within a company. This analysis of a person's temperament includes company, values, culture, and skills. These four main categories work in subsets that include culture clan, adhocracy, market and structure to determine a person's optimal work fit within a company. We will present findings showing how this assessment model might be used to help college students identify the career paths they are suited for well before graduation. Recruitment of this study was achieved via Office of Career Services (OCS) and Career Fairs located at Howard University. Upon providing consent college participants completed a computer based questionnaire of 80 items of images and memes. The questionnaire was broken into 20 items for each category (company, values, culture, and skills) responding to the four subsets culture clan, adhocracy, market and structure. At the time of completion participants were provided a map of their fit of the afore mentioned categories based on the empirically based psychometric items. This study provides analysis of a person's temperament to determine optimal work fit within a company.

Howard University Housing Preservation Development through Restorative Justice

Presenter's Name: Brianna Stephens
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Background: Often when thinking of justice, we focus on discipline. This punishes the offender, but does not repair the harm done to the victim and community. However, restorative justice (RJ) views offenses as more than breaking laws. RJ is a response that addresses the damage as well as the wrongdoing. Through RJ practices, the victim, offender, and community have the ability to repair harm caused by offenders, as well as help them gain an understanding of their offenses and how they have affected those around them. These practices can lead to transformational changes in their lives, if done correctly. This preliminary study explores ways we can implement these practices into Howard University's housing policies. **Methods:** Through literature searches and non-formal questioning, we will study face-to-face meetings, circles of support and accountability, and victim-offender conferencing. We intend to incorporate these restorative justice practices into Howard University's housing policies for the following infractions: Physical and/or verbal confrontations, Drug(s) and weapon(s) use'; Violation of visitation. **Results:** We expect that RJ practices may help decrease students' violations of housing policies and reduce students' expulsions from on-campus housing. **Conclusion:** We hope to show equal concerns for and commitment to victims and wrongdoers, involving both in the process of restorative justice.

The Issue of Demand and Supply on Psychology Internships

Presenter's Name: Joy Stradford
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Internship demand/supply imbalance has been a major problem in the training of professional clinical and counseling psychologists. An increasing proportion of internship applicants cannot get matched for many reasons, including the overall shortage of available positions, increasing number of academic programs and internship applicants, and applicants' geographic restrictions. This research will analyze existing survey reports posted by The Association of Psychology Postdoctoral and Internship Center (APPIC) on the National Match Program that has administered the match since 1999. We will focus on the trends of the internship demand/ supply imbalance, applicants' training background, and their geographical preferences. Implications on the field and potential students of clinical and counseling psychology will be discussed.

Keywords: APPIC, psychology internship match, demand/ supply imbalance, geographic restriction

---

Socioeconomic Influences on The Optimism of College Students: A Multiple Regression Analysis

Presenter's Name: Sherese Taylor
Classification: Graduate Student
Presentation Type: Poster Presentation

While research demonstrates that socioeconomic status impacts optimism, it does not make evident to what extent. The aim of this research is to examine the relationship between the education of parents and optimism of college students. The educational status of the parents' impacts optimism because education correlates with wealth, and expanded social networks creating higher standards of living that may impact the dispositional optimism of students. Using a questionnaire, Howard University students were asked to self-assess their levels of optimism, closeness to their family, overall health, their parents' educational status, and their family income. 1649 participants were selected using a convenience sample from Howard University's campus, and a multiple regression analysis was employed to analyze the data collected. The results demonstrated that the educational status of the parents does not have an effect on the dispositional optimism of the students once the other variables in the study are controlled. Future research should employ random sampling and test other variables like religion, addiction, and fitness as a measure to see how different variables correlate with dispositional optimism.

Racial Socialization as a Protective Factor against Poverty in African American Children

Presenter's Name: Mark Tucker-Powell
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Shareefah Al-Uqdah

Poverty has been cited as one of the most significant causes of distress on a global level (Murali & Oyebode, 2004). African American children disproportionately live in impoverished

conditions when compared to other racial groups (Galster, 1991). The risks associated with children living in poverty include; negative psychosocial functioning and educational outcomes (Myers & Taylor, 1998; McLeod & Shanahan, 1996). Children residing in poverty may have lower IQs and school achievement (McLeod, 1998). Factors associated with negative effects of poverty on educational outcomes include lower amounts of home-based cognitive stimulation, lead exposure, low teacher-student expectations, and lower academic reading readiness skills (McLeod, 1998). Despite the overwhelming negative impact of poverty on children, research suggests that racial socialization may serve as a protective factor for African American youths (Fischer & Shaw, 1999; Neblett, et. al., 2006). Racial socialization may benefit African Americans by alleviating a portion of the effects of perceived racism (Fischer & Shaw, 1999). Children of parents who provided positive messages around their racial background were found to be more curios, persistent, and have higher school performance (Neblett, et al., 2006). Intervention programs may need to train parents in providing their children with positive racial messages to foster resilience within their children (Coard,et al., 2004). This poster presentation will explore the benefits of racial socialization for African American children, especially those residing in poverty, and provide strategies for including racial socialization in programs geared towards African American youth.

Russia, Syria, and The Arab Spring

Presenter's Name: Rasheed Varner
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Russia has in its recent years increased both its presence and influence in the ongoing civil war in Syria. The United Nations puts the civilian death toll of the Syrian war at over an estimated 250,000 people since the conflict started in 2011. Throughout this time both Russia and the West have been in dispute as to what the best course of action would be in order to rectify the situation in Syria and to prevent Syria from becoming a failed state. The interest of the Kremlin lay in protecting the integrity of Russia and preventing the rise of a western friendly backed government on its doorstep, while NATO (comprised of the United States, the United Kingdom, France, etc.) want to see a transition of power from President Bashar al-Assad to a newly elected government. The Arab Spring transformed the conversation revolving around the citizens of Syria and their government (which facilitated the civil war) and the situation has become ever more complicated by foreign actors and state interests. This research seeks to examine the role of Russia in the Syrian conflict and the impact Russia's foreign policy has had on the peace process. Moreover, the research seeks to explore the political, economic, and social interest Russia has in Syria and in its overall efforts in the Middle East and Arab Spring.

Intersectional Marxism

Presenter's Name: Amber Walden
Classification: Undergraduate Student
Presentation Type: Oral Presentation

Race in Russian culture was and is a complex issue. During the tsarist period, the focus of identifying different groups focused more on ethnicity and religion. During the Soviet period, 1917-1991, the issue of race took on global political importance. This was mainly due to one core goal of Communism that involved destroying the capitalist system by taking control of the means of production from the bourgeoisie. In an effort to really drive this point home, the Soviet Union and their approved Communist groups in the United States sought to show African-Americans the freedom and equality that they could have within the communist system.

However, many black intellectuals doubted the sincerity of the Soviet government. They knew that the Soviet Union only fought for the equality of African-Americans for the sake of their own success. Despite this knowledge, U.S. based intellectuals and artists of African descent sought to use the positive aspects of Russian and Soviet culture to uplift their community. By examining the publications of the Communist Party and Western black intellectuals, it is clear to see how the Soviet ideals of human equality, feminism, and progressive art heavily influenced the work of black intellectuals in the United States during the twentieth century. The goal of this research is to prove that by attempting to apply intersectional theory to Marxist- Leninist theory, black intellectuals were able to create a form of Marxism that would allow them to improve the conditions for all African-Americans. Primary sources like letters, essays, novels, and newspaper articles will be used as direct examples from black intellectuals. Secondary sources will help with placing these primary sources in the context of U.S. history, which will allow for an analysis of how the work of black intellectuals intersects with it.

Where Are Our Voices? Understanding the Subjective Impact of Community Violence on African-American Youth

Presenter's Name: Mar'Kayla Walker-Jones, MSSW, LSW
Classification: Professional Student
Presentation Type: Poster Presentation

Community violence has been defined as witnessing or hearing about homicides, shootings, robberies, or gang-related occurrences (Voisin, 2007). Exposure to this particular type of violence has been linked to physical and mental health concerns, as well as poorer life outcomes (Richards et al, 2015). For instance, community violence in the United States has been correlated with higher traumatic symptomology, depression, and aggression among adolescents. Unfortunately, African-American adolescents are exposed to community violence at a disproportionally higher rate and thus are more susceptible to negative life outcomes (Voisin, 2007). The multitudes of African-American adolescents exposed to community violence typically exhibit higher rates of anxiety and behavioral issues as well as lower rates of academic success when compared to non-marginalized youth (Halpert, Petropooulos, Felix, & McMahan, 2009). Correspondingly, African-Americans students who have been impacted by community violence face a higher probability of being placed in special education programs (Voisin, 2007). Therefore, exposure to community violence may also negatively affect the scholastic achievement of African-American adolescents. Despite these probabilities, gaining perspective about how African-American adolescents perceive the impact community violence may provide a more accurate reflection about the consequences of this experience. Consequently, this additional insight increases our understanding about the psychological and developmental effects of community violence. Community Violence is a rampant issue within the United States that further marginalizes African American adolescents, psychologically and academically. As social scientists we have established firm empirical tenants about the psychosocial impacts of community violence. However, empirical literature often neglects the unique voices of the participants in the study. This poster presentation will highlight the paucity of research utilizing adolescent responses about how community violence affects their psychological well being and academic success. Additionally, this presentation will explore implications for psychologist and policy makers. Thus, presenters will circumvent etic trends, by exposing the values and perspective of African American adolescent who are survivors of community violence.

Optimism Level and its Effects on Children's Academic Performance.

Presenter's Name: Tava West
Classification: Graduate Student
Presentation Type: Poster Presentation

The purpose of this research is to study teacher and student optimism levels and its effects on children's performance in the classroom. I will be using optimism as a manipulating variable (IV) to see how it affects students' academic performance (DV) in elementary school aged children, specifically grades 3-5.

#Science: An Exploration of Public Engagement and Understanding of Science through NOAA's Twitter

Presenter's Name: Leticia Williams
Classification: Graduate Student
Presentation Type: Oral Presentation

Science communication most commonly occurs through newspapers, television, magazines, the Internet (Besley & Tanner, 2011), and recently social media. However, there is scant research about social media as an effective channel for science communication (Gastrow, 2015; Lee & VanDyke, 2015). Hence, there is a need for science communication scholars to examine science discourse via social media such as Twitter. The purpose of this research proposal is to explore whether Twitter can increase public engagement and understanding of science. Since science is a broad term that encompasses many different areas of study and disciplines, this study focused on tweets posted by the National Oceanic and Atmospheric Administration (NOAA) during the 2016 blizzard. Preliminary analysis of a thematic analysis of tweets demonstrated that NOAA used Twitter to share information about severe weather, but did not engage the public in communication about science.

Translational & Clinical Sciences

Impact of Diabetes and Hypertension on the Progression of NAFLD in Obese African-American Patients

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

Coauthors: Zaki Sherif, Edward Lee, Hassan Brim, Hassan Ashktorab

Background: Central obesity and hypertension are part of the metabolic syndrome that contribute to the development of Non-Alcoholic Fatty Liver Disease (NAFLD), which is associated with liver-related morbidity and mortality as well as an increased risk of developing both cardiovascular disease (CVD) and type 2 diabetes mellitus (T2DM). **Aim:** To determine the risks of developing cirrhosis and other comorbidities such as CVD related to the effect of metabolic syndrome in African-American (AA) patients with NAFLD. **Methods:** A longitudinal review of the Electronic Medical Records between 2004 and 2015 revealed 480 obese AAs with chronic liver disease. Patients with scanned images of steatosis or fatty liver were included in the study whereas those with a history of hepatitis B or hepatitis C infection were excluded. **Results:** We were able to extract data for 77 (16%) patients with fatty liver or steatosis supported by ultrasound or CT-scanned images. Females made 56% of the study group. Mean age was 49 years old. The frequency of T2DM was 41% whereas the frequencies of hypertension (HTN), cardiovascular disease, dyslipidemia, kidney disease and cirrhosis were 56%, 17%, 24%, 19% and 6%, respectively. Death of two patients (2.4%) were reported during the study period. **Conclusion**: This study shows that obesity, HTN and diabetes are closely associated with NAFLD in a possible cause and effect manner. Dyslipidemia, Kidney disease and CVD may also be correlated to NAFLD but to a lesser extent. Four out the 5 NAFLD patients with cirrhosis had HTN and 2 of them had both T2DM and HTN. Based on imaging reports, it is evident that these patients are meeting the criteria for NAFLD diagnosis although the prevalence of NAFLD in these obese AA patients with chronic liver disease and metabolic syndrome is low when compared to other US ethnic groups.

Period 3 Gene Polymorphism and Sleep Adaptation to Stressful Urban Environments

Presenter's Name: Maxwell Anderson
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Ameenat Akeeb, Joseph Lavela, Yuanxiu Chen, Thomas Mellman

Study Objectives: To investigate the relationship between a variable number tandem repeat (VNTR) Period 3 gene (PER3) polymorphism and sleep adaptation to stressful urban environments.**Design:** Candidate gene association. **Setting:** Clinical Research Unit of urban minority serving hospital. **Participants:** 83 (51 female) black participants (ages 18-35) living in neighborhoods with high rates of violent crime were selected for the study based on converging criteria for good or poor sleep. **Measurement and Results:** Categorization of sleep quality was made based on the Insomnia Severity Index (ISI) and estimates of typical sleep duration and sleep efficiency. Other assessments included the Fear of Sleep Index (FOSI) and City Stress Inventory (CSI). Whole blood DNA was analyzed for the 4 and 5 VNTR alleles using polymerase chain reaction (PCR). While there were no significant associations with genotype the presence of the 4-repeat allele was more frequent among those with poor sleep (57% versus 25%; $\chi 2 = 4.172$, $p = .041$). FOSI and CSI scores were also significantly associated with the sleep quality categorizations. In a regression model with all three variables, only FOSI was a significant predictor of sleep quality group ($\beta = .287$, $p = .014$). FOSI scores were lower among the participants homozygous for the 5-repeat allele ($t = -2.657$; $p = .013$). **Conclusions:** Per 3 polymorphisms appear to influence sensitivity to the effects of stressful urban environments on sleep. While we find FOSI to be independently associated with sleep quality category, the candidate vulnerability allele was also associated with greater "fear of sleep."

Female with Mammary Analogue Secretory Carcinoma and Prolactinoma: A Case Report and Review of Literature

Presenter's Name: Ghedak Ansari
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Adedoyin Kalejaiye, Laquanda Knowlin, Daniel Bostock, Babak Shokrani

Objectives: To describe a unique case of Mammary Analogue Secretory Carcinoma (MASC) in a woman with a prolactinoma. To examine the potential link between elevated prolactin levels and salivary gland tumors. **Methods:** A 23-year-old woman with a history of pituitary prolactinoma presented with a slowly enlarging right parotid mass. Cytology and immunohistochemistry were consistent with MASC. Literature was reviewed along with patient records to identify links between the MASC and prolactin levels. **Results:** MASC is morphologically and genetically similar to secretory carcinoma of the breast. In the past, MASC was erroneously classified as acinic cell carcinoma and other adenocarcinomas due to similar histopathological features, but MASC should be differentiated from these tumors given that it displays a specific t(12;15)(p13;q25) translocation. In the patient reported, fine needle aspiration (FNA) of the right parotid revealed a monotonous population of cells with abundant eosinophilic cytoplasm and frequent cytoplasmic vacuoles. Multiple studies have suggested that circulating prolactin level is related to breast cancer risk but we did not identify any studies linking prolactin level to salivary neoplasms, making this case unique. **Conclusion:** MASC is a newly described carcinoma, and more research is needed to be able to accurately diagnosis and provide treatment for it. To our knowledge, this is the first reported case of MASC in a patient with a prolactinoma. Further studies are needed identify a link between elevated prolactin and salivary tumors such as MASC. This link can be used to further studies in the field, and begin to identify therapies.

Imaging and reconstruction of the neonatal nasal cavity with an optical coherence tomography probe

Presenter's Name: Albert Aparicio
Classification: Professional Student
Presentation Type: Poster Presentation

The use of non-invasive ventilation has increased dramatically in neonatal care. Respiratory support can now be administered through the nose via nasal prongs. Nevertheless, complications often arise, which can include injury and necrosis of soft tissue and cartilage in the developing neonatal nose. Currently, there is no bedside diagnostic tool that can identify the first signs of nasal trauma. Optical coherence tomography (OCT) is a minimally-invasive imaging modality capable of providing high-resolution, 3D cross-sectional images of biological tissue. The main objective of this work is to construct an OCT probe that is capable of imaging and reconstructing the nasal cavity. First, a phantom nose was constructed from CT images of a neonatal nasal cavity using 3D Slicer. Next, a side-viewing, helical scanning OCT probe was inserted into a sheath with an outer diameter of 1.01 mm, which is then inserted into the nasal cavity for imaging. After imaging, each cross-sectional OCT image was analyzed in MATLAB. The average cross-sectional area of the nose and area between the nose and sheath are 4.53 mm2 and 3.73 mm2, respectively. Data have shown that occlusion of the nasal cavity by the OCT and sheath is not a problem.Finally, pilot evaluation of human neonates will be attempted. This study will be conducted to discern the different tissue layers of the nasal cavity, such as the epithelium, basement membrane, lamina propria, and cartilage, and detect any irregularity or trauma if present.

Low prevalence of nonalcoholic fatty liver disease in African-Americans undergoing bariatric surgery at Howard University Hospital –observations in the longitudinal assessment of bariatric surgery (LABS) study

Presenter's Name: Suneel Arwani
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Zaki Sherif, Ali Afsariali, Gezzer Ortega, Denia Tapscott, Hassan Brim, Hassan Ashktorab

Background: Nonalcoholic fatty liver disease (NAFLD) is the most common chronic liver disease that runs from simple steatosis to nonalcoholic steatohepatitis (NASH) and fibrosis. It is mostly asymptomatic and is linked with morbid obesity. Currently bariatric surgery is the most rapid and effective treatment option for morbid obesity and its associated metabolic co-morbidities. **Aim:** To determine the frequency of NAFLD cases in African-American obese patients seeking bariatric surgery at Howard University Hospital. **Methods:** Data were collected from Electronic Medical Records of 477 adult African-American obese patients who had undergone

bariatric surgery at Howard University Hospital from April 2004 through September 2015. Sixty two patients diagnosed with liver condition at the pre-operative stage underwent an anthropometric assessment. Confirmatory scanning liver images were also sought when necessary. **Results:** Sixty two cases (13%) of liver condition were identified out of the 477 bariatric patients, and of these only 6 cases (9.7%) of NAFLD were reported. The total NAFLD cases in bariatric patients were (1.3%). The associated comorbidities with NAFLD were: Hypertension (100%), diabetes mellitus (67%), dyslipidemia (50%), obstructive sleep apnea (67%) and gastroesophageal reflux disease (33%). All bariatric patients including NAFLD cases exhibited BMI of 40 and above. **Conclusions:** This longitudinal study demonstrated that obese African-American bariatric surgery patients are not strongly associated with NAFLD although they manifest characteristics of metabolic syndrome similar to the general patient population. This also confirms the low prevalence of NAFLD reported in the African-American population, which may be partially due to genetics and other as yet undetermined factors

Does a pathogenic mutation in African Americans with colorectal cancer be distinctive? A Targeted sequencing approach

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

Coauthors: Hamed Azimi, Hasti Olumi, Mike Nickerson, Sudhir Varma, Edward Lee, Babak Shokrani, Laiyemo Adeyinka, Hassan Brim

Background: Colorectal cancer is a major concern and third leading cause of death in US. With the advancement of Next generation sequencing the future of personalized medicine is becoming a reality. Targeted exome sequencing and distinguishing specific panel of genes for cancer, particularly CRC in AA population which are affected by this disease is of priority. In our study, we investigated at a panel of 15 Genes which was discovered by Ion Torrent sequencing and validated by Illumina Platform. **Method:** 140 CRC patients specimens collected from were used for validation by TS, using Ion Torrent sequencing and the mutations validated in 36 sample CRC by Illumina sequencing. In-Silica analysis for the distinct mutations was done. We determined the frequencies of the mutations by using R software to compare the variants in the normal and tumor samples with those in the 1000 Genomes database. We compared our results against The Cancer Genome Atlas. These somatic mutations were annotated with ANNOVAR. **Results:** From our 36 validated samples, there were 76 variants of the 15 genes. AMER1 (1/76) [1%]), APC (20/76 [26%]), ARID1 (6/76 [8%]), MSH3 (4/76 [5%]), MSH6 (7/76 [9%]), BRAF (1/76 [1.3%]), NRAS (15/76 [20%]), KRAS (1/76 [1%]), FBXW7 (4/76 [5%]), PIK3CA (2/76 [3%]), SMAD4 (4/76 [5%]), SOX9 (1/76 [1%]), TCF7L2 (2/76 [3%]), TGFBR2 (3/76 [4%]), TP53 (5/76 [7%]). From these validated variants (18/76 [24%]) were distinct mutations in 7 genes (AMER1, APC, ARID1A, NRAS, MSH6, PIK3CA, TCF7L2. There were total of 76 variants in the panel of genes, 17% (13/76) were non-synonymous mutations, 18% (14/76) were stopgain mutations, 21% (16/76) were synonymous mutation and 43% (33/76) were flanking intronic mutations. **Conclusion:** The distinct novel mutations can help to predict, diagnose and establish new therapeutically advanced modalities for optimum CRC patient care using a panel of pathogenic genes. The frequencies of these mutations can be for a better-targeted management approaches.

Comparison of Pathogenic Colorectal Cancer panel of gene between African American and Caucasian patients, a multi-center study

Presenter's Name: Hamed Azimi
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Hasti Olumi, Mike Nickerson, Sudhir Varma, Edward Lee, Babak Shokrani, Laiyemo Adeyinka, Hassan Brim, Hassan Ashktorab

Background: Colorectal cancer (CRC) is the third most common cancer worldwide and it has a different lifetime risk for variety of ethnicity. There are limited Targeted Gene Sequencing(TS) researches in African American (AA) with CRC and not many comparing the mutational frequency of AA versus other ethnicities, particularly Caucasians(CU). In this study, we investigated at a panel of 11 Genes which was discovered by Ion Torrent sequencing and validated by Illumina Platform, and compared the frequency between AA compared to CU. **Method:** 116 CRC patients specimens collected from African American (n=63) and Caucasians (n=53) were used for validation by TS, using Ion Torrent sequencing and the mutations validated in 28 samples (AA (n=15) and CU (n=13)) CRC by Illumina sequencing. In-Silica analysis for the distinct mutations was done. We

determined the frequencies of the mutations by using R software to compare the variants in the normal and tumor samples with those in the 1000 Genomes database. We compared our results against TCGA Network. These somatic mutations were annotated with ANNOVAR. **Results:** From our 28 validated samples, there were 50 variants of the 11 genes. AMER1 (2/50 [4%]), APC (12/50 [24%]), ARID1A (1/50 [2%]), MSH3 (7/50 [14%]), MSH6 (5/50 [10%]), BRAF (3/50 [6%]), KRAS (6/50 [12%]), PIK3CA (5/50 [10%]),SOX9 (2/50 [4%]), TGFBR2 (3/50 [6%]), TP53 (4/50 [8%]). There were common variants among 26% (13/50) nonsynonymous, 26% (13/50) synonymous, 4% (2/50) stopgain and 44% (22/50) splice site mutations. Overall mutational frequency of variants for AA was 0.65 (+/- 1%) vs 0.37 (+/- 1%) for the CU CRC patients. **Conclusion:** We showed the cumulative risk for CRC in AAs with 11 genes mutations to be higher to that of Caucasians with Colorectal cancer. Differences in the mutational spectrum are likely to reflect the genetic diversity of CRC.

A Case Study: The role of medical nutrition in addressing health disparities associated with metabolic syndrome and related chronic diseases

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

Coauthors: Chimene Castor

Purpose: Metabolic syndrome is considered to be a constellation of interrelated risk factors such as elevated blood pressure, blood glucose, triglycerides, reduced HDL, and obesity that appear to have a direct role in promoting the progressive development of atherosclerosis and cardiovascular disease. It also states that patients that present with these metabolic risk factors are at an increased risk for the development of type-2 diabetes mellitus. Metabolic syndrome has become an increasing public health concern and certain populations continually remain at risk. Statistics reveal that non-Hispanic blacks have the third highest prevalence of metabolic syndrome. However, this population makes up the highest percentage of individuals with independent risk factors such as obesity and insulin resistance. The purpose of this research is to explore a clinical case to get a better understanding of patients admitted with metabolic syndrome and the associated health disparities. By using medical nutrition therapy the objective is to reduce the risk factors that increase risk for type II diabetes and cardiovascular disease. **Methods:** This study used qualitative methods that consisted of in depth review of the electronic medical record review, interview of patient and the medical team. The information from the case was organized and analyzed data using the Nutrition Care Process. The nutrition care process is a systematic approach that utilized the use of four domains: nutrition assessment, nutrition diagnosis, nutritional intervention, and nutritional monitoring and evaluation to provide effective nutrition care and promote good nutritional status. **Results & Discussion:** The study found that the use of the nutritional care process and evidenced based literature reviewed presents a strong correlation in reduction of risk factors with the use of medical nutrition therapy. The primary therapy entails adherence to the DASH diet, increased fish consumption, physical activity, weight reduction, carbohydrate counting, and behavior modification. Current research shows that dietary salt restriction, weight loss, and glycemic control can prevent hypertension and stop insulin resistance. Increased consumption of fish, grains, vegetables, and fiber, has been show to reduce risk for cardiovascular disease. In the future by addressing metabolic syndrome with nutrition therapy we can begin to reduce the disparities that continue to impact the different populations. **Conclusion:** Medical nutrition therapy has a direct impact on risk reduction in metabolic syndrome. This includes changes in elevated serum glucose, elevated triglycerides, reduced HDL-C, obesity, and elevated blood pressure.

Comorbid Depression in Diabetes: A Comparative Study of Prevalence Between the United States and a Ghanaian Cohort

Presenter's Name: Bianca Carson
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Adaku Ofoegbu, Sandra Uweh, Felix Asamoah-Darko, Earl Ettienne, Georgia Dunston, Albert Amoah, Winston Anderson

Background: Comorbid depression in diabetes carries an enormous public health burden, leading to an increased likelihood of reported diabetic symptoms, more office visits, more same-day appointments, more missed visits, and a higher mortality rate. We interviewed patients from the National Diabetes Centre at the Korle Bu Teaching Hospital (KBTH) in Accra, Ghana to determine the prevalence of comorbid depression in diabetes (CDD) in the patient population and compare depression prevalence to United States data. **Methods:** We interviewed 199 patients using the Patient Health Questionnaire-9 (PHQ-9) and the My Mood Monitor (M3) assessments to determine the presence

and severity of depression. We also collected patient demographic information from medical charts. U.S. data on diabetes in depression was sourced from the literature. **Results:** Of the 199 patients interviewed, 41.7% were female (n=83) and 58.3% were male (n=116), spanning the ages of 15 and 92 (mean=58.74; SD=12.84). The average HbA1c was 7.3 (SD=2.5). PHQ-9 scores ranged from zero to 20 (mean = 3.1, SD = 3.6) and M3 scores ranged from zero to 60 (mean = 11.8, SD = 11.6). CDD prevalence was 5% in the patient population, lower than an approximate 25% prevalence rate for the United States. **Conclusion:** The lower prevalence in the Ghanaian cohort warrants a further look and may be instructive. Depression is often underdiagnosed or misdiagnosed in ethnic minority communities in the US and this may be consistent in Ghana.

Surveillance Study to Investigate the Incidence Rate of Selected Lysosomal Storage Disorders in Under-Represented Minority Groups

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

Coauthors: Marjorie Gondré-Lewis

Collectively, lysosomal storage disorders (LSDs) tend to have a prevalence of 1:5000 to 1:10,000 in general population. However, there has been no focused study to determine the prevalence for under-represented minority groups. In order to provide more accurate diagnostic data to clinicians, we initiated a large scale screening for "treatable forms" of LSDs with a special focus on under-represented minority groups. The study population comprised of anonymized patients in the Washington, D.C. metro area seeking healthcare for varied reasons. 85% of the patients are African-American and 7% of are Hispanic, and the remainder report as white, other, or American Indian. Under IRB approved protocols (NCT02120235 and IRB-14-MED-09), dried blood spots were prepared from peripheral blood samples within 24 hrs of draw and miniaturized fluorometric enzyme assays performed using 4-methylumbelliferyl (4-MU) substrates specific for a-galactosidase (Fabry disease), a-glucosidase (Pompe disease), b-glucosidase (Gaucher disease), chitotriosidase (Gaucher and Niemann-Pick C disease) and b-galactosidase (Gangliosidosis) enzymes. Reference ranges for all the enzyme assays were established using n=40 random normal subjects with no known symptoms of any of the LSDs. Taking together results from all the assays, 14 patients out of 1000 were found to have abnormal enzyme levels falling within LSD diagnostic ranges. Findings so far highlight higher incidence rates for abnormal enzyme levels in our sample population compared to previously published random population or newborn LSD screenings, possibly due to the fact that the results were collected on adults and children already under clinical care for various symptoms.

Epidemiological associations between religious activity and sedentary lifestyle in a U.S. national sample at risk for cardiovascular disease

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

Coauthors: Isaac M. E. Dodd, Kristen D. Dodd, Richard F. Gillum

Background: Shown to increase the risk of mortality and cardiovascular disease, the number of hours spent sitting is a component of sedentary lifestyle involved in television (TV) viewing activities or computer use (screen hours). No previous studies have compared religious activity to screen hours, and an increased frequency of attending religious services may be associated with lower screen hours. **Methods:** The National Health & Nutrition Examination Survey (NHANES) 2005-2006 data was employed, a national survey that used a Computer-Assisted Personal Interviewing (CAPI) system. Those surveyed were asked for the number of hours per day spent sitting to watch TV/videos and/or use a computer in the past 30 days. They were also asked how often they attend church or religious services. A Mobile Examination Center (MEC) also examined the subjects for height and weight to calculate their BMI. A statistical analysis was conducted using STATA 11 to perform an adjusted Wald chi-square test and multivariable linear regression to assess weekly or more religious service attendance as a potential predictor of TV/computer hours while sitting. **Results:** Out of 3,029 persons aged 40 or older, 85% and 28% reported daily TV and computer screen hours respectively. Religious attendance frequency was significantly predictive of TV hours ($p = 0.002$) with no significant confounding variables or effect modifiers, being independent of age, BMI, race, marital status, or education. This association was not seen with computer hours. Subjects who reported attending religious services weekly or more reported fewer TV hours. **Conclusions:** Our research, through a large representative sample, shows that attending weekly religious services demonstrates fewer

screen hours for TV viewing. The implications of this study are that regular religious attendance may demonstrate health benefits. Research on NHANES data in the past has shown prolonged sitting is associated with increased insulin levels and other metabolic effects. Future research is needed to study the dimensions of religious activity beyond self-reported data from a cross-sectional study.

Keywords: sedentary lifestyle, health behavior, religious attendance, screen hours, epidemiology, statistical analysis, cardiovascular disease risk

---

Prevalence of Hypertension in Fort Liberte and the Northeast Region of Haiti

Presenter's Name: Joseph Dubery
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Nicholas Gonzalez, Damien Pinkett, Roxanne Smith-White, Shelly McDonald-Pinkett, Marjorie Gondré-Lewis

Hypertension is a condition where the force of blood circulation, when chronically altered by blood clots, stress, calcification and sclerosis, can cause health problems such as stroke, heart attacks, and kidney disease. Haiti, where these conditions are prevalent, could benefit from rigorous scientific assessment of health status and healthcare needs to prevent, diagnose and treat diseases, but no such data are available. The purpose of this cross- sectional study was to assess blood pressure in Haiti compared to the US. **Methods:** The International Medicine Service Learning Program (IMSLP) traveled to and set up mobile clinics in the cities of Fort Liberté, Derak, Ouanaminthe, and Acul Samedi. Evaluative patient information such as vital signs was collected during routine clinical care. These data were recorded and anonymized by volunteers for NOAH-NY, and were analyzed and interpreted by the HU Health Sciences team for prevalence, trends, and statistical significance. **Results**: Of the 202 patients analyzed, 56.8% of males and 35.4% of females displayed elevated blood pressure readings. By contrast, the CDC reports an incidence in the US of 30.6% for males and 28.7% for females. **Conclusion:** Our study is the first in-depth evaluation of the incidence of hypertension in the NorthEast of Haiti. Our results indicate that hypertension is more prevalent among Haitians than Americans. Haitian men are at significantly higher risk to develop circulation problems than women, or their male counterparts in the US. Early preventative care, education, and healthcare continuity are valuable tools to improve health and quality of life.

Ibuprofen-induced anaphylactic shock and Non-ST-segment Elevation Myocardial Infarction. A case of Kounis syndrome?

Presenter's Name: Ngozi Enwerem
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Stephan Hemmings, Mark Larralde, Uzoma Anwukah, Sonja Geralde, Hedara Kedija, Ankit Mahajan Anand Deonarine, Rai Prithviraj

Background: Kounis Syndrome (KS) is infrequently encountered in clinical medicine. It is a hypersensitivity-associated cardiac syndrome manifesting as acute coronary syndromes (ACS) in the setting of anaphylaxis. We present the case of a woman who developed KS during treatment of ibuprofen-induced anaphylactic shock. **Case Presentation:** An 18 year old African American female presented with facial swelling, tongue swelling, and chest pain of 12 hours duration after ingesting ibuprofen 400mg for relief of cramps. On examination, vital signs were significant for tachycardia (HR 125 beats/minute), hypotension (BP 86/58mmHg), tachypnea (RR 24 breaths/minute). Peri-orbital, lip and tongue swelling as well as auscultated rhonchi were confirmed on examination. Emergent medical therapy included: IV diphenhydramine 50mg, methyl-prednisolone 125mg, ranitidine 50mg and epinephrine 0.1mg (1:10,000 dilution). Subsequently she complained of worsening chest pain, 10/10 in severity. Repeat vitals showed HR 160 bpm and BP 104/60mmHg. An EKG showed ST-segment depressions and T wave inversions in the anterior-lateral and inferior leads. Within 60 minutes, her symptoms abated and her vitals normalized. Repeat EKG was normal. Initial labs were significant for troponin-I of 1.1ng/mL .She was admitted for of non-ST-segment myocardial infarction (NSTEMI). Echocardiogram revealed normal left ventricular function, without wall motion abnormalities. She was managed conservatively without anticoagulation. **Discussion:** KS is due to histamine-induced coronary vasospasm during anaphylaxis. Epinephrine, a part of the treatment for anaphylaxis, likely contributed to coronary vasospasm in our patient, manifesting as worsening chest pain and NSTEMI. Physicians need to be aware of the possibility of KS in patients with anaphylaxis.

Assessing Impact of Student-Run Free Clinic on Urban Community

Presenter's Name: Chibuike Ezeibe
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Vincent Long, Babafemi Adenuga, Kandie Tate

Introduction: According to the Society of Student-Run Free Clinics (SSRFC), a student-run clinic is defined as a service-learning student driven outreach project in any discipline that strives to enhance the health and well-being of a community. Given that health services are offered to patients free of charge, the New Freedmen's Clinic (NFC) affiliated with Howard University College of Medicine is one such Student-Run Free Clinic (SRFC). It is the aim of this study to evaluate the New Freedmen's Clinic as a SRFC project and elucidate the demographics of the patient population that it serves.**Study Design/ Methods:** A retrospective patient chart review was conducted and demographic information was recorded and analyzed. Both qualitative and quantitative information gathered was compared to the national average as indicated in the literature. 171 patients were selected at random for the study. Patients included in the study were seen at the NFC from 2009 to 2015. STATA data and statistical analysis software was used to tabulate the results. **Results:** An analysis of the data shows that NFC has a patient population that consists predominately of African Americans, who are English literate. In terms of education, most of the patients had attended college, but despite this, a majority of the patients reported being unemployed. There was also a correlation between the patient insurance status and having a primary care physician (PCP) or dentist. Only 17% of patients reported having insurance and only 12% of patients reported having a PCP or a dentist. Finally, our analysis also examined the overall health status of our patient population. A small percentage of patients were recorded having a diagnosis of hypertension, diabetes, or dyslipidemia. **Conclusion:** The New Freedmen's Clinic (NFC) at Howard University has a unique patient population and therefore, a unique opportunity, to provide services to our underserved community. Currently, the clinic has served as a primary care clinic treating hypertension, hyperlipidemia and diabetes creating a pipeline to healthcare for underserved, uninsured and underinsured patients. The future plans of NFC involve transitioning from paper charts to electronic medical records (EMR), as well as collaborating and coordinating with the School of Social Work, the School of Dentistry, and the School of Law in order to provide services, information, and opportunities to patients concerning insurance, education and employment.

Using the Nutrition Care Process To Address Health Disparities in Diverticulosis

Presenter's Name: Jackie Ferretti
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Chimene Castor, Thomas Fungwe

Purpose: The purpose of this research is to explore a clinical case to gain an understanding of the anatomy and physiology of diverticulosis and the associated health disparities. Using medical nutrition therapy and evidenced based research, the objective is to reduce the risk factors associated with diverticulosis and other gastrointestinal diseases. **Methods:** This was a qualitative case study consisting of an electronic medical record review utilizing the ADIME format, interview of patient and with the medical team. The information was analyzed using the Nutrition Care Process. A literature review was conducted on PubMed using the following key terms: diverticulosis, diet, and treatment. A total of three articles were included in this review. **Results:** Diverticulosis affects more African American males than other races, as well as older individuals and those who consume a high fat low fiber diet. The patient in this case study presented with most of these risk factors. The literature review presented a strong correlation between similar risk factors for the development of diverticluosis and colorectal cancer. While there is no causative relationship, the risk factors were similar. A diet high in fiber is recommend in the treatment and prevention of both diveriticulosis and colorectal cancer. The efficacy of pre- and probiotics is variable but in the near future there may be recommendations for the inclusion of these to protect against diverticula formation. **Conclusion:** Diverticulosis occurs at a higher prevalence in older individuals. Similar lifestyle and dietary habits that lead to diverticular disease may also lead to colon cancer. Those at greatest risk for colon cancer are African American males. The prevention of complications of diverticulosis along with weight loss may reduce the risks associated with the development of colon caner.

Circulatory MicroRNAs as Potential Biomarkers and Regulators of Metabolic Dysfunction in African American Adults with Type 2 Diabetes Mellitus

Presenter's Name: Maurice Fluitt
Classification: Graduate Student
Presentation Type: Oral Presentation

Background: Previous research has explored the molecular mechanisms and identified biomarkers for type 2 diabetes mellitus (T2DM) in mouse models and European populations. However, there is a greater need to elucidate the molecular mechanisms associated with T2DM and identify biomarkers specific to African Americans. MicroRNAs (miRNA) are a novel class of regulatory RNAs that postrasncriptionally regulate gene expression. Several studies have identified differential expression of both tissue and circulating miRNAs in T2DM mouse models and various ethnic groups. This pilot and feasibility study aims to: 1) identify if circulatory miRNA expression is differentially expressed between type 2 diabetic African American adults and healthy controls and 2) to identify novel relationships between circulatory miRNA and key hormones involved in T2DM development and progression. **Methods:** Patients were recruited from the Howard University Diabetes Treatment Center. miRNAs were isolated from RBC collected following an 8 to 10 hour fast using commercially available kits. SYBR green primers were used for the detection and quantification of miRNAs involved in metabolic regulation (miRNA-499, miRNA-15a, miRNA-146, miRNA-126, miRNA-15b, miRNA-224, miRNA-326, miRNA-223, miRNA-375, LET-7a and LET-7f). miRNA expression was compared between groups and statistically analyzed. Hormones were assayed using commercially available RIA kits. Plasma hormone concentrations were compared with miRNA expression to identify novel correlations. **Significance:** The findings of this study will provide insight into the use of circulatory miRNAs as biomarkers and regulators of metabolic dysfunction in African Americans with T2DM. Moreover, the findings of this study will unearth the complex intricacies associated with the development and progression of T2DM, revealing mechanisms that lead to altered gene expression of key genes of energy metabolism and diabetic complications.

Adolescent Nocturnal Fears: A Psychometric Evaluation of the Fear of Sleep Inventory (FOSI)

Presenter's Name: E'leyna Garcia
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Ameenat Akeeb, Michal Young, Orissa Masseyori, Tyish Hall Brown, Vernessa Perry, Davene White

Introduction: Sixty-two percent of adolescents age 13 to 17 have been exposed to a potentially traumatic event and adolescents living in urban environments are at increased risk for exposure. Sleep disturbance is a common symptom following exposure to trauma and a cardinal feature of PTSD. Previous research has implicated nocturnal fears in the development and maintenance of trauma related sleep disturbance, yet there is limited research addressing the role of nocturnal fears in adolescents exposed to trauma. The Fear of Sleep Inventory (FOSI) is a 23-item inventory that has been validated for adults and has consistently shown significant associations with Insomnia and PTSD symptom severity. The purpose of this investigation was to establish whether the FOSI is a valid measure of nocturnal fears in an urban adolescent population. **Method:** Participants were 147 high school teens who completed a comprehensive mental health screening in a school-based setting. Teens were screened for exposure to trauma, posttraumatic stress disorder, the presence of nocturnal fears, and insomnia among other forms of mental health conditions and important health habits. **Results:** Similar to adult findings, exploratory factor analysis of the FOSI yielded a five-factor structure, accounting for 57% of the total variance and it included the following factors: Fear of Sleep, Fear of the Loss of Vigilance, Fear of Re-experiencing Trauma, Vigilant Behavior, and Fear of the Dark. Internal consistency estimates were moderate to high (.57-.79) for the subscales and .84 for the total scale. The FOSI also showed adequate convergent validity with PTSD symptom severity and Insomnia severity (PTSD, $r = .20$, $p < .05$; ISI, $r = .35$, $p < .01$). The Fear of Loss of Vigilance and Vigilant Behavior factors positively correlated with PTSD symptom severity ($r = .19$, $p < .02$; $r = .30$, $p < .01$). The Fear of Sleep, Fear of Loss of Vigilance, Vigilant Behavior and Fear of the Dark factors all positively correlated with Insomnia severity (all ps <.01; effect sizes: $r = .19$ to $.36$). **Conclusions:** This study demonstrates that the FOSI is a valid tool for assessing nocturnal fears in urban adolescents and can be used in future studies to help elucidate factors that contribute to trauma related sleep disturbance in teens.

Early Caffeine Therapy is Not Associated with Mortality within 48 Hours of Life in Very Low Birth Weight Newborns

Presenter's Name: Vamsi Chaitanya Garimella
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Coauthors: Mia Ma, Vamsi C. Garimella, Avanti Gupte, MD, Nitin Chouthai, MD

Background: Caffeine is routinely given for apnea of prematurity to very low birth weight newborns (VLBW). Recently, a large study demonstrated that early caffeine was associated with better lung function outcomes. However, higher mortality was seen in the group that received early caffeine. That study did not include newborns that died within the first two days of life. The objective of this study was to describe the caffeine usage in VLBW newborns that did not survive first hospital admission. **Methods:** This study is a retrospective chart analysis. VLBW newborns born between January 1st 2006 to December 31st 2012 that died during their first hospital admission where evaluated. Perinatal clinical characteristics and post-natal course were documented. The newborns were divided into three groups based on timing of caffeine therapy. "Early Caffeine" therapy was within first 48 hours of life. "Late Caffeine" therapy was after 48 hours of life. "No Caffeine" group did not receive any caffeine. Data was analyzed using SPSS 21.0 statistical program. **Data:** Data from 145 newborns were evaluated in Very Low Birth Weight (Gestational Age: <34 weeks & Birth Weight: <1500 g) and Extremely Low Birth Weight (Gestational Age: 23-24 weeks & Birth Weight: <1000 g) newborns catogeraries.**Results:** A higher percentage of newborns in No Caffeine group died within first 48 hours of life as compared to Early and Late Caffeine groups. **Conclusion:** Early Caffeine Therapy is not associated with a higher percentage of deaths in Very Low Birth Weight Newborns within 48 hours of life.

Diverticular Diseases-Associated Colectomy in Urban African American patients: A Hospital based study.

Presenter's Name: Shima Ghavimi
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Hassan Brim, Laiyemo Adeyinka, Edward Lee, Seyed-Mehdi Nouraie, Hassan Ashktorab

Introduction: Diverticular Diseases (DD) are generally benign and are primarily detected as incidental findings during routine colonoscopies. However, in certain cases, DD might lead to colectomy. Aim: In the present retrospective study, we sought to determine the frequency of colectomies in African American DD patients and the associated clinical and pathological features in such cases. **Method:** We reviewed 2400 files that correspond to DD patients admitted at Howard University Hospital from 1996 to 2014. Clinical and pathological features of patients that resulted in colectomy were analyzed in details. Results were presented in frequency tables.**Results**: Among the 2400 DD cases, there were 60% (1438/2400) females and 40% (968/2400) males, of which 2020 (84%) had diverticulosis while 380 (16%) had diverticulitis. Colectomy was performed in 7.3% (174/2400) of the patients in the study. Six percent (112/2020) of patients who had colectomy were diagnosed with diverticulosis, and 16% (62/380) of patients had diverticulitis who underwent colectomy. From the diverticulosis set of colectomy patients, 82% (92/112) had hemorrhage, of which 30% (34/112) of them were admitted with massive GI bleeding. Of the diverticulitis set patients which had colectomy, 23% (14/62) had hemorrhage and 77% (48/62) had no hemorrhage. From the diverticulitis set of patients which had colectomy 50% (31/62) had recurrent diverticulitis. **Conclusion:** This study reveals that a sizable portion of African Americans with DD undergo colectomy primarily due to hemorrhage in diverticulosis patients. This applies to diverticulitis patients as well, however, in these patients, recurrence of diverticulitis is the primary indicator for colectomy.

Computed Tomography (CT) Imaging of Abdominal Hernias Following Mesh Repairs

Presenter's Name: Adrian Godoy
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Eugene Bivins, Kovosh Dastan, Danh Truong, Sarah Mohamedaly, Belen Tesfaye, Daniel Trand, Andre Duerinckx, Bonnie Davis

Background: Over one million abdominal hernia repairs are performed in the United States annually. Surgical techniques (including open and laparoscopic repairs) and mesh design have improved significantly. Although these procedures have evolved, they are not without risks. Occasional complications include incisional hernia recurrences, fluid collections, mesh infections, and small bowel-related complications.

In such clinical scenarios, imaging can be very helpful. The aim of this project is to provide an overview of the normal anatomy and post-surgical complications utilizing CT imaging. **Methods:** We performed a comprehensive review of the existing medical literature and clinical cases at Howard University Hospital concerning: Types of mesh repairs and surgical approaches; Imaging appearance of post-surgical complications; Review of normal and abnormal cases. **Results:** Post-operative complications are related to the composition of the mesh; CT is a valuable imaging tool in early detection of complications; The complications recently found at our institution include: mesh migration, seroma, abscess, and mesh folding. **Conclusion:**Surgical techniques in abdominal hernia mesh repairs have advanced in the past few decades. CT technology is uniquely positioned to evaluate normal and abnormal post-surgical findings. Familiarity with these imaging findings is beneficial in early detection and management of complications following hernia repairs.

Understanding Patient Experiences with Scarring Alopecia: A Qualitative Research Study

Presenter's Name: Alessandra Haskin
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Ginette Okoye, Crystal Aguh

Background: Central Centrifugal Cicatricial Alopecia (CCCA) is a type of scarring (permanent) hair loss that disproportionately affects African-American women and can be a very distressing experience for those affected. Existing research has examined the experiences of women with chemotherapy-induced alopecia, however there are currently no systematic studies of the psychosocial stressors and emotional factors that affect women with CCCA. **Objective:** To assess the emotional factors that affect women with CCCA and how they influence their ability to cope with permanent hair loss. **Methods:** Participants included 10 African-American women with biopsy-proven CCCA. This study used a qualitative approach and data was collected using one-on-one semi-structured interviews. The interviews were transcribed, and ATLAS.ti software was used to conduct content analysis by identifying emerging themes and thought patterns. **Results:** Several main themes emerged from the interviews. These themes included anticipated issues such as difficulties with acceptance, embarrassment, and the importance of hair for the perception of beauty and self-worth. Other prevalent themes included the stress associated with concealing hair loss, difficulties with burdensome topical treatment regimens, and the role of reassurance from significant others. **Conclusions:** Results suggest that dermatologists need to be cognizant of the potential burden of their treatment regimens, which may improve patients' satisfaction and adherence. Also, it may be beneficial to include significant others in the treatment process since they can be an effective source of support and reassurance. Additionally, dermatologists should consider discussing and/or providing affordable hair-loss camouflage techniques as an adjunct to current therapeutic approaches to CCCA.

Clinical Utility of Radiological Imaging in Diagnosing Sickle Cell Disease: A Review of the Literature

Presenter's Name: William Hill
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Mustafa Alam, Joshua Obamedo, Amara Davidson, Steeve Pierre-Louis, Amit Vij

Background: Sickle cell disease (SCD) is an autosomal recessive point mutation that manifests in sickling of red blood cells, ultimately causing vaso-occlusive crisis, chronic hemolytic anemia and recurring infections. This pathophysiology results in multi-organ complications that can be detected using various imaging modalities. The aim of this project is to illustrate various imaging findings of SCD predominately affecting the skeletal, abdominal, cerebral and pulmonary systems. This will enable radiologists and other clinicians to recognize and treat the complications of this chronic disease. **Methods:** We reviewed the world medical literature on the imaging manifestations of Sickle Cell Disease and reviewed cases from the Radiology teaching file at Howard University Hospital (HUH) in order to: Organize imaging findings based on specific organ systems; Correlate imaging manifestations based on pathophysiological origin; Illustrate characteristic findings across multiple imaging modalities. **Results:** Well known text book presentations of characteristic complications of Sickle Cell Disease have not changed over the years; More and more, medical subspecialties are becoming familiar with imaging findings utilizing various radiographic modalities; The number of major review articles on imaging of SCD has significantly increased in recent years; We were able to illustrate the more common complications of SCD in specific organ systems from our Radiology teaching files. **Conclusions:** SCD is a public health issue of global significance. Early detection and

treatment have helped prolong survival. Imaging findings of the most common presentations of Sickle Cell Disease are well known. This project provides an update with additional recent insight on the use of imaging in SCD for our imaging colleagues and as an adjunct to the clinical picture for our referring physicians. Our findings demonstrate the value of imaging and the need for familiarity in identifying manifestations of SCD.

Cognitions and behaviors that disrupt sleep in formerly deployed US veterans.

Presenter's Name: Mary Katherine Howell
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Howell, M.K.

Background: Sleep disturbance is a common problem following military deployment. Insomnia is associated with other adverse psychiatric and medical health outcomes. There are specialized cognitive behavioral therapies that can effectively treat insomnia; however, these tend to emphasize dysfunctional beliefs about sleep rather than nocturnal vigilance. Deployment to a threatening environment can engender nocturnal vigilance, which appears to be a salient feature of sleep disturbance in formerly deployed veterans. The purpose of this analysis is to characterize sleep-interfering thoughts and behaviors observed in an ongoing pilot study of a novel two-session intervention to improve sleep in veterans. **Methods:** As part of an ongoing study, veterans with disturbed sleep are assessed at baseline, receive two intervention sessions, and are assessed in 3 months. Sleep-interfering thoughts and behaviors are evaluated via self-report forms, interviews and prospective diaries. **Results:** All of the first 5 participants endorsed vigilant behaviors, including being over-attentive to their environment (n = 4), checking behaviors (n = 3), and being "on-guard" (n = 5), and all endorsed sleep-interfering thoughts, including about their environment or about sleep (n = 3), about social or occupational concerns (n = 4), about past nightmares (n = 2), and about health (n = 1). **Conclusions:** The preliminary data suggests that veterans exhibit cognitive and behavioral patterns that involve vigilance and interfere with sleep. This pilot data demonstrates need for an intervention targeting the link between nocturnal vigilance and sleep disturbance.

Case Study: Epignathus-Congenital Oropharyngeal Teratoma

Presenter's Name: Shuna Isom
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Vanessa McDonald, M.D., Oscar Mims, M.D.

Case Report: 24 y/o G2P1-0-0-2 with past medical history significant for Cesarean delivery of dichorionic/diamniotic twins and Mild Intermittent Asthma presented in her first trimester to establish prenatal care. Fetal anatomic survey via ultrasonography in the second trimester revealed a mass emanating from the fetal oral cavity. Subsequent Magnetic Resonance Imaging (MRI) again demonstrated a large heterogeneous mass protruding from the fetal mouth, approximately 3-4 cm from the skin. The mass was also noted to occupy the entire oral cavity. Although the nasal cavity appeared to be uninvolved, there was some encroachment upon both the nasal and oral pharynx. In addition, the mass extended intracranially, through what appeared to be the right skull base to enter the middle cranial fossa/right temporal lobe. There was suggestion of both cystic and solid components, including a large 3-4 cm external cystic portion. Lastly, considerable amniotic fluid was noted, suggesting Polyhydramnios, as fetal swallowing due to the mass had been compromised. Given these findings, the patient was subsequently transferred to an outside facility with a Level 3 nursery as well as both Pediatric Neurosurgery and Pediatric Otolaryngology capabilities. A repeat MRI was performed upon transfer and revealed the size of the mass to have substantially increased in comparison to previous imaging just 3 weeks prior. There was also marked mass effect noted in the midbrain and brainstem with significant ventriculomegaly. Both Neurosurgery as well as Otolaryngology were consulted resulting in the recommendation that the fetal condition was incompatible with life, thus comfort care would be the best option upon delivery. The patient was delivered via repeat Cesarean section at 29 weeks 1 day gestation. At delivery, there was an approximately 7 x 7 cm mass protruding from the female infant's oral cavity. The infant exhibited poor tone and respiratory effort, as inspiration was opposed by the fixed obstruction. The infant was given pain medication to decrease discomfort and subsequently expired one hour post delivery. **Discussion:** Epignathus is a rare space-occupying teratoid tumor that arises from the oropharynx near the basisphenoid region (Rathke's Pouch). It grows in such dimension that the mass eventually fills the oral cavity and protrudes from the mouth. It may also grow intracranially.

The estimated incidence ranges between 1:35,000 to 1:200,000 births and has a slight female predilection. Often classified under the broader heading of cervical teratomas, these tumors may contain elements of all three germ layers- i.e. bone, cartilage, and adipose tissue. The vast majority of these tumors are benign lesions, but malignant variants can occur sporadically and some elements of these tumors may become malignant after incomplete removal. Because of the concern for severe respiratory obstruction in the neonate at birth, sonographic diagnosis and subsequent management are strongly emphasized in the prenatal period. Ultrasonographically, tumors originating from the oral cavity with calcifications and cystic components can be detected. These tumors may also grow intracranially, which will also be apparent radiologically. Additionally, Polyhydramnios is present in most cases and has been associated with poor prognosis. Once the diagnosis is made radiographically, obstetric management must be planned. Due to the concern for respiratory distress in the neonate upon delivery, efforts will need to be coordinated not only with Pediatrics but Otolaryngology and Neurosurgery as well. Genetic counseling must also be undertaken with the patient. Given the high probability for respiratory distress upon delivery, the EXIT technique, or EX utero Intrapartum Treatment (the uterus is kept relaxed and the utero-placental blood flow remains intact, thus supplying the neonate with oxygen until such time as the infant's airway can be established by intubation, tracheostomy, or excision of the tumor) should be considered, if feasible.

Screen hours and Sleep Disturbances: In the 2005-2006 National Health and Nutrition Examination Survey

Presenter's Name: Vladimir Joseph
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: O'Dene Lewis, Yewande Odeyemi, Alem Mehari, Richard Gillum

Background: Both sleep symptoms and television viewing have been linked to many cardiovascular risk factors including diabetes, hypertension and obesity as well as mortality. Few studies report on the relationship between screen hours and sleep symptoms. We examined whether screen hours were associated with sleep symptoms. **Methods:** Data from the 2005-2006 US National Health and Nutrition Examination Survey were analyzed. Screen hours and sleep symptoms were assessed at home interview. Screen hours were the sum of daily TV hours and computer hours during the past 30 days. A total of 4,342 participants (including 2181 non-Hispanic whites, 1018 non-Hispanic blacks and 842 Mexicans Americans) age 20 years and over had data on screen hours and sleep symptoms. **Results:** The median hours of sleep among the population was 7 hours and the median screen time was 3 hours. Participants who reported 4 or more screen hours were more likely to report sleep less than 6 hours ($p<0.001$), sleep more than 8 hours ($p=0.001$), snorting/stop breathing ($p=0.005$), sleepiness during the day ($p<0.001$), waking up at night ($p<0.001$), waking up too early ($p<0.001$) and sleep latency>30 minutes ($p<0.001$). The association with short sleep remained significant after stratifying by age. However, when stratified by race and ethnicity the significance only remained among Non-Hispanic whites ($p=0.02$). **Conclusion:** Four or more reported screen hours per day were associated with multiple sleep symptoms in US adults.

Revisional Bariatric Surgery in African Americans: Short Term Outcomes

Presenter's Name: Jamil Kendall
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Gezzer Ortega, Kibileri Williams, Kakra Hughes, Edward Cornwell III, Terrence Fullum, Daniel Tran

Introduction: African Americans have the highest incidence of obesity compared to other groups, and some have benefitted greatly from weight loss operations. Unfortunately there has also been an increase in the need for revisional surgeries due to unsatisfactory weight loss or weight regain. We report the short term outcomes of revisional bariatric surgeries in African Americans at a tertiary academic medical center. **Methods:** We conducted a retrospective study of eligible subjects identified at Howard University Hospital. Patients included were those who underwent revisional bariatric surgery over a 5 year period from August 2008 to July 2013. Data on the patients' demographics, body mass index (BMI), and comorbid conditions were recorded prior to the surgery and at 1, 6, and 12 months post-surgery. **Results:** 364 patients underwent bariatric surgeries during the time frame of the study. 77 (21%) of the 364 were revisional bariatric surgeries. The original surgery was Roux En Y gastric bypass (RNY) in 74 (97%) patients, laparoscopic adjustable gastric banding (LGB) in 2 (3%) patients, and biliopancreatic diversion (BPD) in 1 (1%) patient. The mean pre-op BMI before the

original procedure was 54.3 kg/m2, and the mean nadir bmi was 33.4 kg/m2. The mean revisional pre-op BMI was 42.1 kg/m2 and the mean BMI 12 months post-revision was 34.8 kg/m2. Average percent excess weight loss (%EWL) was 32.1% 12 months post-revisional surgery. Paired sample t-test comparing the means of the nadir BMI after the original surgery to the BMI 12 months post-revisional surgery showed no statistical difference ($p>0.05$). 7 (9%) patients developed post-operative complications. 2 (3%) patients showed post-operative bleeding but only one required a transfusion. 2 (3%) patients developed an incisional hernia through the revisional surgery incision, needing reparative surgery. 1 (1%) patient developed a small bowel obstruction. 1 (1%) patient developed a gastrojejunal stricture needing repair, and 1 (1%) patient developed sepsis from a staple line leak that was repaired. There were no mortalities. **Conclusion:** Revision bariatric surgery produces similar results to the original procedure, and is feasible and safe for African Americans who have experienced weight regain or unsatisfactory weight loss after the original bariatric procedure.

Improving Antiviral Activity of 1E7-03, an Ebola Virus Inhibitory Small Molecule, that Targets Protein Phosphatase-1

Presenter's Name: Amol Kulkarni
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Poster Presentation

Coauthors: Jorge Aguilera, Taylor Hodges, Colette Pietz, Xionghao Lin, Marina Jerebtsova, Yasemin Saygideğer, Tatiana Ammosova, Andrey Ivanov, Alexander Bukre, Aykut, Uren, Sergei Nekhai

Background and significance: Our collaborative research has identified host protein phosphatase 1 (PP1) to be a viable target for the treatment of Ebola virus (EBOV). Recently, we reported a non-peptidic small molecule, 1E7-03, that targeted a non-catalytic site of PP1 and displayed potent anti-EBOV activity. We observed that 1E7-03 underwent a facile hydrolysis resulting in the cleavage of its amide bond. The metabolite bound well to PP1 in vitro but had significantly reduced anti-EBOV activity likely due to poor permeability across cell membranes. Reduced permeability was presumably because of the carboxylic acid moiety which predominantly exists as a negatively charged carboxylate anion at the physiological pH. **Experimental approach:** We converted the carboxylic acid moiety in the metabolite into an ester and an amide. We predicted that these neutral prodrugs will possess enhanced ability to cross the cell membrane. Hydrolysis of these prodrugs inside the cells will furnish the active metabolite. We developed a four-step route leading to the chemical syntheses of our analogs. So far, we have tested the anti-EBOV activity of the ester analog using Vero-6 cells infected with Ebola Zaire virus (EBOV). **Key results:** The ester analog displayed significantly improved anti-EBOV activity as compared to the metabolite bearing free carboxylic acid. **Conclusion:** Our studies indicate that the urea side chain in 1E7-03 is not critical for its anti-EBOV activity and can be modified into ester and amide groups. Our research is focused on the development of metabolically stable analogs of 1E7-03 containing an amide functionality.

A randomized trial of patterns of laxative ingestion to improve bowel preparation for colonoscopy

Presenter's Name: Adeyinka Laiyemo
Classification: Senior Faculty
Presentation Type: Oral Presentation

Coauthors: Kolapo Idowu, Getachew Mekasha, Momodu Jack, Carla Williams, Angesom Kibreab, Victor Scott, John Kwagyan

Introduction: Improving the experience of patients with bowel preparation process will enhance uptake and quality of screening colonoscopy. We examined patterns of flavoring of polyethylene glycol (PEG) on patients' satisfaction and adequacy of bowel preparation at colonoscopy. We hypothesize that patients will have better experience if they taste PEG with and without flavoring before consuming the laxative. **Methods/Study Population:** We conducted a single blind (endoscopist), parallel design, randomized trial (NCT 02062112) during which patients scheduled for colonoscopy were assigned to one of three groups. Group 1 patients (n = 84) were issued a gallon of PEG and were instructed to drink it without flavoring (unflavored group), group 2 patients (n = 90) were issued PEG with flavor packs and were instructed to flavor the entire gallon and drink, while group 3 patients (n = 82) were issued flavor packs but were instructed to taste a cup of PEG without flavoring and another cup with flavor and decide for themselves how they want to drink the rest (choice group). Split dose bowel preparation was recommended for all patients. On the day of their colonoscopy, patients used a scale of 1 to 10 (1 = unbearable; 5 = neutral and 10 = pleasant) to rank the taste of the laxatives, the ease of drinking, and overall experience of bowel preparation process. They were also asked if they would want the same laxative again if they

were to undergo colonoscopy in the future. Adequacy of bowel preparation and presence of neoplasia was assessed by the patient's endoscopist who was blind to the randomization assignment of the patients. **Results:** There were no differences in the mean scores of patients across the groups (1, 2 and 3) in the taste of the laxatives (6.81 vs 7.69 vs 7.34, P = 0.67), the ease of drinking (7.47 vs 8.18 vs 7.84, P = 0.47), and overall experience of bowel preparation process (7.91 vs 8.09 vs 7.95, P = 0.25). Surprisingly, adequacy of bowel preparation of good to excellent was higher among patients who drank their PEG unflavored and subsequently had higher detection of adenoma even though they were less likely to want the same laxative again. Patients in the choice group had 3-folds increased odds of willing to have the same laxative again. **Discussion/Significance of Impact:** There were no differences in the overall tolerability of bowel preparation by patterns of flavoring of PEG. Those who had a choice pattern of laxative ingestion were more willing to have the same laxative again but those who drank unflavored PEG were less satisfied but had better clinical outcome.

Funding source: This study was funded in part by the Bridge Funds and Pilot Study Awards Program (Grant number U400043) of Howard University.

Is their a relationship between Orthodontics and Speech Sound Disorders: The need for collaboration.

Presenter's Name: Buford Lauren
Classification: Graduate Student
Presentation Type: Poster Presentation

According to the office of Disease Prevention and Health Promotion (2010), at least 1 in 6 Americans currently have a communication impairment or disorder. Among those various diagnosed communication impairments, articulation disorders are treated and assessed by speech-language pathologists. Articulation disorders, which are also referred to as speech sounds disorders, can vary in severity and be due to motor-based disorders, structurally based disorders, syndrome/condition-related disorders, and sensory-based conditions (ASHA, 2004). Many of the key components needed for speech production are the oral structures such as the lips, teeth, tongue, and jaw. Articulation disorders caused by malocclusions, and other dental problems may require treatment from both the speech-language pathologists and orthodontists. Orthodontists, who are specialists in preventing and treating dental and facial anomalies such as teeth and jaw alignment may informally judge their clients' speech as normal and/or disordered while assessing dental concerns. The study investigated the impact that dental disorders may have on speech sound production. The charts of 200 dental patients records were reviewed to determine is there a relationship between articulation disorders and dentition. This session explores the following 1) the presence of dentition errors; 2) the types of dentition errors; 3) the incidence of speech sound disorders based on orthodontist's clinical judgment, and 4) the need for collaboration between the disciples of speech-language pathology and orthodontics. The results of the present study will help in the referral process between disciples and will be used for future training programs

---

Systematic Responses of Human Embryonic Kidney 293T cells to Protein Phosphatase 1 Targeting Small Molecule 1E7-03 Revealed by Label-Free Quantitative Phosphoproteomics

Presenter's Name: Xionghao Lin
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Oral Presentation

Coauthors: Tatiana Ammosova, Sergei Nekhai

The phosphorylation and dephosphorylation of host proteins by kinases and phosphatases constitute an essential regulatory network in viral infection. Protein phosphatase-1 (PP1), a member of the Serine/Threonine phosphatases, controls the phosphorylation state and cellular function of a wide variety of host and virus proteins. Recently, we identified a small molecule, 1E7-03, that targeted PP1 and inhibited transcription and replication of HIV-1, Ebola virus (EBOV) and Rift Valley Fever Virus (RVFV). However, no systematic study has been conducted to identify host proteins which phosphorylation is induced by 1E7-03. Here, we conducted a label-free quantitative phosphoproteomic comparison for human embryonic kidney (HEK) 293T cells treated with or without 1E7-03. We quantified 15,104 phosphopeptides (PPEs), in more than 6,000 phosphoproteins (PPNs). Of these PPEs, 437 PPEs in 339 PPNs were significantly increased (RatioTreated/Control>2, $p<0.05$), whereas 1905 PPEs in 1391 PPNs were significantly decreased (RatioControl/Treated>2, $p<0.05$). Computational analysis of biological functions suggested that 14 upregulated and 64 downregulated PPNs were involved in viral infection. Pathway analysis showed that the phosphorylation level of PP1 regulatory subunit 13B was significantly decreased (-2.96 folds, $p=2.06\times10\text{-}6$) in the protein phosphatases network, and the phosphorylation levels of several proteins in the signal transduction pathway

with 14-3-3 protein as a central regulator were significantly upregulated (2.4-8.6 folds, $p<0.007$) and downregulated (2.17-5.75 folds, $p<1.90\times10\text{-}3$). 14-3-3 protein has been confirmed to regulate phosphorylation/dephosphorylation of Cdc25 together with PP1. In general, label-free quantitative phosphoproteomics has discovered new contributors involved in the anti-virus mechanisms of 1E7-03 including PPNs regulated by PP1 directly or indirectly.

Factors Affect Adoption of Computerized Physician Order Entry System

Presenter's Name: Mohammed Malhani
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Earl Ettienne, La'Marcus Wingate

Background: Computerized physician order entry (CPOE) system is commonly believed to reduce medication-related errors, but the predictive factors for CPOE adoption are underexplored. **Methods:** A cross-sectional study using the 2006–2010 National Ambulatory Medical Care Survey (NAMCS). The primary outcome, CPOE adoption, was defined as a practice which had a fully functional CPOE. The data was analyzed at the physician level by SAS 9.3 using weighted analyses given the survey's multistage sampling design. Descriptive statistics for all study variables were estimated. Unadjusted and adjusted logistic regression analyses were used to evaluate predictors of CPOE adoption. **Results:** The weighted proportion of physicians who had adopted CPOE was 37%. Physician specialty was significantly associated with CPOE adoption ($p= 0.005$). Surgical and Medical specialties were less likely to adopt CPOE, compared to primary care specialty ($p<0.05$). CPOE adoption was less likely among solo practices vs. non-solo practices ($p <.0001$), practices that submit claims as all paper vs. electronic ($p <.0001$), practices where physicians were owners vs. employees ($p= 0.0008$), practices which had less than or equal to 50% of revenue from private insurance vs. more than 50% of revenue from private insurance ($p= 0.0367$), and physicians who did not conduct internet/email consults with patients ($p <.0001$). CPOE adoption did not significantly vary by metropolitan status, physician degree, geographic region, and practice ownership. **Conclusions:** This study found that physician specialty, solo-practice status, billing method, ownership status, lower private insurance revenue stream, and use of internet/email consultations were significant predictors of CPOE adoption.

Factors Associated with Intentions to Engage in Yoga among African American Breast Cancer Survivors

Presenter's Name: Chloe Martin
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Sr Lakshmi Yeruva, Danyella Greene, Teletia Taylor

Background: Data support that yoga is helpful in ameliorating symptoms among cancer survivors. However, compared to Caucasians, African Americans (AAs) are less likely to be yoga users. Understanding factors associated with intention to engage in yoga is warranted in this group. The aim of this study was to examine if certain baseline participant characteristics were associated with intention to perform yoga using Theory of Planned Behavior (TPB) constructs. **Methods:** Thirty-three women were randomized to a yoga group or a waitlist control group. Fourteen AA breast cancer survivors participated in an 8-week restorative yoga program and completed baseline measures of TPB (attitudes- positive or negative attitude about engaging in yoga program, subjective norms- social support received regarding yoga participation, perceived behavioral control-perceived ease or difficulty of engaging in yoga program, and intention), demographics, anthropometrics, perceived stress, depression, sleep quality and fatigue. **RESULTS:** Pearson's r correlations revealed significant relationships between: Attitude and fatigue ($r= -.58$) and attitude and sleep quality ($r= .72$) (participants reporting low fatigue and better sleep quality at baseline had more positive attitudes towards engaging in yoga); depression and subjective norm ($r= -.57$) (participants reporting lower depression scores at baseline tended to have more support from others to engage in yoga); sleep quality and perceived behavioral control ($r= .581$) (participants reporting better sleep quality at baseline were confident in their ability to engage in yoga) ($Ps<.05$).
Conclusion: Understanding factors associated with intention to engage in yoga among AA breast cancer survivors may help create successful theory-based interventions.

Peripheral arterial disease in a 94 year old man with unilateral femoral-popliteal bypass surgery

Presenter's Name: Latonia Miller
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Miranda Armour-Chelu, Deawodi Ladzekpo

Background: Peripheral arterial disease is estimated to affect 10 million people in the US. It is one of the most disabling afflictions of patients suffering from diabetes mellitus, hyperlipidemia and coronary arterial disease. Manifestations include claudication of the lower limbs and critical limb ischemia which may be treated with angioplasty, stents or bypass surgery. Here we map the extent and distribution of atherosclerotic occlusive disease in a 94 year old male with unilateral femoral-popliteal bypass surgery**. Methods:** The abdominal aorta and its branches were dissected and distribution of plaque was mapped. The aorta and its branches were prepared for thin sections to quantify the degree of plaque formation and stenosis. **Results:** Extensive plaques were recorded along the wall of the abdominal aorta with development of an infrarenal abdominal aneurysm. Bilateral plaques extended from the Aortoiliac bifurcation to the Tibial artery. An artificial bypass vessel was discovered between the left superficial Femoral and Tibial artery. **Conclusions:** Dissection revealed extensive post-operative development of atherosclerotic plaques both superior and inferior to the graft, while the graft itself remained unaffected. Although the date of the bypass surgery is unknown it can be postulated that the procedure occurred at least ten years prior to death given the man's age. In conclusion, as life expectancy increases the long-term collection of post-operative data sets is essential for assessment of treatment options for older patients.

Transferrin Receptor-targeted Liposomal Cisplatin for Cancer Therapy

Presenter's Name: Morgan Morrow
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Morgan Morrow, Christina Becco

Background: Cisplatin has been used widely for treatment of various types of cancer, however the side effects significantly limit its dosage. Herein, we constructed a transferrin receptor (TfR)-targeted liposomal cisplatin to enhance the efficacy and reduce the side effects of cisplatin. **Methods:** The liposomal nanoparticles were prepared with lipids DOTAP and DOPE (1:1, v/v) by lipid film hydration, followed by downsize with sonication and size extrusion. Cisplatin was encapsulated within the inner space and transferrin (Tf) was linked on the surface of the nanoparticles for targeting. The final concentration ratio was 12.5:10:0.25 (μg:nM:mM) for Tf:Lipid:Cisplatin. The construct (designated as Tf-Lip-Cisplatin) was then characterized for its size, zeta-potential, cellular internalization and cytotoxicity against JHU-22 head neck squamous cell carcinoma cells. Naked cisplatin and cisplatin-encapsulated liposomal nanoparticles (Lip-Cisplatin) were used as controls. **Results:** Following cisplatin encapsulation and Tf linkage, the hydrodynamic size of Tf-Lip-Cisplatin increased and its zeta-potential decreased compared with that of liposomal nanoparticles and Lip-Cisplatin. Tf-Lip-Cisplatin effectively internalized into the JHU-22 cancer cells and induced cell death. The cytotoxicity (IC50) of Tf-Lip-Cisplatin was measured to be 1.49 μM, significantly more potent than that of either Lip-Cisplatin (4.89 μM) or naked cisplatin (6.16 μM) ($P<0.05$). **Conclusions:** Considering that TfR is overexpressed in various types of cancer and liposomal cisplatin leads to increased circulation time and accumulation of cisplatin at tumor site, we hypothesized that TfR-targeted liposomal cisplatin will be more efficacious and induce less side effects in clinical settings. The initial results supported our hypothesis.

The Prospective Association of Periodontal Disease and the Risk of Type 2 Diabetes

Presenter's Name: Indra Mustapha
Classification: Junior Faculty/ Lecturer/ Instructor
Presentation Type: Oral Presentation

Though the bi-directionality of periodontal disease and diabetes is widely discussed, evidence of periodontal disease and subsequent risk of diabetes is sparse. Using data from the Atherosclerosis Risk in Communities (ARIC) Study, we tested the hypothesis that exposure to periodontal inflammation, using clinical exam evidence, systemic inflammatory markers and local inflammatory markers, predicts the subsequent occurrence of incident type 2 diabetes. Of the total 5,819 eligible participants at baseline (ARIC Visit 4), ¬1,967¬¬ individuals developed incident type 2 diabetes after a mean of 13.8 years of follow-up. Incident diabetes was assessed with yearly telephone interviews and self-reports form study participants. In multivariable analyses using the Cox proportional hazards model, when compared to Category I (probing depth (PD) ≤3mm, bleeding upon probing ≤10%), the hazard ratio of incident diabetes was the highest with early periodontal clinical measures of inflammation as found in Category II (probing depth (PD) ≤3mm, bleeding upon probing >10%) (HR=1.4, 95%CI: 1.1-1.7,$p<0.001$) after adjustment for sex, age, race, education level, smoking status, physical activity, total caloric intake, waist circumference, hypertension, previous cardiovascular disease, family history of diabetes, and HDL cholesterol levels. Compared with individuals in Category I, with minimal bleeding and probing

measures, the hazard of incident diabetes appears to be 1.2 times higher (95% CI: 1.0 – 1.4, p<0.001) in adults with moderate clinical periodontal inflammation (Category IV-one or more sites with PD≥4mm, bleeding upon probing >10% &<50%) and 1.3 times higher (95% CI: 1.0- 1.6, P<0.001) in adults with advanced clinical periodontal inflammation (Category V- one or more sites with PD≥4mm, bleeding upon probing ≥50%). This data supports the hypothesis that periodontal exposure increases the risk of subsequent incident diabetes.

Apolipoprotein D is a potential urine biomarker for colorectal neoplasia

Presenter's Name: Hasti Olumi
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Guilherme Ventura, Namita Kumari, Songpin Wang, Xionghao Lin, Sergei Nekhai, Hassan Brim, Hassan Ashktorab

Background and Aims: African Americans have higher colorectal cancer (CRC) incidence and mortality than Whites. Risk factors for this disparity are not well known. Robust non-invasive CRC screening tests will likely reduce this disparity, knowing that AA have the lowest adherence rate to colonoscopy that associate with advanced lesions at diagnosis. We aimed to determine potential proteomic markers in urine of patients with colorectal neoplasia. **Methods:** We used urine samples from 20 patients (5 normals, 6 polyps, 6 adenomas and 3 cancers). Urine dipstick test was used to choose only specimens with negative or trace protein values (≤0.15 ml/dl). The selected specimens were trypsin-digested and run in a mass spectrometry (MS). Proteome Discoverer v2.2 was used for qualitative analysis while SIEVE was used for quantitative data analysis and Creatinine used for normalization. Ingenuity Pathway Analysis (IPA) was used to map the proteins to known pathways. **Results:** When comparing normal and cancer urine proteomic profiles, 391 proteins were statistically different. SIEVE analysis indicates Apolipoprotein D (Apo D) and protein kinase A anchoring protein 6 (PRKP6) as the top candidates with 65-240 and 27-138-fold induction in cancers vs. normal, respectively. However, immunoglobulin kappa constant was 7-21 folds lower in cancers when compared with normals. IPA analysis showed Apo D in the WNT pathway. **Conclusion:** We defined proteomic markers related to metabolism and immunity that have a potential to be used as a non-invasive screening of colorectal cancer patients' urine samples. These markers need to be validated in a larger cohort.

Green Coffee Bean Extract Does Not Influence Cardiac Autonomic Modulation in Young Adult Obese African-American Women

Presenter's Name: Alexis Osby
Classification: Undergraduate Student
Presentation Type: Poster Presentation

Background: No population in the United States has a higher obesity rate than African-American women. Obesity, defined as the excessive accumulation of body fat resulting from the positive energy balance, refers to the risk of severe chronic diseases such as diabetes and hypertension. One important manifestation of obesity is impairment in the autonomic nervous system. Autonomic behavior in obese adults is characterized by a decrease in parasympathetic activity, with an autonomic imbalance. Green coffee bean extract contains chlorogenic acid, a major phenolic compound proposed to benefit cardiovascular health. **Purpose:** The present study analyzed green coffee bean extract containing chlorogenic acid on the cardiac autonomic behavior in young adult obese African-American women. **Methods:** In a randomized double-blinded design, eight obese (% fat=31.5± 0.8) young adult African-American women (Age= 19 ± 0.4 years) ingested chlorogenic acid (360 mg/day) from green coffee bean extract or a placebo for seven days. Dual-energy X-ray absorptiometry was used to measure non-lean body mass. Heart rate variability (HRV) (i.e., the spontaneous beat-to-beat variation of the HR) is a noninvasive reproducible, measure of cardiac autonomic nervous system function. Heart rate was captured for 60 minutes in the supine position whilst breathing spontaneously. For the autonomic analysis, calculation of HRV in the frequency domain (LF: 0.04 to 0.15 Hz, HF: 0.15 to 0.40 Hz, and LF/HF) using the software Nevrokard HRV (Izola, Slovenia). **Results**: Regarding autonomic modulation no difference was observed in the HFnu (58.3 ± 2.3 vs 55.2 ± 3.2), LFnu (37.3 ± 38.5 ± 3.2) and LF/HF (0.67 ± .07 vs 0.76 vs .01) between the green coffee bean extract and placebo. **Conclusion:** The present study shows that green coffee been extract does not characterize a cardiovascular benefit in obese African-American women by altering cardiac autonomic function at rest.

Responsiveness and Reliability: Understanding Text Messaging Communication in a Pelvic Inflammatory Intervention

Presenter's Name: Bria Rice
Classification: Graduate Student
Presentation Type: Oral Presentation

Coauthors: Steven Huettner, B.A., Jamie Perrin, Ph.D., Maria Trent, M.D., MPH

Purpose: Pelvic Inflammatory Disease (PID) is a reproductive health disorder that disproportionately affects low-income, young minority women. The care for PID has shifted to outpatient settings and youth struggle with antibiotic adherence and other self-care behaviors during the 14-day treatment period, increasing their risk for adverse sequelae. Youth-focused, disease-specific text-messaging interventions may provide needed adherence support, but limited research has explored communication responsiveness and the reliability of text reported adherence. The purpose of this study is to evaluate patient responsiveness to an automated text messaging system for PID self-management, to examine the reliability of text-reported compared against interview-reported medication adherence, and to examine attenuation over time. **Methods:** This study examines data from patients aged 13-25 years with mild-moderate PID enrolled in the Technology Enhanced and Community Health Nursing (TECH-N) study; a randomized controlled trial evaluating the effectiveness of a text messaging and community health nursing intervention for improved self-management and outcomes. All participants received standard of care, antibiotics, and instructions to follow-up after the 14-day treatment period. During the treatment period, the intervention participants also received an automated welcome text message, daily medication reminders, and prompts to report the number of dosages consumed each day via text. This analysis focuses on the text messaging and adherence data from intervention participants. Raw text message correspondence was downloaded from the text messaging system into Excel (Microsoft Office, 2011), organized by patient ID and color-coded based on message type. Basic and user-defined Excel functions were used to count or sum messages by background color or message content and responsiveness to welcome and dosage message types examined. The correlation between text-reported and interview-reported dosage data was established and attenuation over time was analyzed using linear regression analysis.**Results:** 97 participants were randomized into the intervention group and 94% were eligible for text message analysis. Most participants were African American (92%) and low income (77%), with a mean age of 18.3 years ± 2.2. 76% patients responded to the welcome message, and the average responsiveness was 53% (SD=34%) for dosage messages. Responsiveness to dosage messages attenuated over time, approximating a 2% decrease per day (ß= -0.023, 95% CI -0.03 to -0.015) over the 14-day treatment period. Correlation between text-reported and self-reported medication adherence was positive and moderate (r=0.46, p<0.001). From the two-week follow-up interview data, low text message engagement was not indicative of low self-reported adherence, with patients reporting an average (SD) of 24.2 (5.16) out of 28 pills taken.**Conclusions:** The TECH-N intervention successfully delivered text support to young women with PID in the outpatient setting. Patients were more than 50% responsive to text messages and text reports of medication adherence were moderately reliable for monitoring medication adherence. Additional research designed to improve responsiveness via text is warranted. Continued use of face-to-face outreach support is critical for adherence research with this vulnerable population of youth.

Improving the Function and Cognition of the Traumatic Brain Injured Through Attention Process Training

Presenter's Name: Cherra Ross
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Crystal Wilson

Diagnosis of a traumatic brain injury (TBI) is made when a patient encounters an impact to the head strong enough to disrupt the brain's normal function. Types of injuries that can bring forth this type of impact include car accidents, football accidents, stroke, as well as bullet wounds to list a few possibilities. A traumatic brain injury affects the cognitive and functional abilities a person needs to live an independent life. Occupational therapists have explored how Attention Process Training (APT) can improve a patient's cognitive and functional abilities. Survey results collected for this study concludes that APT is an unknown rehabilitative tool that is available to the community for TBI patients. With APT being a non-standard practice in healthcare, research supports that APT testing when completed consecutively over a prolonged period of time, improves attention.

Keywords: Traumatic Brain Injury, Attention Process Training, Occupational Therapy, Function, Cognition, Post-accident, Self-perception, Attention, Memory

---

The Impact of Exposure to Community and Interpersonal Violence on Alcohol an rug Use, and HIV Risk Behaviors amomg Young Adult African American

Presenter's Name: Forough Saadatmand
Classification: Senior Faculty
Presentation Type: Poster Presentation

Background: This presentation discusses baseline preliminary analysis of data from 440 African Americans young adults ages 18-25 living in Washington DC collected in a longitudinal study. **Objective:** The objective is to understand how exposure to community and interpersonal violence impacts alcohol, tobacco and drug use and HIV risk behaviors and if there are differences in the strength of associations based on violence type. **Methods:** We first conducted a factor analysis of the interpersonal and community violence scales to identify domains or types of violence. We then conducted a series of regression analyses to assess the various interpersonal and community violence types (e.g., witnessing a murder) on the dependent variables representing Alcohol Tobacco and Other Drugs (ATOD) use, and knowledge and perception of HIV risk factors. **Results:** Survey data showed that as children, 32% of the participants reported seeing a parent get hit by another parent or a boyfriend/girlfriend and 40% said someone close to them was murdered. As adults, 18% have seen someone shot, 27% reported seeing a dead person in the community, 35% witnessed someone getting beaten up or mugged, and 50% heard the sound of gunfire outside or near their home. Factors representing exposure to community violence were strikingly more likely to influence ATOD use and HIV risk behaviors than those representing interpersonal violence. Direct experiences of interpersonal violence were associated with alcohol use, younger age of first alcohol use, tobacco or marijuana use, and limited knowledge of HIV risk behaviors. However, community violence proved to have a stronger effect on the dependent variables than interpersonal violence. **Conclusion:** The results suggest that a large number of young African American adults are exposed to community and interpersonal violence and that community violence in particular impacts ATOD use and HIV risks. Implications for improving public health through targeted HIV prevention, trauma-informed care, and violence prevention are discussed.

Note: We acknowledge Dr. Kathy Sanders-Phillips' contributions as the original PI of this grant.

Clinical factors affecting NAFLD and NASH progression in African-American patients at a Howard University Hospital

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

Coauthors: Armana Saeed, Seyed-Mehdi Nouraie, Angesom Kibreab, Edward Lee, Hassan Brim, Hassan Ashktorab

Background: The prevalence of Non-Alcoholic Fatty Liver Disease (NAFLD), which includes Non-Alcoholic Steatohepatitis (NASH), is significantly lower in African-Americans (AAs) than the general US population. The clinical features contributing to this low incidence have not been clearly identified. **Aim:** To evaluate the clinical determinants contributing to the lower rate of NAFLD cases in AAs by analyzing patients' medical record data of the past ten years at Howard University Hospital (HUH). **Methods:** We reviewed the medical records and pathology reports of 1073 African American patients with chronic liver disorders from June 2004 – June 2015 at HUH. Clinical and pathological data were collected from 356 patients that underwent ultrasound-guided liver biopsies. NAFLD cases were compared with other liver disorders such as hepatitis B virus (HBV), and hepatitis C virus (HCV), as well as a control group representing non-hepatic End Stage Liver Disease (ESLD). Liver biopsy was performed for disease; and evaluation was performed using Batts-Ludwig Fibrosis Staging Score. STATA software was used for statistical data analysis. **Results:** Among the 356 biopsied patients, 41 were confirmed cases of NAFLD (i.e. thirty-two NAFL cases and nine NASH cases) using ultrasound (US) imaging, which displayed significant ($p = 0.07$) fatty liver changes in NAFLD (6%) when compared to HCV (2%) patients. Sixty-eight percent of the NAFLD cases were males with the average of 56 years vs. 45% males with an average age of 59 for the Controls ($p = 0.047$); median (IQR) hemoglobin was 12 vs. 11 for the controls ($p = 0.041$); steatosis, 1 for NAFLD vs. 0 for HBV ($p = 0.011$) and 0 for HCV ($p = 0.013$). Although there was a higher BMI in NAFLD and NASH than the other groups, platelet count, iron deposits and hypertension were not significant among the disorders. Patients with diabetes mellitus included 19% of NAFLD; 11% of NASH; 23% of

HBV; 13% of HCV; and 24% of Controls. HDL was lower whereas TG level was higher in NAFLD and NASH when compared to other groups. When NAFLD and NASH cases were combined, the median IQR for fibrosis in NAFLD/NASH cases showed a higher level of fibrosis than in HBV cases ($p = 0.08$). Also, the prescription drugs used by the patients did not significantly result in higher NAFLD or NASH diagnosis when compared to HBV, HCV, or Control groups. Conclusions: Thrombocytopenia, neutropenia, hypertension and diabetes were not associated with NAFLD or NASH. Lower HDL level at a younger age and higher BMI, fibrosis, steatosis, hemoglobin count, and TGs were significant risk factors for NAFLD development. Low BMI, cholesterol and triglyceride levels and early detection via non-invasive US will help maintain the lower incidence of NAFLD / NASH in African-Americans and thwart End Stage Liver Failure.

Keywords: African-Americans, NAFLD, NASH, Metabolic syndrome, insulin resistance, HBV, HCV

This work is supported by NCI/NIH grant to ZAS

Clinicopathological features of Sessile Serrated Polyp/Adenoma: Improving serration detection to adjust Interval follow-up colonoscopy

Presenter's Name: Sanmeet Singh
Classification: Professional Student
Presentation Type: Poster Presentation

Coauthors: Hamed Azimi, Babak Shokrani, Edward Lee, Seyed-Mehdi Nouraie, Hassan Brim, Hassan Ashktorab

Background: The majority of colorectal cancers develop through the adenoma-carcinoma sequence, while 15 to 20 % develop via the serrated neoplasia pathway. Sessile Serrated Adenomas/Polyps (SSA/P) are subtle and more difficult to detect colonoscipally leading to a disproportionate contribution to colorectal carcinoma. These polyps lead to cancer faster than conventional adenomas. In order to better identify SSA/P, we performed a retrospective study to define the clinicopathological features of patients with SSA/P. **Methods:** Using the Howard University pathological 2010-2014 database, we identified 4415 patients with polyps. We identified 251 SSA/P and subdivided the clinical data into age, gender, number of total polyps, location, and frequency of SSA/P per site. **Results:** The incidence of SSA/P was 5.7% (251/4415) in > 50 age, 146/251 patients were female and 189/251 patients had multiple polyps. 65% (163/251) cases were classified as distal. **Conclusion:** Our results show that there is an increased incidence of SSA/P in patients that are females, >50, and have multiple polyps. We also found that a majority of SSA/Ps were classified as distal.

The Impact of Coagulopathy on Traumatic Splenic Injuries

Presenter's Name: Norma Smalls, MD
Classification: Senior Faculty
Presentation Type: Poster Presentation

Coauthors: Imudia Ehanire, Augustine Obirieze, Edward Cornwell

Introduction: The standard of care for blunt splenic injuries has evolved over the past 40 years from mandatory splenectomy to non-operative management. Non-operative management avoids the morbidity associated with post splenectomy sepsis and non-therapeutic exploratory laparotomy. There is little in the literature about the impact on the morbidity and mortality of coagulopathy for traumatic splenic injuries. **Objective:** To investigate the risk-adjusted effect of coagulopathy on outcomes following traumatic splenic injury. **Methods:** Retrospective analysis of the National Trauma Data Bank (NTDB) from 2007- 2010. Multivariable logistic regression analyses used to determine independent predictors of intra-abdominal drainage procedure, mortality and complications, adjusting for demographics, injury characteristics and treatment modalities. **Results:** 58,896 met all inclusion criteria. Blunt trauma was the mechanism of injury for 92.5% of patients. Overall, 1.9% of patients had a bleeding disorder. 28.8% of those with a bleeding disorder had operative management (slpenectomy) vs. 21.9% for those without a bleeding disorder. Coagulopathic patients were more likely to undergo operative management, compared to non-coagulapathic patients (28.8% vs. 22.0%, $p<0.001$). Multivariate analysis revealed patients with a bleeding disorder had 50% higher odds of undergoing drainage of intra-abdominal fluid (OR: 1.50; 95% CI: 1.08-2.08). Coagulopathic patients also had higher odds of mortality (OR: 1.27, $p=0.017$), sepsis (OR: 1.94, $p<0.001$), ARDS (OR: 2.61, $p<0.001$), acute renal failure (OR: 1.47), cardiac arrest (OR: 1.48), and overall complications (OR: 2.41, $p<0.001$). However, the higher odds of myocardial infarction as a complication did not achieve statistical significance (OR: 1.55, $p=0.068$). **Conclusion:** Coagulopathy has a negative impact on complications of intra-abdominal fluid drainage,

sepsis, ARDS, acute renal failure, and mortality. However, the higher likelihood of myocardial infarction in coagulopathic patients did not reach statistical significance.

The Correlation Between Malocclusion and the need for Speech and Language Therapy

Presenter's Name: Patrice Smith
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Sana Augustus, Martine Elie, Shaleeta Jones, Lauren Buford

Background: Speech is primarily a function of the central nervous system. However, abnormalities in the peripheral speech organs sometimes militate against the development of normal speech1. Speech-sound disorders vary in severity and may be due to a number of different etiologies, which include motor-based disorders (i.e. apraxia), structurally based disorders and conditions (i.e. malocclusion, cleft palate and other craniofacial anomalies), syndrome/condition-related disorders, and sensory-based conditions (ASHA)2. Individuals with structurally based speech sound conditions may require assessment and treatment from a number of different professionals in order to treat both the structural and speech concerns. These disorders are the common meeting ground for the Orthodontist and Speech-language pathologist, and close cooperation with these two specialty professionals is highly desirable to intervene in the care of clients who present with such disorders. **Purpose:** The purpose of this study is to determine if there is a correlation between malocclusion and sound production. Developing a collaborative strategy for both orthodontist and the speech-language pathologist to diagnose and treat speech pathology patients will also be investigated. **Research design/Method:** A collaborative effort between Howard University Department of Orthodontics and the Howard University Speech and Language Pathology Department was conducted via chart review of 200 patients treated at Howard University Department of Orthodontics within a three-year period (2013-2016). The correlation between age, gender, habits, malocclusion and the need for speech and language therapy was recorded. It was also noted if patients received appliances for speech therapy and/or referrals for speech correction. **Expected Results:** There is a relationship between malocclusion and speech and language pathology. Specific types of malocclusion give rise to specific types of speech defects Proposed Learning Outcomes: At the completion of this study, both parties will be able to recognize speech pathology and orthodontic problems and be able to refer patients across the specialties.

Adiponectin, Leptin, IGF1 and TNFα serum biomarker as noninvasive diagnosis of colon adenoma

Presenter's Name: Akbar Soleimani
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Alexandra Nichols, Komal Sodhi, Laiyemo Adeyinka, Hassan Brim, Mehdi Nouraie, Hassan Ashktorab

Background and Aim: The potential role of Adiponectin, Leptin, IGF1 and TNFα as biomarker in colon adenoma has not been studied. Therefore, we investigated the blood serum levels of these biomarkers in colorectal adenoma. **Method**: The case-control study consisted of 180 African American patients with colon adenoma (cases) and 198 healthy individuals (controls) at Howard University Hospital. We used ELISA for biomarkers detection. Statistical analysis was performed by t-test and multivariate logistic regression. **Results:** The differences in median leptin, Adiponectin, IGF1 and TNFα levels between control and case groups (13.9 vs.16.4), (11.3 vs.46.0), (4.5 vs.12.9) and (71.4 vs. 130.8) were statistically significant ($p<0.05$), respectively. In a multivariate model, the odds ratio (ORs) for Adiponectin, TNFα and IGF1 were 2.0 (95% CI=1.6–2.5; $P\leq0.001$), 1.5 (95% CI=1.5– 2.0; P 0.004) and 1.6 (95% CI=1.3–2.0; $P\leq 0.001$), respectively. There were positive correlations between serum Adiponectin and IGF1 concentrations with age ($r=0.17$, $P\leq 0.001$ and $r=0.13$, $P=0.009$), also between TNFα, IGF1 and Leptin concentration with Body Mass Index (BMI) ($r=0.44$, $P\leq 0.001$ and $r=0.11$, $P=0.03$; $r=0.48$, $P\leq0.001$), respectively. There was a negative correlation between Adiponectin concentration and BMI ($r=-0.40$, $P\leq0.001$), respectively. **Conclusion:** These data support the hypothesis that serum Adiponectin, IGF1 and TNFα are risk biomarkers for noninvasive detection of colorectal adenomas.

An Examination of the relationship between poor sleep and parental distress in medicated and unmedicated children with ADHD

Presenter's Name: Brandi Walker
Classification: Graduate Student
Presentation Type: Oral Presentation

Background: Over the last few decades ADHD has become a prevalent disorder in 6-8% of children. Within that population nearly 70% of parents have reported their children endure moderate to severe sleep problems. As parents struggle to deal with ADHD symptomology and its impact on the child and the family, medication is highly sought out even though it is accompanied by various side effects to include potential problems with sleep and appetite. Many parents have decided to either continuously medicate their children, medicate them during the school week but not on the weekends, or to avoid medication completely. Our objective is to conduct a pilot study to determine if there is a difference in sleep quality/sleep behaviors during the week, the weekend, and overall, utilizing seven operationalized variables: *bedtime onset latency* (BOL), *perceived sleep onset latency* (PSOL), *whole routine* (WR), *total sleep time* (TST), *sleep obstacles* (SO), *sleep disturbances* (SD), and *morning irritability* (MI). Additionally, determine if there is a difference in parental stress utilizing the Parent Stress Index total score and three domain scores (Parental Domain-PD, Parent-Child Dysfunctional Interaction-PCDI, and Child Difficulty-CD).**Methods:** During an initial face-to-face clinical interview, each parent and their ADHD-diagnosed child completed consent/assent forms and questionnaires (parents: Demographic/Intake Form, Conners3 Parent Short Form, Parent Stress Index, Abbreviated Child Sleep Habits Questionnaire, and child: Self-Report Short Form and Parent Report Card). For 1 -2 weeks, each parent monitored their child's sleep and maintained a sleep log of the child's sleep quality. Similarly, they maintained a daily diary of their child's bedtime and morning wake up behaviors as well as the accompanying emotions/mood of both parent and child**. Results:** Overall, none of the three groups, on average, obtained the recommended 10 hours of sleep. Unmedicated children had the lowest total sleep time (TST) for both weekends and weekdays while consistently medicated children obtained the highest amount of sleep across weekends and weekdays. Each group demonstrated a decrease in sleep obstacles on the weekend compared to weekday, although, sleep disturbances and morning irritability were consistently higher for unmedicated children during the week and on the weekend. Additionally, continuously medicated ADHD children are generating the least amount of parental distress and overall getting the best overall sleep.

Key words: ADHD, medicated, unmedicated, partially-medicated, stimulants, sleep

Knowledge, Access and Utilization of Low Vision Assistive Technology

Presenter's Name: Andre Wright
Classification: Graduate Student
Presentation Type: Poster Presentation

Coauthors: Megan Essman, Todd Matthews, Rashad Holly, Andre Wright, Joylynne D. Wills, MGA, OTR/L Faculty Advisor

Background: Providing service to clients with low vision is an increasing practice area in occupational therapy. As the "baby boomer" generation ages, the incidence of low vision is expected to increase significantly. Urban dwelling elders may be at increased risk for developing low vision due to high incidences of obesity, heart disease and diabetes in these communities that lead to visual disturbances such as macular degeneration, glaucoma and diabetic retinopathy. This presentation provides an overview of a pilot project pending IRB approval. This pilot study seeks to determine if an occupational therapy directed education module on low vision technology will increase access and utilization of low vision devices to improve the functional status of community dwelling elders. **Methods:** A survey will be administered to community dwelling elders to assess baseline knowledge of community services and assistive devices for low vision. An educational module will provide information about community services available to DC Residents, including public library programs and Columbia Lighthouse for the Blind; information and demonstration of low-vision adaptive equipment such as magnifiers and electronic readers; and low-vision accessibility options available in typical computer programs. The survey will be re-administered to assess changes in the knowledge and utilization of low vision assistive technology. The project will include elders in community programs in the Washington, DC area. **Results:** SPSS software will be used to compare the survey data to determine if there is a measureable difference in knowledge as a result of the intervention. Positive results are indicated if the participants actually use the programs in community resources; or utilize low-vision assistive devices or technology. **Conclusions:** Analysis of the data will provide information on the efficacy of occupational therapy focused educational sessions regarding use of low-vision resources.

Varicella-Zoster Virus (VZV) Reactivation Resulting in Stroke and Myelitis

Presenter's Name: Yongxing Zhou
Classification: Post Doc/Resident/Fellow/Research Associate
Presentation Type: Poster Presentation

Coauthors: Abhishek Anand, Faranak Najibi, Frehiwot Temesgen, David Katz, Shariff Dunlap, Roger Weir

VZV may invade the central nervous system (CNS) during primary infection. VZV becomes latent in ganglionic neurons after primary infection. With a decline in VZV-specific cell-mediated immunity, VZV reactivates to cause zoster (shingles) as well as CNS manifestations such as meningoencephalitis, the Ramsay Hunt syndrome (RHS), leukoencephalopathy, transverse myelitis and stroke. Various ophthalmologic disorders can occur, the most common is progressive outer retinal necrosis (PORN). Transverse myelitis due to VZV infection is rare and occurs shortly after typical cutaneous rash with the development of weakness, sensory changes and/or autonomic dysfunction. VZV is the only virus that has been shown to directly invade cerebral arteries and produce focal or multifocal ischemic damage, vessel wall necrosis with arterial dissection, aneurysm formation, or hemorrhagic stroke involving any vascular territory within the brain or spinal cord. The classic presentation is contralateral hemiparesis usually resulting from infarction of the ipsilateral middle cerebral artery several weeks after the onset of herpes zoster ophthalmicus (HZO). We are hereby reporting two immunocompromised cases with hemiparesis, one caused by a stroke 2 months after PORN after three episodes of shingles, the other caused by myelitis shortly after one episode of shingles, respectively.

Index

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Y

Z

HOWARD UNIVERSITY

OFFICE OF THE ASSOCIATE PROVOST
FOR RESEARCH AND GRADUATE STUDIES
400 College Street, NW | Washington, DC 20059
202.806.6800
www.howard.edu