

MICHIGAN AGEP ALLIANCE FALL CONFERENCE

Kellogg Hotel & Conference Center
Michigan State University, East Lansing, Michigan
October 14, 2017

Student Abstracts

CrossTalks & Posters

CrossTalks: 16 Student Oral Presentations

8:30 AM – 10:30 AM

Michigamme Room with Facilitator: Dr. Ashley Sanderlin

Room 62 with Facilitator: Dr. Jubin Cheruvelil

Poster Session: 22 Poster Presentations

11:45 AM

Big Ten Room A

MICHIGAN STATE
UNIVERSITY

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Student Oral Presentation Abstracts Michigamme Room

Liyah Marshall

Grand Valley State University

The Effect of CRF2 Receptor Regulation on Depressive – Like Behaviors During Protracted Alcohol Withdrawal

Alcoholism has detrimental effects on the citizens and budget of the United States. Those experiencing withdrawal report unpleasant mood disturbances such as anxiety, depression, and negative affect. These mood disturbances increase the chance of relapse and make the process of long-term recovery more difficult. Based on previous research showing that activation of type 2 corticotropin-releasing factor receptors (CRF2 receptors) has the ability to alleviate stress-related behaviors during acute withdrawal, the current study proposes studying the effects of the selective CRF2 receptor agonist urocortin 3 (Ucn 3) on depressive-like behavior following protracted abstinence from alcohol. Wistar rats were the subjects of this study and were placed on either an ethanol or control liquid diet for 28 days followed by a 42 day period of abstinence. At the end of this period, they will be tested for signs of depressive-like behavior in the forced swim test. We expect that Ucn 3 will decrease depressive-like behaviors in rats with a history of ethanol dependence.

Sara Bano

Michigan State University

The Glass Wall between Us: Cross-Cultural Mentoring Experiences of Chinese Visiting Scholars at an American Campus

Introduction: We explored cross-cultural mentoring experiences of Chinese visiting scholars at an American campus as a part of large research project. A large mid-western university has been hosting Chinese visiting scholars from a partner Chinese university for the past eight years. Each visiting scholar had one student and one faculty mentor to provide academic and social support during their eight-month long program at the American campus. The purpose of this project is to understand the role and significance of mentoring relationships between Chinese visiting scholars and their American peer and faculty mentors at Midwestern University.

Methods: We interviewed a group of 12 female masters' students from a regional Chinese University who participated in an eight-month long visiting scholar program at mid-western university in the year 2015-16. They were interviewed twice during and once after their program. Each interview lasted from 60-90 minutes. We also interviewed three student mentors and one faculty mentor after the program finished.

Results: The experiences of visiting scholars varied with each mentor, based on the mentor's motivation and commitment to the program and mentors' past international experiences. Cross-cultural communication barriers hindered the participants from seeking help from their mentors. Faculty members' busy schedules and lack of incentive for their international work also impacted on visiting scholars' experiences. Overall, participants reported student mentors provided support in navigating social and cultural life and faculty mostly focused on the academic aspect of their experience.

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Talesha Dokes

Michigan State University

*Non-harvest Mortality of American Marten (*Martes americana*) in the Eastern Upper Peninsula, Michigan*

American marten were reintroduced to Michigan starting in the mid-1900s. Currently marten are considered a sustainable resource in the Upper Peninsula (UP) and the signatories to the 2007 Inland Consent Decree each administer a limited trapping season. Although detailed information is collected on recreationally harvested marten, little is known about non-harvest mortality or individual survival in the UP. We partnered with the Inland Fish and Wildlife Department (IFWD) of the Sault Ste. Marie Tribe of Chippewa Indians to trap and radio collar marten within the Hiawatha National Forest of the eastern UP. Our objectives were to identify the sources and quantify the rate of non-harvest mortality. We collared 17 female and 18 male marten since 2013; 69% were adults and 31% were young adult/juveniles. Over the 24 months of our study, confirmed mortality was 29% (10 deaths), 80% where adults. Of the 10 marten mortalities, 4 were attributed to incidental trapping, 4 to predation (based on circumstantial evidence), and 2 to other (collar entrapment and drowning). We observed a higher mortality rate for females than males, 60% and 40%, respectively.

Jamil Scott

Michigan State University

Understanding Candidate Supply: The Role of the Michigan Political Leadership Program in Michigan Politics

While the literature on candidate emergence has made great strides in understanding the factors that hinder office-seeking behavior, especially as it pertains to women and minorities, the reasons why individuals decide to run for office are less clear (Dolan 2006). One factor that has been considered as playing an important role in the candidacy of women, in particular, are political organizations that take on a recruitment and training role (Burrell 2006). However, there is very little research that examines the outcomes of these organizations, as it pertains to training and recruitment, and how they matter for the candidacy of women and minorities. Furthermore, there is little to no research about the individuals who complete these programs and if they fit the traditional conception of the candidacy pool. In this project, I use original data from the Michigan Political Leadership Program (MPLP) that encompasses the total applicant pool of the program from 2003 to 2015. The nature of the data provides leverage to examine the electoral trajectory of individuals who were accepted to the program and those who were not. Demographically, the MPLP pool of minority applicants exceeds the expected percentage given the representation of these groups at the state level. I find that individuals who were accepted to the program were more likely to run for office. This suggests that being accepted into the program, and subsequently completing it, is an important and under explored factor in office seeking behavior.

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Rajia Rashed
Wayne State University

Regulation of the Antioxidant Glutathione by Enteric Glia During Inflammation

The research study examines the nature of workplace power in a Libyan oil company and how is power distributed, managed, and maintained within the structure of this workplace. I also examine how gender and tribal identities affect who has power in the workplace setting. I also look at the types of decisions workers have control over, depending on their rank and status within the organization, time with company, gender and tribal identity. In this proposal, I argue that workplace power is not only about decision making within the company but it also mirrors larger social and political inequalities in the society at large. The goal of this quantitative study is to examine employee authority and influence within workplace. Specifically, the research objectives are: 1) to describe the standardization of workplace power regarding structural characteristics, as defined by formalization, centralization, and specialization; 2) to investigate the relationship between gender and the ability to make decisions and influence decision making; 3) to examine the relationship between tribalism identification and the ability to make decisions and influence decision making, and 4) to explore work commitment and the ability to make decisions and influence decision making. This study intends to determine which variables explain the most variance in the distribution of workplace power. Data was gathered using a self-administered questionnaire given to a disproportionate stratified random sampling of employees working at Azzawiya Oil Refining Company. The findings show that power is unevenly distributed by gender and women's power in the workplace remains constrained. Also, workplace power affected by tribal identities. Workers who belong to a powerful tribe can be involved in the process of decision making.

Luis Silva
Western Michigan University

Advancement of a Neonatal Ventilator

Respiratory illnesses are the one of the leading causes of infant death in low resource countries. This problem is in part due to the lack of adequate equipment; current ventilators are too expensive, require continuous electrical power and trained operators. However, a new cost effective neonatal ventilation device has been produced a which can provide output performance comparable to commercial ventilators. By simply using water and an air source, it can deliver two pressures without any electronics. This project concerned furthering the development of this prototype ventilator. A concern with the prototype was that with extended exposure to water, the prototype material expanded, adversely affecting its performance. Several different plastics, with low water absorption properties, were chosen for testing. The chosen plastics were then 3D printed in a similar shape to the final design. These parts were then exposed to water and the dimension changes were measured. The most suitable material was then selected for implementation onto the prototype.

To advance the studies and testing of this new device, a reliable, inexpensive pressure monitoring system (PMS) was needed for data acquisition purposes. This system was required to measure, compute, display and record in real time the pressure and air flow being delivered by the ventilator. This PMS was built from off-the-shelf parts. Designing the system involved, selecting compatible components, configuring the embedded software, troubleshooting the power source, and addressing potential thermal problems. This system was then used to quantify and analyze the ventilator's performance in animal tests and simulated lungs.

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Debra Renee Johnson
Oakland University

The Process of Teachers Professional Knowledge Teacher Characteristics and Effective Implementation of the Accelerated Reader Program, as Reported by Teachers of African American Students

How are teacher characteristics related to teaching practices in reading instruction? It is important to determine which teacher characteristics may be affecting the reading achievement of African American students when the Accelerated Reading (AR) program is utilized in the classroom. This study examined teacher characteristics and compared them to elements of the Accelerated Reader program and teaching approaches the participants may have used with their African American students to increase their reading achievement scores. The study is necessary to the field of literacy because no study exists that considers the actions of the teachers when they utilize the AR program with their African American students to increase their reading achievement scores.

This study reported responses and comments of 25 teacher participants from three different elementary-middle schools. The hypothesis predicted that the teacher characteristics would be related to all eight elements and all ten approaches. The results of the study indicated five teacher characteristics, specifically the participants' educational level, the participants' total years of teaching experience, the participants' years of using AR in the classroom, the years the participants had been teaching the current grade, and the number of school or district AR workshops the participants attended positively correlated with multiple elements of the AR program and many of the teaching approaches the participants used with their African American students to increase their reading achievement scores.

John Tran
Michigan State University

Improving Technologies for Advanced Biofuels

Second generation biofuels, or advanced biofuels, are fuels derived from various types of biomass. Of the various types are lignocellulosic biomass or woody crops and therefore more difficult to extract because of the tissue rigidity enabled by the presence of lignin in the plant cell wall. Understanding the process of lignification is important for modifying the plant cell wall for easier extraction and thus making technologies for second generation biofuels efficient, sustainable, and scalable. We will be using radiolabeled binding assays to understand how lignin becomes incorporated in the plant cell wall.

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Student Oral Presentation Abstracts

Room 62

Luntadila Paulo

Michigan State University

The Role of Foreign Investment and Oil Industry in Angola's Economy

The current paper analyses Angola's macroeconomics conditions, the role of oil industry, and the effect of foreign investment on Angola's economy. To find effect of the oil industry and foreign investors in Angola, the study relies on the theory of economic growth. The findings and conclusions of this study suggest a need for a better industrial diversification of this important economic player.

Eva Nyutu

Western Michigan University

Student Engagement in Direct Instruction, Undergraduate Microbiology Laboratories

Introductory laboratory courses are a standard component of undergraduate science programs and historically taught using direct instruction/confirmatory lab models. Previous studies have shown that inquiry-based labs enhance student engagement in science courses. However, research on how direct instruction introductory lab courses effectively engage undergraduate students is lacking. This study, therefore, using a mixed model design, assessed the extent to which a direct instruction, science laboratory course effectively engaged undergraduate students. Data was collected through self-report surveys, classroom observations, and interviews at a Midwestern university in the USA. The findings suggest that students found the lab activities engaging. The students indicated that what enhanced their engagement included: relevance of lab activities to students' daily-lives, relevance to professional careers, and learning new lab procedures. This study provides a baseline data which describes student engagement in undergraduate direct instruction biology lab courses. This baseline can be used in further research against which comparisons can be made when studying other types of lab teaching interventions.

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Darya Owens
Wayne State University

Patient Integration and Diversity in Education

Trauma-informed care, traditionally, have reported vulnerable periods of time when students, especially students with autism find it difficult to communicate their sense of fear which may result in a student becoming more disruptive or challenging within the classroom. In this instance SAMHSA NCTIC (2013) defines the three R's of trauma-informed care. 1. Realizing the prevalence of trauma; 2. Recognizing how trauma affects all individuals involved in the program, organization, or system and 3. Responding by putting this knowledge into practice. Identifying when to initiate the three R's is systematic for classroom-based strategies because there may be opportunities that involve using a movie such as the "Birth of a Nation" or books on an elementary level such as "Freckleface Strawberry" by Julianne Moore or "Be Good To Eddie Lee" by Virginia Fleming. Strategies that highlight social well-being, supports students with autism self-esteem and is key to initiating and maintain learning environments that implement trauma-informed care for academic purposes. Currently trauma-informed care is also referred to as traumatic interpersonal adversity according to D'Andrea et al. (2012). Concurrently this presentation has implicated that trauma-informed care is interpersonal for students with autism because when initiated the three R's, this process builds self-esteem through classroom-based strategies that nurture students, strengthens their knowledge and increases their trust.

Raymond Greiner
Western Michigan University

Lipid Modified Vesicle Drug Delivery

Heart disease is the cause of nearly fifty percent of the industrialized world's deaths according to the National Institute of Health. Atherosclerosis, the underlying condition in heart disease, is the hardening of the arteries caused by the migration of low density lipoproteins (LDL) through the endothelial layer forming lesions. Currently, this condition is mostly treated with statins to lower LDL levels in the blood. However, lipid modified vesicles may increase bioavailability of treatments. Research has optimized formation of 100nm phosphatidylcholine vesicles. The characterization of these lipid vesicles using multi angle laser light scattering in combination with Raleigh-Gans-Debye theory is one focus of current research. In the future the use of light scattering to characterize stability and properties of the vesicles, important in adherence with FDA regulations and the development of methods to use vesicles in medicine. Additional testing of the thermostability and stability under osmotic pressure is determined. Future research is to modify the lipids to deliver the vesicles to specific sites of inflammation. Current research recognizes the contribution of the Louise Stokes Alliances for Minority Participation program.

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Bernadette Castillo
Michigan State University

Culturally Responsive Goals in Waterville: A Case Study

The benefits of culturally responsive practices (CRP) are substantiated as one strategy educators utilize to improve the achievement and discipline gaps that exist in U.S. schools amongst racially diverse students (Gay, 2010; Ladson-Billings, 2009). Current research provides insight into singular experiences of both school leaders and teachers working individually to enact CRP (Castagno, 2012; Khalifa, Gooden, & Davis, 2016). Yet, research is lacking in the area that explores how a public-school district entity envisions, promotes, and pursues a common goal of implementing CRP. The purpose of this case study is to explore how one school district engages in culturally responsive practices (CRP). CRP emerged in Waterville Public Schools as a district initiative to improve the schooling experiences for Black and Latino students by implementing practices to close achievement and discipline gaps. Drawing upon organizational learning theory, I examined the systems that encourage the collective learning and change in practice. Utilizing qualitative methods, I conducted interviews and observations and collected documents to gauge how participants understand and enact district goals to become culturally responsive. Preliminary findings suggest a misalignment between school leaders and teachers. Although, CRP has been implemented into various areas, competing district-wide initiatives caused a lack of clarity and feelings of frustration with participants. Further analysis suggests peer groups and modeling may provide pathways to implement CRP.

Marva Goodson
Michigan State University

Help or Hindrance: Female Probationers' Navigation of Supervision Requirements Through Personal Support Networks

This study integrates egocentric social network analysis techniques and qualitative methods to examine 1) the characteristics of female offenders' semi-regular interaction partners and their provision of resources; 2) the relationship and key resources, or lack thereof, provided by the "most helpful" and "least helpful" network member; and 3) the characteristics of network members with whom offenders shared conflictual relationships and had desisted communication. In-person interviews were conducted with 41 female felons who provided information on 436 network members. Findings from the network data suggest that on average, women possess 10 semi-regular interaction partners, networks have a heavy concentration of substance users, and less than half of the network members provide any form of helpful supervision-related resources to the participants. Findings from the qualitative component of the research highlight the helpfulness of networks members who provided transportation, financial assistance, and emotional support. Helpful network members tended to be older, employed, more educated, closer geographically, and frequently in contact with the participants. Individuals who were geographically or relationally distant (e.g., coworkers), failed to provide emotional support, or encouraged substance use, hindered women's abilities to abide by supervision requirements. Network members elicited by the negative network member probe were primarily ex-friends, many of whom used various types of illegal or prohibited substances.

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Danielle King
Michigan State University

Resilience Narratives: Whether and Why Talking about Resilience Gets You the Job

Many organizations seek to hire employees with high resiliency, and a major way to select for resiliency is to ask candidates to share stories of resilience. But do certain resilience narratives garner more favorable perceptions of resiliency and produce more favorable selection outcomes than others? To address this question, we draw on attribution theory and examine how factors of resilience narratives – that is, locus of support for overcoming adversity and locus of the adversity – influence observers’ perceptions of applicants’ trait resiliency and subsequent selection outcomes. Across two experimental contexts with two different populations, we found that locus of support, rather than locus of adversity, was influential. That is, applicants who describe seeking external support in times of adversity, as compared to those who rely on self/internal support, are seen as lower on trait resiliency and are subsequently less likely to be recommended for hiring. This is a first examination into factors that influence perceived resiliency and the impact of resiliency on selection. We discuss theoretical implications for selection and resilience research, as well as practical implications for applicants and organizations.

John Vasquez
Michigan State University

The Problem with Postdocs: A Review of the Literature

The post-doctorate is one of the most common positions recent PhD graduates move into after graduation and is one of the fastest-growing occupations in U.S. higher education (Cantwell & Lee, 2010; Cantwell & Taylor, 2015). The National Postdoctoral Association estimates that there are approximately 79,000 postdoctoral scholars involved in research in the United States (NPA, 2014) and is steadily increasing due to the fact that the post doctorate has become the de facto next career step following completion of a doctoral degree in many disciplines. While the key characteristic of a postdoctoral position is that it is a temporary position meant to help an individual prepare for a more permanent position in academia, usually a tenure-track faculty position, more and more postdoctoral scholars are staying longer in these positions, or taking multiple consecutive appointments, with the majority never even getting into coveted faculty positions (NPA, 2014).

This presentation is a review of the current literature focusing on several aspects of postdoctoral positions, specifically in the United States. This presentation begins with the origin of the post doctorate in the U.S., along with the evolution of its definition over time, and a breakdown of where postdoctoral researchers can be found. Following this overview is an explanation of the rapid growth of the post doctorate in the U.S. which is in part due to the internationalization of the post doctorate and the use of the post doctorate to diversify the academy, which has led to the eventual situation what some have termed “the problem with postdocs.” The presentation will end with recommendations and suggestions that PhD students should consider before applying to and beginning a post-doctoral training position.

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Student Poster Presentation Abstracts Big Ten A

Ashley Sanderlin

Michigan State University

The Relationship of Body Mass Index with Brain Structure and Longitudinal Behavioral, Functional and Cognitive Changes in Mild Cognitive Impairment

Background: Obesity has been linked to lower brain volumes, cognitive deficits and the future development of dementia. Yet, the relationship of obesity, brain volume and longitudinal changes in Mild Cognitive Impairment (MCI), a precursor to Alzheimer's disease, is not well known. We hypothesized that obese subjects would have lower brain volumes at baseline and greater deficits in behavior and cognition over 2 years. Methods: We analyzed baseline neuroimaging, behavioral and clinical data from MCI subjects in the Alzheimer's Disease Neuroimaging Initiative. The analyses were done in two parts. Study 1 analyzed 36 regional brain volumes selected due to previously reported relationships with either body mass index (BMI) or MCI. A multivariate analysis of variance (MANOVA) model compared brain volumes across three BMI groups: normal-weight (NW), overweight (OW) and obese (OB). In study 2, behavioral, functional and cognitive test scores were collected at baseline and after 2 years. An ANOVA model compared baseline, 2-year and change scores across weight groups. Results: There were 635 MCI subjects; 216(34%) NW, 282(44%) OW and 137(22%) OB. Brain volumes were significantly lower for NW subjects in 14 brain regions affected primarily in early/moderate Alzheimer's disease compared to MCI. In addition NW subjects had greater cognitive deficits at baseline and over a 2-year period. Conclusions: In this study, NW-MCI subjects were older with lower regional brain volumes, and greater cognitive deficits compared to OW/OB subjects. This study may provide neurological evidence for recent research findings of a protective effect of an over-weight BMI on cognitive decline and progression from MCI to Alzheimer's disease

Carl Fields Jr.

Michigan State University

Next-generation Stellar Evolution: Multi-Dimensional Simulations of Massive Stellar Core Collapse

The evolution and deaths of massive stars have an enormous impact on our universe but are yet not fully understood. We present some of the first work to extend massive stellar evolution beyond one-dimensional spherical symmetry. We evolve a 15 solar mass stellar model from the pre main-sequence to ~500 s before core collapse using the stellar evolution code MESA. The model is then mapped into a multidimensional hydrodynamics code and the subsequent evolution is followed in 2D. We follow the nuclear burning using a reaction network that follows 21 isotopes. We find significant, low order convective modes that arise after ~200 s and a peak Mach number of ~ 0.25. Our results have direct implications for the core-collapse supernova explosion mechanism.

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Christopher Rhoades
Michigan State University

Characterizing cGAMP Dependent Regulation of Chemotaxis in Vibrio cholerae

Vibrio cholerae, a pathogenic Gram-negative bacterium responsible for the disease cholera, utilizes a complex regulatory network to modulate virulence factor expression and pathogenicity. The latest *V. cholerae* biotype, El Tor, has supplanted the classical biotype as the primary cause of modern day cholera due in part to the acquisition of two novel gene islands, VSP-1 and VSP-2. While the majority of the genes in these novel El Tor genomic islands have yet to be characterized, they are hypothesized to enhance environmental and host persistence and reduce chemotaxis. The reduction of chemotaxis is a critical event during El Tor host colonization and RNAseq data suggest that overexpression of the VSP-I gene, VC0179 (DncV), may play a role in this regulation. DncV is a dinucleotide cyclase, whose predominant product is the hybrid cyclic nucleotide, cyclic-GMP-AMP (cGAMP). Ectopic expression of DncV in El Tor results in a decreased capacity to diffuse through low-density agar and this chemotactic phenotype can be relieved following deletion of the putative-phospholipase, VC0178. The mechanisms by which DncV, cGAMP and VC0178 are involved in regulating chemotaxis are as yet unknown. Using a bi-plasmid DncV overexpression system we have identified 36 spontaneous mutants who appear to resist this cGAMP induced chemotactic inhibition. Identifying the locations of genomic mutations occurring in these mutants, through targeted and whole-genome sequencing, will reveal the molecular mechanism by which cGAMP regulates chemotaxis and providing insight into understanding the enhanced pathogenic capacity of the El Tor biotype and cGAMP's role in virulence.

Daniel Babayode
Michigan State University

Electrochemical Detection of Salicylic Acid in the Brain

Electrode fouling is an issue that occurs when attempting to identify salicylic acid electrochemically. This problem is serious due to the positive impact salicylic acid can have upon the body, such as preventing cancers, and diminishing the effects of neurodegenerative diseases. Electrode fouling due to adsorbed reaction product(s) occurs on sp²-bonded carbon electrodes, like glassy carbon. In this research project, we sought to answer the question, does electrode fouling occur on sp³-bonded carbon electrodes, like boron-doped diamond? Cyclic voltammetry was used with solutions of salicylic acid in 0.1 M phosphate buffer, pH 7.2. This electrochemical method was used to determine the oxidation peak potential, E_p^{ox} , and the oxidation peak current, i_p^{ox} , as a function of the salicylic acid concentration (1-1000 μ M), scan rate (50-500 mV/s), and scan number at a given scan rate. In addition to studying the oxidation reaction at boron-doped diamond thin film electrodes, measurements were also made at nitrogen-incorporated tetrahedral amorphous carbon thin-film electrodes. It is hypothesized that a stable and sensitive oxidation response will be observed at both diamond and tetrahedral amorphous carbon electrodes with no surface fouling.

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Daniel Claiborne
Michigan State University

How Young Adult Human Microbiota Impacts Allergy Induction in C57BL/6 Mice

16S rDNA data collected from 15 infants in the Isle of Wight Birth cohort indicated taxa proportions might play a role in allergy protection (high Bacteroidaceae) or as an allergy agonist (high Enterobacteriaceae). We developed a C57BL/6 murine model with transplanted human microbiota sensitized to the common allergen house dust mite (HDM). We also attempted to enhance the Th2 immune response to a *Campylobacter jejuni* infection. The goal of this experiment was to develop a proof-of-concept with mice carrying a young adult human microbiota. Mice transplanted with human microbiota (Humice) and others carrying conventional mouse microbiota (Momice) were separated into 8 groups. Both Humouse and Momouse groups were infected with *Campylobacter jejuni* 260.94 and housed for 30 days. Over a 2-week period, mice received 6 doses of HDM intranasally. On day 14, lung functions were measured with the flexiVent apparatus; following humane euthanasia, bronchoalveolar lavage fluid (BALF), plasma, fecal samples, lung, and GI tissues were collected for further analysis. Initial results indicate that allergen exposure impacts lung physiology and function. Total BALF cell counts were higher in Humice infected with *C. jejuni* and exposed to HDM. FlexiVent showed variable interactions in Humice infected with *C. jejuni* across parameters measuring respiratory resistance (Rrs,). Changes in Rrs were observed in Humice infected with *C. jejuni* and exposed to HDM. Our humanized mouse model was successful, we were able to induce allergy in these mice. This allergy induction to HDM was enhanced by the microbiota but not dependent on the presence of *C. jejuni*.

Danielle Ayeh
Michigan State University

Mental Health in Sub-Saharan Africa, the CRPD Comparison

According to the convention on rights of persons with disabilities was created to ensure that governments of different countries uphold the rights of persons with disabilities (UNICEF, 2008). The purpose of this presentation is to look at the convention on rights of persons with human rights and see how it pertains to mental health policies in sub-Saharan Africa specifically in Ghana and South Africa. The mental health sector in sub-saharan African countries is an area that needs more attention from policy makers. According to Okasha (2002) there are about 1200 psychiatrist and about 12, 00 psychiatric nurses who provide mental health services to a population of about 620 million people. Additionally, this presentation will share a brief overview of mental health policies in Ghana and South Africa. The presentation will also look at the mental health resources and supports in Ghana and South Africa. Finally, this paper will discuss the research in relation to the role of the rehabilitation counselor and how future research can be done to further understand the topic. It is important to note that throughout this presentation, the terms “counselor”, “practitioner”, or “mental health professional” will be used interchangeably.

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Dukernse Augustin
Michigan State University

Did the Medicaid Expansion Affect Access to Health Care General Health, and or Smoking among Women of Childbearing Age?

Background: In 2014, the Affordable Care Act was enacted to expanded Medicaid eligibility for to adults earning within less than 138% of the federal poverty level. Although this policy was intended to be implemented in all states, the authority to provide Medicaid is held at the state level. Our study specifically looks at women within the states that expanded their Medicaid program and deciphers whether they were more likely to have access to care, be in better health and/or try to stop smoking compared to women living in states that did not expand Medicaid. Our study examines the impact of the Medicaid expansion on women of reproductive age, as there is growing concern that women do not receive adequate preventative care before and between pregnancies.

Methods: Data is from the US Behavioral Risk Factor Surveillance System (BRFSS), an annual, cross sectional, nationally representative survey of US adults. The analytic sample will include non-pregnant women ages 18-44 in 2015 (n=14,786).

Conclusions: In this study, we found evidence to suggest that there is an association with the Medicaid expansion affecting increased women's access to health care, but did not with impact women's general health or smoking within the first year of the expansion, and health behaviors.

Glorie Rubambiza
Grand Valley State University

Measurement and Statistical Analysis of Submarine Internet Cable Performance

The network of submarine cables spanning the oceans handles an overwhelming majority of the transcontinental Internet's traffic. Internet performance metrics such as available bandwidth and packet latency provide insight into the performance of a wide-area network. For instance, the packet latency and available bandwidth data may show the average round-trip time and bottleneck encountered by a packet transmitted between New York and London, respectively. Currently, Internet performance metrics for terrestrial networks are known from previous studies. However, little is known of the performance of submarine Internet cables due to a lack of studies and confidentiality agreements. Using performance tools such as path load and traceroute, we collected and analyzed available bandwidth and latency of packets sent across submarine cables linking North America to Europe and Asia over time. The results showed that packets traversing submarine cables take a default route on a given day and the possibility of using bandwidth estimation and packet analysis to distinguish submarine cables. The performance analysis is applicable to cable anomaly detection as well as developing novel routing mechanisms for packets traveling through the cables.

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Gloria Desanker
Michigan State University

Phenoregion Variability in East Africa

Seasonal vegetation dynamics or phenology, in terrestrial ecosystems provides important information about environmental responses to climate change and ecosystem productivity. Satellite imagery contributes to knowledge of regional and global ecosystem variation via changes in greenness measured by calculating the Normalized Difference Vegetation Index (NDVI). NDVI is an indicator of green, healthy vegetation in satellite imagery that uses measures of light wavelengths stored in an image. Phenoregions are land cover classifications characterized by regional phenological changes of NDVI time series. Here, NDVI times series are extracted from Landsat 8 satellite imagery at the pixel (30m by 30m) level. Five study sites were selected that intersect protected areas along a latitudinal gradient in semi-arid savanna type (SAST) regions of East Africa. I used digital elevation model (DEM) data calculated from Shuttle Topography Mission (SRTM) data to explain variability in NDVI and Principle Component Analysis (PCA) reduction of the NDVI time series. Differing elevation across a landscape causes increases or decreases in NDVI over time and these trends are grouped into 4 clusters. I used Principle Component Analysis (PCA) reduction of NDVI time series in K means algorithms for pixel level cluster assignment. Multinomial regression analysis is used to explain the variability in cluster assignment. The reliability of these results is assessed using differing numbers of PCA components and numbers of clusters. Results will show landscape scale controls of elevation on phenology in SAST regions and how they differ across the continent. This study can be used to better understand regional scale changes of NDVI in SAST systems in East Africa.

Jessica Maldonado
Michigan State University

Jansky VLA: An Imperative Tool for Next Generation Supernova Remnant Studies

Determining Type-Ia supernova progenitors has been a prevalent unsolved problem in modern astrophysics, although measuring the supernova rates of different galaxies has helped to reveal hints to the solution. We find one of the more methodical ways to measure supernova rates is with the measurement of supernova remnants in detailed, high quality radio continuum images of Local Group galaxies like M31. To further illustrate this point, we convey the current state of radio continuum data, the need for higher sensitivity data of M31 and the need for more comprehensive supernova remnant studies. In an effort to converge on a consensus of Type Ia supernova progenitors we measure the supernova rate as a function of the age of a star (the Delay Time Distribution) using surveys of supernova remnants and models of their radio light curves. We present our deep Jansky Very Large Array survey of M31, and discuss the promise of our survey to provide the astronomical community with the long-needed sensitivity and resolution for next-generation supernova remnant studies.

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JoAnn Ballor
Michigan State University

The Microstructural Evolution and Mechanical Behavior of Fe and Al modified Ti-Cr Alloys

Titanium (Ti) alloys are used in structural applications that require high strength and the ability to survive in high temperature environments. Finding a way to improve the desired properties with a low-cost Ti alloy would help increase the use of Ti alloys. One way to increase the strength of Ti alloys is to introduce a phase change, where atoms in the metal rearrange from one structure to another. The beta-to-omega and beta-to-alpha phase changes, where atoms move from being positioned in a body-centered-cubic (BCC) structure to being positioned in hexagonal structure, usually result in a significant strength increase. This work induced such phase transformations in newly-developed, low-cost Ti alloys, and microstructure-property relationships were investigated.

Ti was alloyed with chromium (Cr), iron (Fe), and aluminum (Al) to create four low-cost alloys with a beta (BCC) structure: Ti-Cr, Ti-Cr-Al, Ti-Cr-Fe, and Ti-Cr-Fe-Al. The alloys were heat treated at 410°C for 12 hours in a vacuum environment to induce the phase transformations. Each sample was characterized using X-ray Diffraction before and after heat treatment to determine the phases present. Hardness and tensile tests were also performed to determine the alloys' hardness values, strengths, and fracture behavior.

Before heat treatment, the alloys had only the beta (BCC) phase present. After heat treatment, the beta, alpha, and omega phases were present. The new phases caused the hardness and tensile strengths of the alloys to significantly increase, however their elongation-to-failure values decreased. Further analysis will be performed to determine microstructure-creep and microstructure-fatigue relationships.

Jorge Mateus
Michigan State University

Wire Scanners Monitors Scattering and Emittance Growth

Beam-profile monitors are essential diagnostic tools utilized in particle accelerators. Scanning-wire-type profile monitors are placed in series along a beam line to observe the evolving spatial distribution of the ion beam. However, each measurement done affects the underlying beam quality due to Coulomb scattering on the wire, limiting how many measurements can be performed before degrading the beam quality to an unacceptable extent. Using the computer software SRIM, the scattering pattern of ions in the 12 keV—20 MeV per nucleon range from 100–300 µm diameter tungsten wires was simulated, and the growth of the emittance profile (the spatial and angular distribution) of the particle beam was determined.

Kalani Gates
Western Michigan University

Engagement in Home Visiting Services During the Perinatal Period: A Qualitative Study

Maternal health conditions are one of the leading contributors toward infant mortality rates in America. To address this, home visiting programs serve pregnant women with an aim to improve child and maternal well-being, specifically during the postpartum period when women experience an immense amount of change and subsequent stress. However, past

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research has indicated that home visiting programs that support pregnant and postpartum women suffer from high rates of attrition. Currently, the literature regarding engagement during this transition are scarce. Therefore, research on engagement is important to inform ways in which providers can reduce attrition rates. This study sought to examine client perceptions of factors related to their engagement in services during the transition from pregnancy to postpartum via semi-structured interviews. Women (N = 33) who participated in three evidence-based home visiting programs (Healthy Babies Healthy Start, Nurse Family Partnership, Healthy Families America) in Kalamazoo County, Michigan were interviewed at 3 months postpartum. Primary themes that mothers' reported included their relationship with their home visitor, the home visitors' provision of information and referrals, and personal qualities of the home visitor.

Mamie Butler

Western Michigan University

QTGNC Students of Color in Academia - Using Triple Jeopardy Framework

The purpose of this poster is to review the literature relevant to experiences of QTGNC in academic settings through the lens of the triple jeopardy framework to encourage more research focused on the impact of the triple jeopardy on QTGNC students in academic settings to improve their outcomes and understand how universities can increase inclusive spaces. Create culturally responsive and inclusive ways to increase academic resiliency in QTGNC students of color that utilizes an anti-deficit approach. Identify ways in which race-related stress and heterosexism impact QTGNC students of color in academic settings. Identify implications for advocating for inclusion of QTGNC students of color at their academic institutions.

Mia Jawor

Western Michigan University

Analyzing the Interactions of Nanojars with Biological Compound using Electrospray-Ionization Mass Spectrometry

Nanojars are coordination complexes that encapsulate anions such as CO_3^{2-} , SO_4^{2-} , PO_4^{3-} , and HPO_4^{2-} . In the presence of one of these anions, nanojars are formed by the self-assembly of Cu^{2+} , OH^- , and pyrazolate ions. The objective of this project is to study the interaction of the pyrazole nanojar $(\text{Bu}_4\text{N})_2[\{\text{Cu}(\text{OH})(\text{C}_3\text{H}_3\text{N}_2)_{29}\}\text{CO}_3]$ and monoethylene glycol pyrazole nanojar $(\text{Na})_2[\{\text{Cu}(\text{OH})(\text{C}_6\text{H}_9\text{N}_2\text{O}_2)_{29}\}\text{CO}_3]$ with major organic metabolites (Urea, Uric Acid, Creatinine and Creatine), nutrients (Glucose and Tyrosine), and nucleobases (Adenine) in solution. The reaction mixtures will be analyzed using Electrospray-Ionization Mass Spectroscopy (EMI-MS) to determine if the nanojar is stable with a metabolite, nutrient, or nucleobase present. The goal of this project is to understand how a nanojar will behave in a biological environment for future pharmaceutical research.

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Monica Barreto
Western Michigan University

A Single-Session of Acceptance and Commitment Therapy to Promote Health-Related Behavior Change: An Open Clinical Trial

The Centers for Disease Control and Prevention have identified tobacco use, physical activity, alcohol consumption, nutrition, and sleep as five key health-related behavior domains for chronic disease prevention. Only a minority of the population meet recommended guidelines across all domains. To impact population health, it is important to develop interventions that can be simultaneously focused, flexible, efficient, and efficacious. Toward this end, we examined the initial efficacy of a single ACT session targeting health-related behavior change. Using an open clinical trial design, 40 collegians (Mage = 20.95 [3.29], 90% female, 60% white) chose one of the five health-related domains to target and received the ACT session. Within-group analyses suggested an immediate post-session increase in confidence in making a change. At the 30-day follow-up, participants reported a significant and specific increase in actions taken toward the value of self-care. Moreover, the largest significant changes, and increases in satisfaction, were reported with respect to the targeted domain. Reduced but substantial change, and increased satisfaction, was also reported in domains that were functionally related to the target, while no changes in behavior or satisfaction were reported in functionally unrelated domains. The evaluation of ACT as a brief intervention is still in its preliminary stage. These initial results are promising and set the stage for subsequent studies.

Neco Wilson
Michigan State University

Corticotropin Releasing Factor Receptor Subtypes CRF1 and CRF2 Divergently Modulate Stimuli-induced Cytokine Synthesis and Release in Mast Cells

Background: Life stress is a known risk factor in the onset of immunological disorders including allergy, asthma and autoimmune diseases but the underlying mechanisms remain poorly understood. That mast cells (MCs) are critical innate immune cells which orchestrate the pathogenesis of many immunological disorders and are highly activated in response to psychological stress, supports their role as key modulators of stress-induced disease. We previously demonstrated that activation of the corticotropin releasing factor (CRF) system in MCs potentiates degranulation and associated pathophysiology in animal models of IgE-mediated anaphylaxis and psychological stress, via CRF receptor subtype 1 (CRF1) expressed on MCs, while signaling via that other CRF receptor subtype CRF2 was shown to suppress MC degranulation and disease pathophysiology. These studies showed that CRF receptors divergently modulate degranulation of pre-stored MC mediators, however, the role of CRF receptor in modulating release of de novo synthesized cytokines remains unknown. The objective of this research was to test that hypothesis that mast cell CRF2 is a modulator of mast cell stimuli-induced cytokine secretion. Bone marrow derived MCs (BMMCs) derived from CRF2-deficient (CRF2^{-/-}, respectively) and congenic WT mice were stimulated with MC stimuli, IgE/DNP, LPS and IL-33, and cytokine concentrations were subsequently measured in BMMC supernatant via ELISA. Results: Compared with WT BMMCs, CRF2KO BMMCs exhibited reduced IL-4, IL-6 and IL10 release following Fc3R1 cross-linking with IgE/DNP. IL-33

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and LPS stimulation induced IL-6 release in CRF2KO compared to WT mice. Conclusions: CRF2 divergently modulates cytokine release in MCs, IL-33 generated a greater response in CRF2KO BMMCs when compared WT BMMCs. CRF2KO BMMCs also exhibited a greater response to IL-33 and LPS in contrast to IgE/DNP. Responses are stimulus specific in CRF2KO BMMCs.

Oacia Fair
Michigan State University

Challenges of Food Security Among Pastoralists

Naitolia is a rural Maasai village located in northern Tanzania. This community consists of pastoralists, where livestock are reared for both meat and milk production. More recently, this community has transitioned to include subsistence farming of maize and legumes. Currently Naitolians face a wide variety of challenges related to food security and pastoralism. We identified these challenges to be climate change, conflict with wildlife, access to water, disease, etc. We conducted three focus groups discussions, consisting of men, women, and the local animal health committee to generate baseline information on the challenges facing various aspects of food security and pastoralism. Using information gathered from focus groups, we developed an open-ended questionnaire relating to pastoralism and the four pillars of food security to gather quantitative and qualitative data from local stakeholders. We held face-to-face interviews at bomas/households to obtain this information. We found that most people are food insecure due to low income and climate change and the most common solution to combat this challenge is access to governmental assistance.

Olaitan Jimoh
Morehouse College

College, Culture, and Relationships: A Case of Skills Based Interventions to Reduce Intimate Partner Violence (IPV) and Sexually Transmitted Infections (STIs)

College women aged 16-24 years old experience intimate partner violence (IPV) at high rates. These women are also more susceptible to contracting sexually transmitted infections (STI) due to fear presented in violent relationships that contribute towards risky sexual behaviors and inefficient communication of consent. This paper reviews research since 2001 that has examined college intervention programs aimed at reducing IPV and STI rates. We have focused on research related to current on-campus interventions while exploring needed improvements within these programs in order to gauge the benefits of skills based, peer led learning. Research on current skills based interventions has been limited as many programs, such as bystander intervention and public awareness campaigns focus on spreading information on IPV and STI rates rather than building lifelong skills among students. Additionally, current programs do not combine IPV and STI teachings but instead view both matters as two non-related topics. However, research suggests the need for skills based elements in programming in order to empower students and build confidence within relationships. From our research we found that these types of programs have yet to be created. Ideal interventions would model a holistic approach that accounts for cultural mindsets within relationships. We discuss the findings that support the development of skills based programs that cater to young people of color as they experience the highest rates of both IPV and STI.

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Tiara Hinton
Morgan State University

Anticancer Properties of Organorhenium Mefenamate and Tolfenamate Complexes

Transition-metal complexes of non-steroidal anti-inflammatory drugs (NSAIDs) are important because they possess interesting biological properties including anti-cancer and cancer prevention. Our lab is engaged in the synthesis of organorhenium complexes of a variety of NSAIDs. The objective of this study is to determine how cytotoxic organorhenium complexes of mefenamic and tolafenamic acids are to MDA-MB-231 and MCF-7 breast cancer cell lines. We hypothesize that the rhenium complexes will be cytotoxic to the cells due to the data in previous studies in our lab. Numerous studies have explored the cytotoxicity of rhenium complexes of these NSAIDs and others on U-937 lymphoma cell lines. In this study, compounds were synthesized using a quantitative reaction and characterized using spectroscopies and x-ray crystallography. A cytotoxicity study was completed to determine the cytotoxicity of the compound to breast cancer cells at various concentrations. According to the cytotoxicity results, the inhibitory concentration at which there is 50% cell death (IC-50) values of these complexes against MDA-MB-231 are 11.6 μ M and 6.08 μ M for the mefenamic and tolafenamic acid complexes, respectively. For MCF-7 the IC-50 values are 2.61 μ M and 3.67 μ M. In previous studies similar to this one, the data showed that the rhenium complexes were cytotoxic to U-937 lymphoma cell lines, and this study is consistent to the trend.

Victor Ruiz-Divas
Michigan State University

Racial Targeting Among Youth

We currently live in a socially constructed society, which is a society created through shared views and assumptions that sets what is mainstream and what is not in a society. Due to the increase of hate and discrimination against marginalized groups currently in American society, people have developed negative and discriminative mindsets and behaviors. With the exposure to negative, bigoted, and outright racist views on marginalized groups, children and adolescents develop their minds around these views. These negative and bigoted ideologies can lead to negative views towards their peers in school, which can result to racial targeting through chants, vandalism, and blatant altercations. This project examines the racial targeting of Black and Hispanic students in American public middle and high schools and focuses on how teachers and administrators respond to these racial aggressions from 2016 to 2017. It is important to see how our teachers and administrators respond to these issues. It is also important to see how teachers and administrators are trained to respond to these issues. To gain a better understanding to how teachers and administrators respond, we must look at how they are trained in teacher education programs.

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Win Hon

University of Michigan

Novel Crystal Forms of the Antibiotic Cefixime

In the pharmaceutical field, solid form selection is often plagued by low bioavailability, a property determined by intestinal permeability and water solubility of a drug. The poor performance of these pharmaceuticals, however, can be improved through the use of novel crystal forms. Methods used to approach and adjust the solubility include the use of various crystallization techniques as well as crystal engineering of multicomponent forms, such as solvates or cocrystals. Crystals are analyzed using different techniques including optical microscopy, Raman spectroscopy, and powder X-ray diffraction. Herein, we describe the novel crystalline forms discovered for the antibiotic cefixime. Crystallization conditions used in our research include evaporation at room temperature, heated evaporation, cooling, addition of an antisolvent, vapor diffusion, grinding, and slurring. Our results show that molecules containing carboxylic acids interact best to form crystals with cefixime. Scale up is needed in order to perform further characterization on these novel crystal forms.

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WHAT IS MICHIGAN AGEP ALLIANCE (MAA)?



The Michigan Alliance for Graduate Education and the Professoriate (AGEP) seeks to join together universities and colleges in the common mission of increasing the number of underrepresented minority students earning PhDs and positioning minority students to become leaders in the social, behavioral, and economic sciences fields (SBE), science, technology, engineering and mathematics (STEM) fields.

Each AGEP alliance employs creative administrative strategies, develops infrastructure, and engages in substantive partnerships with non-doctoral granting institutions (many minority-serving institutions to enhance recruitment, retention, and advancement).

Five major research universities in this alliance include the graduate schools at the University of Michigan, Michigan State University, Michigan Technological University, Wayne State University, and Western Michigan University.

For more information, visit us at:

MAA website: www.michagep.org

MSU AGEP website: www.grad.msu.edu/agep

Michigan AGEP Fall Conference website: www.grad.msu.edu/agep/conference

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