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2020 AGEP Student Success Conference
Student Abstracts CrossTalks & Poster

Michigan State University

October 24, 2020

CrossTalks: 28 Student Oral Presentations
8:45AM - 10:15AM
MSU Zoom Platform

Poster Session: 32 Student Poster Presentations
1:20PM - 2:30PM
Easy Virtual Fair Platform

MICHIGAN STATE UNIVERSITY

GRADUATE SCHOOL

Student Oral Presentation Abstracts
Zoom Room 1 Facilitator: Dr. Abdifatah Ali

Zoom Link: http://bit.ly/AGEP20ZoomRoom1

Kristen Hunt
University of North Carolina at Chapel Hill

Adolescent Attitudes and Sexual Behavior Associated with Teen Dating Violence Victimization

Teen Dating Violence (TDV) affects hundreds of thousands of adolescents across the United States. This violence has an array of negative consequences for its victims, including adverse health effects and predisposition for domestic violence victimization as adults, yet there is little emphasis on this issue within society or research. Extant literature has determined some of the most consistent risk factors for TDV, including attitudes that this violence is "normal," beliefs supporting gender inequality, risky peer networks, and sexual behaviors. This study examined the predictive power of these factors for TDV verbal and physical victimization. 3,064 participants were recruited, with a subsample of 1,885 adolescents who had been in a dating relationship. Using self-report measures, TDV victimization was predicted by measures of (a) peer justification of TDV, (b) attitudes promoting gender inequality, and (c) sexual behavior. The data were analyzed using multiple linear regression models. Risky peer networks that justified behaviors of TDV were the most significant and consistent factor positively correlated with TDV victimization, followed by support among participants for statements promoting gender inequality, which was positively correlated with TDV victimization at significant levels. Finally, having sex was negatively correlated with TDV victimization, a finding likely due to measurement error based on the item used. Future research that analyzes how attitudes supporting gender inequality and sexual behaviors affect TDV will be especially helpful in reducing the cycle of abuse to promote positive, fulfilling romantic relationships among youth.
Keywords: Teen Dating Violence, Adolescents, Attitudes, Peer Influence, Sexual Behavior
Social Impact: Family Relations

Sarah Coffman
Lake Forest College

"It Happens in Chicago": Reenvisioning Post-WWII Racial Terror in the Windy City

In the wake of the second wave of the Great Migration(1940–1970), cities of the American North, particularly Chicago, faced relatively frequent incidences of racial terror in neighborhoods where integration was a plausible threat. The influx of African Americans to fill war industry jobs meant a rapid hike in Chicago's black population¾as the city's long established residential Black Belt overflowed, working- and middle-class African Americans moved into traditionally white neighborhoods and occupied space in either public housing projects for war workers and veterans, or private housing. The presence of black Chicagoans in white spaces defied previous de facto segregation strategies (i.e. restrictive covenants and HOLC redlining maps). Consequently, African Americans endured small and large acts of domestic terrorism at the hands of white families seeking to guard their neighborhoods and push African Americans who challenged Chicago's informal segregation system back to the Black Belt. My project seeks to 1) create a digital humanities exhibit that visualizes instances of white intimidation in Chicago and its suburban hinterland; 2) explore the (irrational) reasoning behind white Chicagoans' anger and violent actions towards African Americans who integrated public and private housing.
Keywords: race riots, segregation, public housing, private housing, police, tipping point, urban space, Chicago, racial violence, domestic terrorism, Post-WWII, racial intimidation, digital humanities
Social Impact: Social Equity

Deja Young
North Carolina Central University

Examining African American Families: Parenting Formats and Styles and Their Impact on Emotional Intelligence

This study will examine parenting formats and styles as predictors of emotional intelligence (EI) in African Americans (AA). Many studies conducted on EI utilize adolescents, and few studies aim to understand AA families and their emotional development due to parenting formats and styles. Parenting formats (PF) include maternal, paternal, and dyad for both parents. Parenting styles (PS) include authoritarian, authoritative, permissive, and neglectful. There is literature to support the idea that a two-parent household has a greater impact on child EI than a single-parent home. Contrarily, literature states the type of PS rendered to a child impacts their EI significantly, no matter the PF. This study will shed light on the impact of PF and PS on EI, individually and collectively. Participants will include a sample of 120 AA adults residing in the United States. Data collection will consist of a demographic survey, perceived parenting test, and EI test. Spearman correlation, analysis of variance, and multiple regression will be run to assess the individual and collective impact of PS, PF, and gender on AA adults' EI. Among participants, I predict that authoritative parenting will produce the highest EI scores across all formats. Female participants will have greater EI scores than males, and PF and PS will predict EI scores. This study can provide insight into increasing awareness among positive, effective parenting behaviors to promote high EI in adults. The results of this research may have implications for parenting interventions, advancing science on the AA community.
Keywords: parenting, parenting styles, emotional intelligence, emotional development
Social Impact: Mental Health

Yasmin Parris
John Jay College of Criminal Justice

Resilience in the Many Faces of Adversity: Exploring Trauma in African American Adults in Economically Disadvantaged Communities

Previous literature supports that African Americans who reside in disadvantaged communities have higher rate of traumatic experiences than the general population. However, previous researchers have found that this population has resiliency which helps them to cope or overcome their trauma. One critique to this area of research is that it predominantly concentrates on youth, without understanding experiences of middle-aged adults and seniors. Thus, it is imperative to fill this gap in research in order to understand how, and if, trauma and resiliency occurs through age, while also identifying the types of trauma and resiliency older adults may experience. The purpose of my proposal is to examine the relationships between trauma and resilience for African American adults (ages 30 and up) who come from poverty-stricken communities. I will address two research questions: What are the different types of trauma experienced by this population? What aspects of resiliency helps them to cope or overcome their trauma? I intend to use quantitative and qualitative method designs to address these two research questions. First, I will measure whether the participants report symptoms of Post-Traumatic Stress Disorder (PTSD), using The PTSD Checklist- Civilian Version (PCL-C; Weathers, Huska & Keane 1991), a screening tool for posttraumatic stress symptoms. Then, I will conduct semi-structed interviews with participants ranging from 30 to 70 years old, who identify as African Americans and reside in poverty-stricken communities. I will use consensual analysis to examine data from the interviews. The findings from this study will provide implications for mental health clinicians and medical practitioners, including recommendations for how to structure mental health services for this population and how to better understand this population’s exposure to trauma and the ways they develop resiliency.
Keywords: Resilience, trauma and mental health
Social Impact: Mental Health

Jessica Saucedo
Michigan State University

Native Culture and Language Experiences: Supporting the Health of American Indian/Alaska Native Children

Native culture and language practice have been identified as core positive supports that have allowed American Indian/Alaska Native (AI/AN) communities to persevere despite adversity. Given these findings, Native culture and language may be protective against obesity; however, this relationship is currently understudied. AI/AN youth are at a particularly high risk of developing coronary heart disease, hypertension, and type 2 diabetes in adulthood. Food insecurity is an understudied correlate of obesity and its associated health conditions. When food insecurity is experienced early in life, it is strongly associated with obesity, diabetes, and hypertension, making it important to study the relationships between food insecurity and obesity among young children. Notably, food insecurity has been linked with food sovereignty and colonialism in Native communities. This study will explore three hypotheses: Boys will have higher obesity rates than girls; Food insecurity will be positively associated with obesity in 3-to 5-year old AI/AN children; and Native culture and language use will be protective, such that the relationship between food insecurity and obesity will decreased for children who are exposed to their Native culture and language compared to children without these cultural ties. A Hierarchical Ordinary Least Squares regression will be used to explore all three hypotheses. For the first hypothesis, percentages of obesity rates between boys and girls will be compared. The incremental F-test statistic will be interpreted for the second and third hypotheses. Findings from this study may support culturally responsive programs, policies, and early interventions needed to increase long-term health in AI/AN children.
Keywords: Supporting culturally responsive programs, policies and early health interventions
Social Impact: Healthcare

Ayuni Kelton
University of California, Los Angeles

The Male Gaze in The Workplace: The Color Red's Effect on Men's Perception of Woman's Attractiveness and Intelligence

Elliot and Maiar have stated that the color red facilitates approach and avoidance motivated behaviors depending on context (2012). Approach behaviors are seen through the biological perspective in the reddening of faces during ovulation and then ingrained socially with associations of red and romance. Avoidance behaviors are biologically displayed in red faces when expressing anger and red is socially conditioned as a sign of danger. This study examines red in the workplace, which is a context where one's abilities and one's appearance are evaluated and could promote avoidance related behaviors and approach related behaviors. This study intends to question if the color red affects heterosexual male participant's perceptions of a female's attractiveness, measured by sexual intent, and intelligence, measured by hirability, in the work place. Research of this kind has value as women make up a larger percent of the workforce than men, yet hold a disproportionately small number of positions in upper management and are paid less than men. This study hypothesizes that men will present avoidance behaviors in the response to intelligence and approach behaviors in the response to attraction when viewing women in the workplace. This study used an experimental between-subjects design where subjects participated in evaluating a female's intelligence and attraction in one of three color conditions by completing an online survey.
Keywords: Approach motivated behavior, Avoidance motivated behavior, Gender stereotype, Workplace, Social psychology
Social Impact: Workforce Development

Adrian Price
California State University, San Marcos

Metaphor Analysis as a Tool for Explicating Affective Constructs

Subjective emptiness is a transdiagnostic psychiatric symptom that is associated with a wide range of clinical correlates including self-harm and suicidal ideation. Research on this clinically significant construct has been constrained by a lack of standalone multi-item measures, largely attributable to the indescribable nature of emptiness. To facilitate construct explication despite lexical constraints, metaphor analysis was incorporated in qualitative interviews, as part of a mixed-

method multi-step scale construction and validation program. From this series of studies, the Subjective Emptiness Scale was developed and results supported the unidimensionality, internal consistency, and construct validity of this measure. The application of metaphor analysis for defining affective constructs in psychometric research is discussed.
Keywords: emptiness, high-risk complications, suicidal ideation, emptiness scale
Social Impact: Mental Health

Student Oral Presentation Abstracts
Zoom Room 2 Facilitator: Dr. Elizabeth Gil

Zoom Link: http://bit.ly/AGEP20ZoomRoom2

Haley Rose
Siena Heights University

The Contribution of Mental Illness on Parole Recidivism

One of the hurdles to success for people affected by the criminal justice system is that there is an ongoing gap in services and support for people who suffer from mental disorders. As a result, people who have been charged with crimes may re-offend because of a lack of mental health diagnosis or related support. This study examines the relationship between parolees with mental health challenges and recidivism rates and challenges. A review of the current literature suggests an increased likelihood of recidivism among parolees with a diagnosed mental disorder compared to parolees without a mental disorder. In addition to the literature, treatment opportunities for people in parole with diagnosed disorders are further being researched as there is a need for increased accessibility within communities. Implications of these findings and directions for future research are discussed.
Keywords: mental health; disorder; parolees; recidivism
Social Impact: Criminal Justice Reform

Angelina Benli
John Jay College of Criminal Justice

One Man, No Vote: The Legacy of Felon Disenfranchisement

Over the past half-century, the population of those incarcerated in the United States has increased to 2.2 million. State laws that govern whether individuals with felony convictions can vote are not uniform, which leads to unequal participation and unfair disparity in elections based on where an individual resides. Due to felon disenfranchising policies across the country, an estimated 6.1 million Americans are unable to cast ballots, which is 3% of the voting population. This project will have two phases, the first is to use national surveys that include ex-felons, along with national and county-level election returns to examine the political behavior and participation of ex-felons. This will help answer if re-enfranchisement leads to increased turnout, in elections and other political activities. These empirical results will be the backdrop for the second phase, which will be a case study of New York City, focusing on voter turnout after Governor Cuomo's 2018 executive order reinstating the right to vote to those on parole and probation. The greater understanding that we have of the political participation of ex-felons or lack thereof can inform future election and voter policy on a county, state, and federal level.
Keywords: mental health; disorder; parolees; recidivism
Social Impact: Criminal Justice Reform

Grace Gerloff
Grand Valley State University

Racial Reckoning: Exploring New Pathways for Transracial Adoptee Identity Formations in the midst of "Kung Flu" and Black Lives Matter

Transracial adoption from China–the adoption of Chinese children into white families–serves as a space to examine processes of racial identity formation out of racially isolated upbringings. Previous literature on the topic has focused on individual life events–such as moving away from home–as sites where adoptees of color first begin to engage with their racial identities. In this exploratory paper I argue that the resurgence of anti-Asian racism out of the COVID-19 pandemic, coupled with the large-scale national and global attention to race and white supremacy that has arisen out of the Black Lives Matter protests presents a new pathway for transracial adoptees to negotiate their racial identity and their relationship to movements for racial justice. The colorblind ideology that has traditionally shaped racial dynamics in white adoptive families with adoptees of color has become increasingly difficult to sustain as the topic of white supremacy racism remains especially prominent in popular discourse. The theoretical framework presented in this paper will later be used to explore the role of social justice organizing and solidarity as well as national sociopolitical discourses in how adoptees come to understand the ways in which racial flexibility and proximity to whiteness remain fragile ground within transracial adoption. These developing pathways of racial reckoning will inform the ways adoptees of color engage with race as well as shape their own understanding self and solidarity as racialized sociopolitical shifts continue to unfold.
Keywords: transracial adoption, identity formation, Asian American racialization
Social Impact: Social Equity

Darya Owens
Wayne State University

Teacher's Responsiveness During Literacy Instruction that Promotes Student's Mental Wellness.

The purposes of demonstrating teachers modeling learning strategies that improve academic skills of exceptional children with learning disabilities are displayed every day. However, the impact of moderate trauma such as the present pandemic COVID-19 can alter how children perceive facilitated learning strategies i.e. learning from home primarily through technological platforms. However, methods suggested by researchers Yoder, Posamentier, Godek Siebel & Dusenbury (2020) demonstrate teaching children to write about distrust using social constructs that correlate to teachers facilitating reading and writing skills. Additionally, these researchers posit that 67% of states reporting Social Emotional Learning strategies has increased since COVID-19. As a result, reopening of schools as reported by Levinson, Cevik & Lipsitch (2020) will require learning strategies that provide additional in-person benefits such as Social Emotional Learning strategies that improve reading and writing skills of exceptional children with learning disabilities. In order to demonstrate improvement of exceptional children with learning disabilities reading and writing during prevailing trauma I aim to demonstrate outcomes of teachers modifying curricula lessons while facilitating student's use of their reading and writing skills. Additionally, reports of traumatic events that somehow alter students' academic aims will depend on teachers securing learning as a social interaction by way of exposure to literature that rehearses unfamiliar vocabulary and balances thoughts of social emotional learning strategies.
Keywords: Teachers, exceptional children, reading and writing skills, social emotional learning
Social Impact: K-12 Education

Oluwafunmilayo Ayeni
Michigan State University

Impact of Formative Assessments on Student Learning Behaviors and Outcomes

Universities, instructors, and students are invested in the success of students. Studies have noted academic performance as an indicator of student success (Daumiller & Dresel, 2018; 2019). Assessments such as exams, quizzes, and essays are used to evaluate learning and assign course grades to students. The use of assessment to facilitate learning often involves providing feedback to students about their performance (Evans, 2013). While many scholars focus on the benefits of providing feedback to students, there is lesser attention given to the reverse process of

gathering feedback from students on the assessment (Light et al., 2009). Using a mixed methods approach, the current study investigated the impact of formative assessments on students' study strategies/habits, self-efficacy, and grade performance. This study included data from 44 students enrolled in a mid-level, online psychology course. Students completed auto-graded multiple-choice quizzes as part of their coursework at two time points. At time one, students completed the quiz and responded to an online survey to reflect on their study strategies, quiz performance, and suggest course improvements. The feedback provided by students was reviewed and used to refine relevant course materials. At time two, students completed another quiz and responded to the online reflection survey. Students' grades were analyzed, and results indicated an improvement at time two. Reflection survey responses revealed an improvement in students' use of study strategies, increase in self-efficacy, and positive feedback on assessment structure. Overall, findings from this study highlight the benefits of in-process evaluations of learning needs during a course.

Keywords: Student success, academic performance
Social Impact: Higher Education

Antonia Gordon
Grand Valley State University

The True Costs of Education & Why Money Matters

Despite years of education reform, Michigan still has low k-12 student performance. The state's ranking started to decline in 2003 and was expected to continue its downward spiral for fifteen years. Traditionally, education policy research in Michigan has focused on the state's largest municipality, Detroit. The implications of focusing on a singular case study makes it difficult to determine if disparate education outcomes are perpetuated systematically throughout the state. This study uses a comparative case analysis of Detroit Public Schools and Muskegon Heights Public Schools - a city with a similar demographic composition - to test if education policy enacted in the mid 1990's led to decreased test scores in both schools. The research will draw attention to overlooked schools in West Michigan that do not receive the same scrutiny in education research, while identifying flaws in education policy to suggest reform to change the downward trajectory of Michigan student performance.

Keywords: Minority and Urban Education, Education Policy, Education Finance
Social Impact: K-12 Education

Julio Mena Bernal
University of California, Los Angeles

Understanding Existing Mental Health Disparities within Latinx Students and its intersection with COVID-19

Research has shown that Latinx students suffer from higher levels of anxiety, depression, isolation, and experience greater psychological distress compared to their white counterparts (Del Pilar, 2009). Additionally, the stress Latinx students face within higher education often hinders their academic adjustment and participation within the university (Del Pilar, 2009). Currently, Covid-19 has forced abrupt changes and even the closure of many institutions of higher education, directly impacting the educational experience of all students. The pandemic created sudden changes in curriculum, employment, and created an uncertainty for many students' futures, all of which relate directly to their mental well-being. However, Latinx students, being disproportionately affected by additional adverse social, economic, and mental health issues challenges, are especially vulnerable during these circumstances. This study will explore the ways in which COVID-19 has affected the social, economic, and mental well-being of Latinx students in higher education. Specifically, this project aims to explore the mental health disparities Latinx students faced prior to the pandemic and how the pandemic has affected their day to day lives in an attempt to inform ways to properly address the needs of Latinx students in higher education. This study employs a mixed-methodology including semi-structured interviews, surveys, and photo journals to document the social, economic, and mental health hardships during the pandemic. Project implications include advocating for additional support from higher education institutions towards students of color to address the disparities in educational equity.

Keywords: Higher education, Mental health, Latinx Students
Social Impact: Higher Education

Student Oral Presentation Abstracts
Zoom Room 3 Facilitator: Dr. Ashley H. Sanderlin
Zoom Link: http://bit.ly/AGEP20ZoomRoom3

Hannah Pierson
Grand Valley State University

The Link Between Nativity Status and Racial Infant Mortality Disparities

The United States has one of the highest rates of infant mortality in the developed world. Studies indicate infant mortality varies greatly across racial groups. Black women are twice as likely to report preterm birth or infant death relative to White women. Foreign-born Black women have similar rates to that of native-born White women rather than native-born Black women, suggesting the link between race and reproductive health is more complex than previously understood. Thus, this study examines the interplay between nativity, race, and reproductive health. The cumulative disadvantage perspective will be employed to better unpack how life course stressors may be negatively linked to reproductive health of native-born Black women relative to the foreign-born. The National Longitudinal Study of Adolescent and Adult Health will be utilized to examine if a woman's nativity is associated with their reproductive health outcomes based on unique life course stressors they may have endured.
Keywords: Racial infant mortality disparities, sociology, healthcare disparities, nativity status, reproductive health, adverse birth outcomes
Social Impact: Healthcare

Maquela Noel
Baylor University

Examining the impact of a father's childhood experiences on the relationship he has with the mother of his baby

It is unknown what influence the childhood experiences of a father have on the relationship he has with the mother of his baby. Fathers were recruited through a study of Black pregnant women and risk of preterm birth, birth Fathers completed questionnaires to measure adverse childhood experiences (ACES) prior to the age of 18, their relationship with the mother of his baby, and sociodemographic characteristics (i.e. chronic health conditions, educational level, yearly income). The adverse childhood experiences of fathers were measured using a ten-item scale assessing if they occurred or not (i.e. ACES). His relationship with the mother of his baby was measured with a conflict scale of five items using five-point Likert responses. The purpose of the study was to examine how the adverse childhood experiences (measured by a ten item ACES scale) for fathers may affect conflict in his (current) prenatal relationship with his child's mother. We used a t-test to compare the average score on the conflict scale for fathers with 2 or fewer ACES compared to those with 3 or more ACES. We hypothesized that fathers with fewer ACES would have a higher score on the conflict scale (more conflict). The major findings of the study show a higher ACES score of the father was associated with higher conflict with the mother of the baby.
Keywords: father of baby (FOB), mother of baby (MOB), conflict, support, pregnancy, prenatal period
Social Impact: Family Relations

Omina Nazarzoda
Brooklyn College

Oligodendrogenesis is Required for Long-term Memory Formation

Learning and memory are essential for all living organisms. Research investigating the underlying mechanisms of learning and memory have mainly focused on neurons, however the involvement of glial cells, specifically oligodendrocytes, have received limited attention. Studies have shown the requirement of newly generated oligodendrocytes in motor learning, fear memory, and spatial memory consolidation. However, whether episodic memories require de novo myelination and whether cortical regions of the brain are implicated, have not been

explored. We hypothesize that during long-term memory formation oligodendrogenesis is induced in the anterior cingulate cortex (ACC) of mice, and that oligodendrogenesis is required for memory formation. To understand if memory formation induces oligodendrogenesis, mice were injected with 5-ethynyl-2'-deoxyuridine (EdU) - a cell proliferation marker - 1 hour before inhibitory avoidance (IA) training. We found an increase in oligodendrocyte precursor cell (OPC) proliferation and differentiation in the ACC 1 day after training compared to the untrained controls. Next, to determine the requirement of oligodendrogenesis for long-term memory formation, we conditionally knocked out the myelin regulatory factor gene (Myrf). MyRF controls OPC differentiation. The Myrf-knockout mice and the control group were trained in IA and object location to assess their memory. The inhibitory avoidance and object location task results showed memory deficiency in Myrf-knockout mice compared to those with an intact Myrf gene. From the initial experiment, we conclude that long-term memory formation induces oligodendrogenesis in the ACC. The deletion of Myrf shows that oligodendrogenesis is required for long-term memory formation. Since OPC proliferation and differentiation are prerequisites for new myelin, the research may have long-term potential to explain and treat cognition and myelin-related disorders such as multiple sclerosis.

Keywords: Learning, memory, myelin disorders, multiple sclerosis
Social Impact: Healthcare

Ayman Abdullah-Smoot
Texas Southern University

A Quantitative Investigation of Preventative Measures for COVID-19

Coronaviruses, as defined by the World Health Organization, are a large family of viruses that can cause respiratory illnesses ranging in severity from the common cold to Severe Acute Respiratory Syndrome (SARS). Severe Acute Respiratory Syndrome coronavirus 2 (SARS-CoV-2), the most recent coronavirus, causes the coronavirus disease COVID-19. The COVID-19 outbreak has become a global pandemic causing over one million deaths worldwide. In order to mitigate the spread of COVID-19 various preventative measures have been put in place. With the novelty of COVID-19, there are still questions about the efficacy of these preventative measures, namely how successful these measures are at slowing the spread of COVID-19 and what factors contribute to their success. This experiment compares two preventative measures: social distancing and vaccination, to determine the efficacy of each as a standalone preventative measure and to discover the requirements needed to ensure their efficacy. By utilizing a system of equations for each preventative measure, we created a mathematical model to simulate the spread of COVID-19 throughout an arbitrary population. Using the models to calculate the reproductive number (R¬0), the spread of the virus from one infected individual, we discovered that vaccination can become the most effective standalone measure but there are specific factors that could make this difficult to achieve. Our findings are a useful tool in understanding what factors contribute to the success of these preventative measures which can increase the overall efficacy of each one, ultimately helping to prevent the spread of COVID-19.

Keywords: Covid-19, Preventative Measures, Medical Treatment
Social Impact: Healthcare

André Herrera Charpentier
Western Michigan University

Social isolation and cocaine addiction: role of ERK in relapse to adolescent-formed cocaine stimuli

Drug use during adolescence can increase the life-long risk to develop a substance use disorder. Exposure to environments and cues related to drug use can trigger relapse events, with adolescent relapse highly influenced by peer and social factors. In rodent models, it has been shown that social isolation can impact relapse-like behaviors as well as neurochemical and cellular changes. One such molecule- the extracellular signal-regulated kinase (ERK)- plays an important role in facilitating relapse-like behavior. However, the role of ERK activity in relapse to adolescent-formed cocaine stimuli under different housing conditions (paired or isolated) is unknown. Adolescent male rats were divided into pair or single housed groups. Rats received cocaine self-administration training- in which they learned to press an active lever for cocaine in a distinct context (2 h, 1×/day, 10 days), followed by extinction training (EXT) in a second unique context. During EXT, active responses did not result in drug infusions (2 h, 1×/day, 8 days). Rats then underwent testing in the EXT or previous cocaine-paired context. During this phase, lever responses did not result in drug infusions,

thereby serving as a drug-seeking test. Following testing, rats were perfused and brain tissue was processed via immunohistochemistry to detect phosphorylated ERK protein. Overall, single housed rats had higher drug-seeking behavior than their pair-housed counterparts. Ongoing experiments will examine whether pERK levels correlate with drug-seeking behavior. Understanding the molecular changes caused by cocaine use will help in the development of behavioral and pharmacological therapies in the treatment of cocaine addiction relapse.
Keywords: drugs, adolescences, cocaine, addiction
Social Impact: Healthcare

Kayla Ford
Prairie View A&M University

Concussion History and Knee Self-Efficacy in Patients after Anterior Cruciate Ligament Reconstruction

Objective: Previous research has demonstrated that patients with a history of anterior cruciate ligament reconstruction (ACLR) also demonstrate poor knee self-efficacy. Poor knee self-efficacy has also been predictive of decreased physical activity in this population. What is unknown is whether history of sports-related concussions (SRC) can enhance these negative psychological factors observed in patients after ACLR, such as further decreases in knee self-efficacy. Purpose: Therefore, this study examined differences in knee self-efficacy between patients with history of SRC after ACLR and patients without history of SRC. It was hypothesized that the ACLR group with history of SRC would show worse self-efficacy for physical activity than the ACLR group without history of SRC. Methods: Forty participants (24 female, mean age = 24.34.1 years; height (cm) =169.9 (9.1); weight (kg) = 73.2 (15.1)) with a history of ACLR (≥1-year post-operative) were put into a No SRC group (n=29) or SRC group (n=11). The demographics questionnaire asked about the history of concussion. The Knee Self-Efficacy Scale (K-SES)was used to examine knee self-efficacy. The higher the score the higher their knee self-efficacy. To examine the group differences, Mann-Whitney U tests were used. Results: There were statistically significant differences observed between the SRC group (Median=7.5; Range 5.34) and the no SRC group (Median=8.17; Range=6.17) in the K-SES Physical Activity subscale. Those with a history of ACLR in the SRC group demonstrated worse knee self-efficacy for physical activity than the ACLR group with no history of SRC. Conclusion: With these results, it is suggested that SRC history may negatively influence a patient's knee self-efficacy in patients with a history of ACLR. Early assessment of poor self-efficacy after ACLR should occur in patients with history of SRC. Use of psychological interventions, such as mindfulness meditation, may help to improve self-efficacy in patients after ACLR.
Keywords: Self-efficacy, Research, ACLR, Concussion
Social Impact: Mental Health

James Martin
Columbia University

Quantifying the relationship between Conformational Dynamics and Enzymatic Activity in Ribonuclease HI Homologues

"Ribonuclease HI (RNHI), a ubiquitous, non-sequence specific endonuclease, cleaves the RNA strand in RNA/DNA hybrids. RNHI functions in replication, genome maintenance, and retroviral reverse transcriptases contain an essential ribonuclease H domain. NMR spectroscopy combined with molecular dynamics (MD) simulations suggest a model in which the extended handle region domain of Escherichia coli RNHI populates (substrate binding competent) ""open"" and (substrate binding incompetent) ""closed"" states, while the thermophilic T. thermophilus RNHI mainly populates the closed state at 300 K. In addition, an in silico designed mutant E. coli Val98Ala RNHI was predicted to populate primarily the closed state. The present work validates this model and confirms the predicted properties of the designed mutant. MD simulations suggest that the conformational preferences of the handle region correlate with the conformations of Trp85, Thr92, and Val101. NMR residual dipolar coupling constants, three bond scalar coupling constants, and chemical shifts experimentally define the conformational states of these residues and hence of the handle domain. The NMR parameters correlate with the Michaelis constants for RNHI homologues, confirming the important role of the handle region in modulation of substrate recognition and illustrating the power of NMR spectroscopy in dissecting the conformational preferences underlying enzyme function.
Keywords: HIV antiretroviral therapeutics
Social Impact: Healthcare

Student Oral Presentation Abstracts
Zoom Room 4 Facilitator: Dr. Isola Brown

Zoom Link: http://bit.ly/AGEP20ZoomRoom4

Rna Babikar
Sudan University for Science and Technology

Fusarium Brachygibbosum: A Plausible Candidate for Deployment as Component of an Integrated Striga Hermonthica Management Strategy in Sorghum

Striga hermonthica, an obligate root hemiparasitic weed, is a major threat to food security in sub-Saharan Africa. The parasite attacks the major staple food crops including sorghum, pearl millet and maize and inflicts considerable losses in yield amounting to 100% in heavy infested areas thus leading to abandonment of land and migration of villages. The parasite is reported to infest over 50 million of the land under cereals in the region. The wide spread of the parasite, its high fecundity and virulence together with its a complex lifecycle, which is strongly cued to its host and the environment, coupled with its subterranean nature and the irrevocable damage it inflicts during early developmental stages make it a suitable target for biocontrol especially under the prevalent low inputs production systems in the region. In the present investigation three Fusarium isolates, designated as Iso 1, Iso2 and Iso3, obtained from diseased S. hermonthica plants were evaluated, in a laboratory, for their effects on the parasite germination and radicle extension. The results were further validated in a greenhouse using the most effective isolate (Iso2). Pre-treatment for 15 days in a fungus free Czapek-Dox (CD) medium resulted in high germination (94-97%) in response to GR24 and the resulting seedlings displayed radicle extension of 0.6-1.2 µm 10-2. Pre-treatment in Iso1 culture reduced germination to 22-37% and radicle extension to 0.1 µm 10-2. Pre-treatment in Iso2 and Iso3 cultures reduced germination and radicle extension to negligible. Alternating pre-treatments in distilled water (DW) and the fungal cultures reduced both germination and radicle extension in a time dependent manner. Validation of the results in greenhouse experiments, using Iso2, identified as Fusarium brachygibbosum, showed that unrestricted Striga parasitism reduced sorghum height by 15-47.9% and biomass by 25-75%. F. brachygibbosum at the highest inoculum level reduced Striga emergence by 71.9 and 100%, biomass by 71.7 and 100% and repressed its depressive effects on sorghum. Supplementation of the fungus treatments with nitrogen further improved sorghum growth, reduced Striga emergence, and biomass. The study shows the importance of Striga seed bank as a key factor in determining host response to treatments. Further, the study reports, for the first time, isolation of F. brachygibbosum from diseased Striga plants and indicates the plausibility of its deployment as a component of an integrated Striga management strategy in sorghum.

Keywords: Food security
Social Impact: Healthcare

John Tran
Michigan State University

Searching for the One: Using Big Data to Make Tiny Changes with CRISPR

This project aims to improve plant biofuel technologies by modifying the cell wall structure of plant biomass that is difficult to digest during industrial processing. The recalcitrance of plant biomass is contributed by a complex polymer deposited in the plant cell wall during secondary growth - lignin. Lignin, an irregular polyphenolic, enables vascular plants the capability to transport water throughout the body that is key to forming structural materials for growth and development. Genetic approaches to perturb lignin in Arabidopsis have led to the modification of lignin composition by changes in the ratio of monolignol subunits. While perturbations have provided insight into the lignin biosynthetic pathway, a step during its synthesis that is critical to strategies for redesigning plants to improve biofuel technologies is not well understood. An understanding of how monolignols move from the cytoplasm to the apoplastic space, the site of lignin polymerization, has the potential to transform biofuel technologies. I have data that suggest a transporter protein plays a role in this step. Analysis of inflorescence stem from an Arabidopsis mutant in this transporter protein showed substantially reduced lignin content based on the decrease of syringyl and guaiacyl subunits. Also, the mutant is more susceptible to cell wall digestion, releasing higher amounts of glucose and pentose when hydrolytic enzymes are introduced to the alkaline-pretreated inflorescence stem. I am currently doing genetic experiments to provide additional

proof that this mutation underlies the effect. Findings from my research provide insights into regulating the amount of lignin in biofuel crops. I will discuss efforts using gene expression data, overexpression analysis, and CRISPR-Cas9 to identify the transporter protein and support its role in monolignol transport.
Keywords: Bioenergy, Biofuel, Global Warming
Social Impact: Environment

Dexter Smith
University of Central Florida

Photon Detection of PMT and SiPM Arrays for MoNA LISA Applications

MoNA LISA is large area neutron detector consisting of an array of fast plastic scintillators. They are at the National Superconducting Cyclotron Laboratory. The study of neutrons has shown to be very beneficial across many fields. Cancer treatments such as the boron neutron capture therapy (BNCT) utilizes neutrons to fight cancer in medical patients in a non-invasive manner. Nuclear power shows the potential to bring about an energy source with the ability to revolutionize the lives of nearly every human on earth using isotopes. Neutron detectors are also important tools to study nuclear structure effects at the drip line. The problem with detecting neutrons comes from the lack of an electrical charge. MoNA LISA uses a combination of energy transfer and time of flight to study properties of the neutron of interest. This configuration is capable of a 70% detection efficiency for neutrons between 50 MeV to 250 MeV. Detectors of large volume must be constructed to conduct research on such particles. The scintillator arrays currently use photomultiplier tubes to monitor the neutron interactions within the detectors. Photomultiplier Technology (PMTs) have proven to be great in monitoring neutron interactions within scintillators by detection of the scintillation light, but still are very dependent on the geometry of the detector setup. This paper goes into detail on the possibilities opened by a PMT and silicon Photomultiplier combination. SiPMs have shown promise and have the capabilities to match the PMT in neutron detection while offering versatility in detector orientation and configuration.
Keywords: Neutron Detection, Energy, Cancer Treatment
Social Impact: Healthcare

Beatrice Cherop
Tennessee State University

Road Safety in Relaxation to Extreme Events

The United States reported the first case of COVID-19 in January 2020. To minimize transmission and rate of infection, the United States closed schools, non-essential businesses, barred mass gatherings and mandated individuals to work remotely. As a result, traffic volume decreased leading to an increase in instances of over speeding, recklessness and relaxed driving. The pattern of car crashes before and during the initial stages COVID-19 pandemic in Tennessee, USA, are analyzed in this paper. The study data covers crash patterns in the months of March, April and May for the years 2017 to 2020. Non-parametric tests were utilized to study the mean of crashes before and during the pandemic. Traffic and geometric factors were used to model the crashes. It was generally found that the government moves to cab the pandemic had resulting implications on traffic conditions leading to increased safety.
Keywords: Traffic Safety
Social Impact: Environment

Vanessa Maldonado
Michigan State University

Electrochemical Oxidation of Per-and- Polyfluoroalkyl Substances with Boron-doped Diamond Electrodes

Per and Poly-fluoroalkyl Substances (PFAS) are a group of synthetic chemicals with exceptional physicochemical properties which make them resistant to biodegradation. They have been identified as emerging environmental contaminants due to their recalcitrant nature and their associated high-risk health effects. Multiple consumer products containing PFAS end up in landfills, and their presence have been reported in landfill leachates in the ppb range. In

addition, landfill leachates present multiple precursor compounds which can be further oxidized to the most common forms of PFAS: PFOA and PFOS. We used electrochemical oxidation with Boron Doped Diamond (BDD) electrodes as a destructive technology to break down PFAS present in landfill leachates to non-detect levels. The BDD material provides a combination of rigidity, high oxygen over-potential, and overall electrode lifetime, which makes it an attractive option for an electrochemical treatment system. This presentation will cover the basic and applied research findings of using electrochemical oxidation (EO) with BDD electrodes to destroy PFAS in landfill leachates.

Keywords: Water remediation, wastewater treatment, PFAS
Social Impact: Environment

Andrea Meraz
University of California, Berkeley

Selection for Estrogen Sensitivity in Feral Xenopus laevis

Endocrine-disrupting chemicals (EDCs) in the environment are a threat to our health and the ecosystem. Atrazine, an herbicide used heavily on golf courses, is an EDC that induces estrogen production in animals, including humans. African Clawed frog (Xenopus laevis) tadpoles exposed to estrogenic compounds during early development develop female-typical reproductive morphology. Sensitivity to these estrogenic compounds, however, varies between populations. We examined two feral populations of X. laevis collected from a creek, which is bisected by a golf course, to investigate whether there was a difference in sensitivity between populations collected from upstream and downstream sites. We tested this hypothesis by breeding pairs collected from both sites and exposing their offspring to either 3 ng/mL of estradiol or delivery vehicle. When exposed to estrogen, the ratio of male : hermaphrodite : female metamorphs was 61 :17: 87 (63% with ovaries) in the upstream population and 14:10:143 (92% with ovaries) in the downstream population, compared to 49% and 51% with ovaries upstream and downstream, respectively. There was a statistically significant difference between both groups (G-test; $P < 0.05$) and the controls. Estrogen sensitivity was higher in downstream populations, suggesting that exposure to EDCs leads to selection for increased sensitivity to estrogen.

Keywords: endocrine disruptors, estrogenic compounds
Social Impact: Healthcare

Jonathan Aguilera
California State University, Long Beach

Effect of Postnatal Undernutrition on Cardiomyocyte Nucleation and Size in Adult Mice

Individuals that are undernourished during the postnatal period undergo changes in cardiac development that increase their risk for developing heart disease. Postnatal undernutrition is associated with a reduced cardiomyocyte size and number of nuclei per cardiomyocyte, leading to cardiovascular impairment. Interventions for treating undernourished babies include refeeding a healthy diet, but the specific developmental window at which treatment is unable to mitigate permanent alterations to cardiac morphology has not been identified. In this study, we sought to determine whether refeeding a healthy diet to mice after inducing undernutrition during different stages of postnatal development can restore cardiomyocyte cross-sectional area and nucleation. We assigned pups to nurse from mouse dams fed either a control (20% protein) or a low protein (8% protein) diet from birth to postnatal day (PN) 21. Pups experienced either early phase undernutrition, (EUN; PN1-10), late phase undernutrition (LUN; PN11-21), whole postnatal undernutrition (PUN; PN1-21) or proper nourishment (CON). After PN21, all groups were fed a control diet. We sacrificed mice at PN90 and processed images of stained cardiomyocytes using Image J software. CON had a significantly higher percentage of polynucleated cells compared to EUN ($P=0.018$). No significant differences were found in mononucleated cells, binucleated cells, or cross-sectional area. These findings suggest that refeeding treatments do not restore the proportion of polynucleated cardiomyocytes after early phase undernutrition, which may impair functional capacity. Thus, the investigation of alternative countermeasures that mitigate the alterations to cardiomyocyte nucleation are warranted.

Keywords: undernutrition, heart disease, postnatal development
Social Impact: Healthcare

Student Poster Presentation Abstracts
Virtual Location: Easy Virtual Fair
Life Science

Aashna Sahni
Emory University

Characterizing Melanotan II, a Novel Pharmaceutical Drug with the Potential to Enhance the Efficacy of Autism Therapy

There is no effective pharmaceutical drug that can palliate the social deficits caused by autism spectrum disorder (ASD). Oxytocin (OT), a neuropeptide, promotes pro-social behaviors making it a potential candidate for pharmacological treatment. Melanotan II (MTII) is a compound of interest that evokes endogenous OT release in the paraventricular nucleus (PVN). Regions of the social salience network (SSN) coordinate to process social information. MTII primes PVN to release OT throughout the (SSN). MTII combined with social stimulus, increases OT releases throughout the SSN. MTII-induced pattern of brain activation was investigated across the SSN with social exposure. Twenty-four prairie voles received MTII doses ranging from 0.1 nmol to 1 pmol into lateral ventricles and were exposed to social or non-social stimuli. To observe activation, immunolabelling was performed to label for OT expression and c-FOS, an immediate early gene protein used as proxy for neuronal activation. Behavioral side effects were observed: stretching, spinning, scratching, grooming, and ambulating. Decrease in side effects was observed with decrease in dosage. To analyze c-FOS expression an online machine learning program, DeepFLaSH was used. Results suggested no behavioral difference between vehicle and 1 pmol group making it a viable dose for future experiments. However, a quantitative analysis of c-FOS expression suggested there was no significant difference in expression at different doses. We concluded the behavioral differences observed at different doses were not correlated with increased c-FOS expression in the PVN. In future, we will examine MTII-induced activation of c-FOS expression in other regions of the SSN.
Keywords: Social Neuroscience, Autism Therapy, Oxytocin
Social Impact: Mental Health

Anthony Gutierrez
California State University - Northridge

Variable Population Genetic Structure within each of Three Disjunct Regions of the Pine Barrens Treefrog

Across- and within-species, diversity is influenced by both biotic and abiotic factors. Population demographic and genetic data are therefore critical to conserve and manage wildlife species. The Pine Barrens Treefrog (Hyla andersonii) is a seepage bog specialist and a species of conservation concern that is restricted to three isolated regions in the eastern United States: New Jersey (NJ), North and South Carolina (CL), and southern Alabama and the Florida panhandle (AF). Within-region conservation management of this species requires a clearer understanding of how populations may differ from one another and how they are structured. Using 15 previously developed microsatellite markers for 52 sampled localities across its range, we estimated population diversity and connectivity within regions. We found very different patterns of population genetic structure for each region: one panmictic group in NJ, two primary groups in CL, and a more complicated structure of three groups in AF. We also found little evidence for isolation by distance to explain within-region diversity, suggesting isolation via environmental or other factors may explain patterns of connectivity between populations. To explore these factors, we are currently testing hypotheses of how landscape features (i.e. topography, soil type, and urbanization) influence population connectivity using surface resistance modeling.
Keywords: conservation, Anura, microsatellite, landscape genetics, surface resistance modeling
Social Impact: Environment

Ariana Uwaibi
Florida A&M University

Correlation of Toxin Production of Microcystis Aeruginosa with Relevant Environmental Factors and the Correlation of Toxic and Nontoxic Analytical Spectral Profile

Cyanobacterial harmful algal blooms (cHABs) are increasing their presence in warm, stagnant, and eutrophic waters worldwide. Associated with many of these cHABs are an array of cyanotoxins such as microcystins, nodularins, saxitoxin, cylindrospermopsin, and anatoxin-a. The presence of cHABs and their toxins can cause harm to the economy by negatively impacting fisheries, wildlife, and tourism. In addition, cHABs pose a threat to public health because of their potential to affect drinking water sources. The influence of environmental factors on the production of cHABs toxins is relatively unknown. For example, Microcystis aeruginosa, the major cHAB in Lake Erie, produces annual blooms within the Western Basin, effecting the drinking water for 12 million people in both the US and Canada. This proposed research will use cellular hyperspectral imaging to assess how M. aeruginosa physically responds to environmental stressors, such as light availability, temperature, CO2 and nutrient concentrations. These results will be compared to in situ microcystin concentrations through a field-based approach using an Environmental Sample Processor, also known as an autonomous "Lab in a Can", which determines toxin concentrations within an active bloom in near real-time. This research was designed to support bloom and freshwater management by means of improving modeling and forecasting efforts to predict toxin concentrations for stakeholders.
Keywords: Harmful algal blooms, water quality, public health
Social Impact: Environment

Elise Armstrong
Siena Heights University

Mortality and Size in Praying Mantises (Tenodera sinensis)

The original goal of this experiment was to explore aggressive behaviors in praying mantises, because this could change their effectiveness as a biological control. But the experiment on behavior failed when the factor of their aggressiveness was overestimated. Due to previous studies on the cannibalistic, siblicidal, and other aggressive behaviors observed in praying mantises, it seemed that for the experiment, raising them individually would yield a higher sample size. But they do not seem to be as aggressive towards each other as portrayed in other studies. This means that possibly raising them in the same container could have made for a higher sample size to experiment on. The total sample size reached 1,511 and it dropped suddenly over a period of less than three weeks; 1,479 nymphs died during that time. I wanted to know if there were any other factors other than malnourishment that caused this to occur. I used the measurements of the 1,479 dead mantis nymphs and the 32 alive mantis nymphs and looked for a significant difference using an independent two-sample T-test. I found that there was not a significant difference. This means that the size of the praying mantises in my experiment was not the reason for their deaths. More studies on the different rearing methods of praying mantises could provide the information on how to yield a higher sample size in other studies. Rearing mantises from home is becoming a trend as indoor agriculture is becoming more popular and the more we know how to do this successfully the less pesticides used on the indoor grown produce.
Keywords: Insect physiology, mortality rate, insect science
Social Impact: Environment

Erika Sarno

Michigan State University

Mast Cell Activity in Mouse Models of Major Depressive Disorder

About 20% of U.S. adults have suffered from Major Depressive Disorder (MDD) in their lifetime. However, physicians are underprepared to treat health crisis because current treatments fail in about 30% of patients. Improved understanding of brain immunity is needed to develop new targets for depression treatment. Meningeal mast cells, found in the membranes surrounding the brain and spinal cord, sense the environment and release a variety of signaling molecules

which direct the activity of blood vessels, glia, and neurons. My preliminary data demonstrate that prior exposure to stress sensitizes MCs, making them easier to activate later in life. We show that this may be driven by an epigenetic mechanism, altering gene transcription mediated by the transcription factor ΔFosB, a product of the FosB gene. Therefore, we hypothesize that stress-mediated changes in MC gene transcription contribute to altered MC activity driving behavioral and physiological symptoms of MDD. Aim 1 will characterize the meningeal mast cell function in vivo and ex vivo. Aim 2 will examine the effects of stress and infection on meningeal mast cell function in vivo and ex vivo. Aim 3 will characterize the role of FosB in meningeal mast cell function in response to stress and infection. With the help of my cosponsors Dr. AJ Robison, and Dr. Adam Moeser, I will learn to combine novel genetic models with unique in vivo and ex vivo imaging modalities to uncover the role of stress-mediated mast cell transcription changes in major depressive disorder.

Keywords: Depression, inflammation, immune system, depression treatments
Social Impact: Mental Health

Hannah Ramcharan
Stanford University

Assessing Polygenic Risk for COVID-19 Status and Severity

COVID-19 is a highly contagious disease that is rapidly spreading throughout the world. While measures are in place to slow and contain the virus, approximately 33 million cases have been reported worldwide. Symptoms range from mild to severe with the latter leading to hospitalization. To understand differences in severity among individuals we investigate the role that host genetics has on COVID-19 hospitalizations by generating Polygenic Risk Scores (PRSs) across patient and control genome data. We report that different chromosomes across the individuals from host genomic data attribute to a variation of polygenic risk for COVID-19. We plan to apply the PRS that were generated to additional population sets consisting of diverse metadata relating to the diagnosis and status of the disease. Using our findings, we can determine specific gene variants that have a strong contribution to the PRS. The variants that are associated with COVID-19 susceptibility can subsequently be extrapolated to inform patients about their risk for developing a severe case of COVID-19.

Keywords: COVID-19, Polygenic Risk Score, disease
Social Impact: Healthcare

Jacob Holmes
Georgia State University

Specialized Neurons in the Brain for Detecting Unexpected Stimuli

In order to survive and proliferate an organism must be able to detect changes and novel stimuli in their surroundings. The ability to identify stimuli that are unexpected is known as deviance detection. Though it represents a cognitive/perceptual computation, deviance detection is present as early as primary sensory cortex, and somatostatin-positive interneurons (SSTs) function is necessary for deviance detection as shown by chemicogenetic suppression studies (Hamm et al., 2016). SSTs are inhibitory GABAergic interneurons and make up less than 5% of neurons in the mammalian neocortex (Cottam et al 2014; Hamm et al., 2016, 2018). Exactly how SSTs actually control deviance detection in the larger circuit remains unknown. For example, SSTs could be either tonically active throughout the oddball paradigm or physically active only to novel stimuli. The aim of this experiment was to record SSTs in V1 in awake mice during visual “oddball” paradigms. We injected SST-CRE mice with Cre-dependent GCaMP6s viral vectors and performed subsequent two-photon microscopy of calcium transients in SSTs. We analyzed their average responses to the same basic full-field visual grating stimuli across contexts: during a classic oddball paradigm (87.5% redundant visual gratings, 12.5% deviants) and compared that to a “many-standards” control (8 orientations, 12.5% frequency for each orientation) where stimuli were neither deviant nor redundant. SSTs exhibited heterogeneity with some displaying enhanced activity to the deviant stimuli while others showed habituation. Specifically, deep SSTs displayed deviance detection whereas superficial SSTs did not. This is interesting as past research has shown that deep SSTs provide local disinhibition by targeting other inhibitory neurons while superficial SSTs provide more local inhibition. If deep SSTs are exclusively active (or more active) to the deviant stimuli, this could explain how they support deviance detection. Future work could aim towards identifying methods to pharmacologically target only deep SSTs to rescue/treat/augment

deviance detection in humans affected by disorders involving deficits in deviance detection.
Keywords: Neuroscience, deviance detection, somatostatin-positive interneurons, SST, two-photon microscopy
Social Impact: Mental Health

Layan Ibrahim
Emory University

A Systematic Review of the Management of Pediatric Refractory Immune Thrombocytopenia (ITP)

Immune thrombocytopenia (ITP) is a rare cause of thrombocytopenia in children where the immune system destroys platelets which are essential for normal blood clotting. Treatment of pediatric ITP focuses on the termination and/or prevention of bleeding, irrespective of platelet count. Defining refractory ITP and identifying optimal management of pediatric patients with refractory ITP is important to understand as this subset of patients may be at increased risk for complications. Due to the knowledge gap of treatment options for pediatric refractory ITP, we aim to conduct a systematic review of refractory pediatric ITP definitions and management. We searched three different databases using the Ovid interface. Searches were conducted based on language, publication year, and type of article. Records were appraised against the inclusion criteria using a three-step method: initial review for inclusion based on defined criteria, abstract review with arbitration, final inclusion and review. 2148 records were identified through the initial database search, resulting in 1471 records for screening. Abstracts were screened by two reviewers and disagreements were adjudicated by three additional reviewers. The final list of articles was reviewed and summarized for key findings including the definition of refractory pediatric ITP, recommended workup, and treatment. Preliminary analysis suggests that <20% of the original articles will be included in the final analysis and data abstraction. Our systematic review demonstrated that there is a paucity of data to guide treatment in children with refractory ITP, highlighting the need for well-designed studies to answer these important questions for this vulnerable patient population.
Keywords: Pediatric Refractory Immune Thrombocytopenia (ITP), Pediatrics, Hematology, Immunology, Systematic Review, Treatments, Management
Social Impact: Healthcare

Liyah Smith
Florida Agricultural and Mechanical University

Characterization of Microbial Epibionts for Gammarus Tigrinus

Microbes growing on the surface of an organism known as epibionts can directly influence the health of a host and the environment it inhabits. The bacterial components of epibiotic communities for primary consumers and the effects of their primary production in an aquatic environment through host-associated interactions remain largely unexplored. The goal of the present study is to build a taxonomic profile of the bacterial epibionts colonizing the amphipod Gammarus tigrinus and infer their impact on the host.Extraction of the epibiotic DNA from the G. tigrinus specimens, amplification of the V3-V4 region of the 16S rDNA gene, Next-Gen sequencing of the resulting amplicons, and a suite of bioinformatics tools for taxonomic and functional analysis will be used to identify the bacterial taxa and their roles. Management of the aquatic environment can be improved by the knowledge of the biogeochemical regulation through the epibiotic bacterial metabolic activity, which can then help maintain stability of community richness, including populations of species that are commercially important to the fishing industry.
Keywords: amphipod, bacteria, Gammarus tigrinus, epibiont, high-throughput sequencing, bioinformatics
Social Impact: Environment

Mara Cuebas-Irizarry
North Carolina State University

Characterization of Carpenter Bee Bacterial Isolates for Biodegradation of Pulp Milling Waste

Complex polymers represent a challenge for environmental pollution as well as an opportunity for microbial catalyzed conversion to generate valorized chemicals. As an example, black liquor, a by-product from paper milling contains lignocellulose components but is typically burned for energy. Here, we are investigating biodegradation of the lignin and

hemicellulose-derived compounds present in black liquor using bacterial strains isolated from carpenter bees. The isolates were identified to be be Streptomyces spp. by 16S rDNA sequencing. Growth was assessed for the isolates cultured in minimal media with the lignocellulose constituents (cellulose, xylan, and lignin) or black liquor (pulping waste) added as the only source of carbon. Filter paper deconstruction, dye decolorization assays, and % lignin reduction assays were used to determine the cellulose, hemicellulose, and lignin degradation potential of the isolates, respectively. Strain 2-6 and 2-10 were able to decolorize Congo Red by 60 and 50%, respectively, Tolouidine Blue by 100 and 70%, Remanzol Brilliant Blue by 30 and 32% and Bromocresol Green by 15 and 18% after one week incubation without the addition of a reaction mediator. Cellulose deconstruction experiments showed degradation of up to 30% of the filter paper within 10 days. Growth on lignin revealed that strain 2-6 could degrade up to 24% of the lignin mass within 30 days. Evaluation of enzymes activities that may participate in lignin deconstruction (e.g. laccases, peroxidases, etc.) have been conducted to provide additional insight into the potential of Streptomyces spp. isolate 2-6 and 2-10 for lignin degradation and dye decolorization.

Keywords: wastewater, waste
Social Impact: Environment

Peggy Randon
University of Michigan, Ann Arbor

CD6 is a Target for Cancer Immunotherapy

One in eight women in the United States will develop breast cancer, with more than 42,000 fatalities expected in 2020. Immunotherapy is a promising treatment; however, current therapies engender autoimmune toxicities. This presentation reports efforts to develop novel cancer immunotherapy, which unlike currently-available checkpoint inhibitors, also suppresses autoimmunity by targeting the CD6-CD318 axis. CD318 is a cell-surface glycoprotein commonly found on cancer that correlates with cancer aggressiveness and metastatic potential. CD6 is a transmembrane glycoprotein expressed on the surface of most T cells, including natural killer (NK) cells, the body's key defense to immunological stimuli. Our lab discovered that CD318 is a ligand for CD6, forming an immune checkpoint pathway. When the CD6-CD318 checkpoint forms, it dampens the immune response to cancer. Previous studies show that interruption of this pathway with a monoclonal anti-CD6 antibody (UMCD6) reduces CD4+ effector T cell-driven autoimmune responses. Through recent in vivo, immune-mediated tumor-killing assays, we show that UMCD6 enhances NK cells cancer-cell killing ability with more efficacy than current inhibitors. CD6 on NK and CD8+ T cells were isolated and incubated with UMCD6 or an IgG control. UMCD6 resulted in increased apoptosis (****p=7.06x10-7) and reduced survival (****p=4.71x10-5) of breast cancer cells. NK and CD8+ T cells were also isolated and incubated with UMCD6 or currently marketed checkpoint inhibitors. UMCD6 enhanced NK killing more effectively than any other inhibitor (****p<0.0001). Our results further validate the potential for effective checkpoint-inhibitor antibody treatments without the induction of autoimmune diseases.

Keywords: CD6, CD318, immune checkpoint, cancer, immunotherapy, drug development
Social Impact: Healthcare

Samantha Oetjen
Chaminade University of Honolulu

Effects of Female Reproductive State on Serotonin 1A and 2A Receptor Binding in the Bed Nucleus of the Stria Terminalis of Rats

The behaviors displayed during early motherhood, including caregiving and protection, require the coordinated release of many neurochemical, including the neurotransmitter, serotonin (5-HT). These behavioral changes emerge around parturition and continue throughout lactation. The bed nucleus of the stria terminalis (BNST) is a brain region that plays a crucial role in regulating postpartum maternal caregiving, aggression, and affective behaviors. Past research has indicated a link between the BNST and these behaviors, but little is known about the involvement of 5-HT in the BNST in motherhood. To better understand possible roles for 5-HT in postpartum behavior, we sought to determine if female reproduction affects 5-HT receptor expression in the BNST. We hypothesized that postpartum rats would have greater 5-HT 1A and 2A receptor binding in the BNST compared cycling or pregnant females. 5-HT 1A and 2A are excitatory receptors that may drive postpartum behaviors. To accomplish this, female rats were sacrificed as cycling virgins, at

mid-pregnancy, on the day of giving birth, or on postpartum day 7. Receptor autoradiography on brain sections was performed to assess binding of 5-HT 1A and 2A receptors in the BNST. Initial results revealed no differences among groups in 5-HT 1A receptor binding across female reproduction. More subjects are being added to the study to confirm the lack of group differences in 1A binding, and the 2A receptor analysis is ongoing. This work may eventually help explain the roles of 5-HT 1A and 2A receptors in postpartum behaviors and maternal mental health.
Keywords: Serotonin, Maternal Mental Health, Postpartum Behaviors, Maternal Caregiving
Social Impact: Mental health

Shahara Miah
University of Michigan

Deciphering the Role of Astrocytes in Wiring a Higher Order Brain Perception Center

Accurate representation and perception of environmental stimuli by the brain is necessary for survival. One strategy sensory circuits use to enhance the number of detectable stimuli is by expanding a limited number of peripheral sensory channels onto a larger number of higher order neurons in perception centers of the brain. This results in inputs to higher order neurons being sparse. How such sparse neural connections form during development is not understood. One model for studying this is the fly olfactory system, where just 150 Projection Neurons (PNs) expand odorant information onto 2,000 Kenyon Cells (KCs) in the higher order brain region called the mushroom body (MB). In this work, we aim to understand the molecular mechanisms underpinning the formation of sparse connections between PNs and KCs. This study was informed by work in the mouse, where astrocytes are known to regulate the development of neural circuits by providing synaptogenic factors. Fly astrocytes are anatomically and functionally similar to mouse astrocytes. When fly astrocytes are ablated just before the start of synaptogenesis, the result is reduced synapse numbers across the brain by adulthood, including in the MB. While these data suggest that fly astrocytes provide synaptogenic factors to neurons, like their mouse counterparts, the identities of such factors have not yet been determined. We hypothesize that astrocytes could regulate wiring between PNs and KCs in the MB. To test this hypothesis, we set out to identify synaptogenic factors expressed by astrocytes and determine whether they are required for connections between PNs and KCs to form. We generated a transcriptomic dataset for astrocytes from developing brains just at the start of synaptogenesis using single cell RNA sequencing. Our data contains 28,203 cells total, and 11,940 genes were identified. After appropriate quality control measures, we were able to identify several astrocyte clusters, suggesting astrocyte heterogeneity exists in the fly, at least during synaptogenesis. From these clusters, we generated a list of putative synaptogenic factors that we have begun to test. In conclusion, while this work is still ongoing our results so far support the idea that fly astrocytes express molecules similar to synaptogenic factors of mouse astrocytes. It will be exciting to determine which of these molecules, if any, regulate wiring between PNs and KCs.
Keywords: brain, survival, sensory circuits, peripheral sensory channels, Projection Neurons (PNs), Kenyon Cells (KCs), mushroom body (MB), astrocytes
Social Impact: Mental health

Summer Martinez
Florida Agricultural & Mechanical University

Growth Response of Pleurotus ostreatus to Petroleum Crude Oil with Co-metabolites

Pleurotus ostreatus (oyster mushroom) is a white rot fungus known to biodegrade polycyclic aromatic hydrocarbons (PAH) in petroleum crude oil, which are toxic and even lethal to living organisms in the environment. Restoration efforts for oil spills in estuarine environments impose complex problems due to the sensitivity of the environmental resources at risk, which can lead to clean up methods that cause detriment to ecosystems. This study focuses on the ability of P. ostreatus to metabolize crude oil within various estuarine environmental parameters as an alternative. While previous studies have shown P. ostreatus mycelium's ability to grow with certain nutrients, this work examined their influence of nitrogen and phosphorus co-metabolites based on the C:N:P ratio. We used image analysis to measure the mycelium's surface area to calculate the growth rate in vitro at 27°C in a humidity-controlled chamber to simulate semi-tropical estuarine environments. Fluorescence spectroscopy coupled with GC-MS will identify total crude oil components and categorize PAHs. This analysis will identify the efficiency of P. ostreatus to degrade crude oil components under certain conditions. Oil spills in estuaries are devastating to their ecosystems and can even negatively impact blue economy and

human health. With added knowledge about the efficiency of oyster mushrooms to biodegrade petroleum crude oil, they may be used in the future as an effective remediation tool.
Keywords: Oil Spill Remediation
Social Impact: Environment

Student Poster Presentation Abstracts
Virtual Location: Easy Virtual Fair
Physical Sciences, Mathematics and Engineering

Gerson Romero
Florida International University

Understanding the Relationship between Visual Stimuli and Localized Calcium Events in Astrocytes

The brain consists of two main types of cells: neurons and glial cells. The focus of this work is on the glial cells known as astrocytes which for years were thought to have no role in higher processing other than neuronal support. Astrocyte activity is measured by the signals that are derived from an increase in intracellular calcium, which is evoked in the visual cortex of ferrets using a visual stimulus. Quantifying and analyzing astrocyte activity have proven to be a challenge as cell activity varies widely in the spatial and temporal domain. Through the implementation of a MATLAB-based software AQuA (Astrocyte Quantification and Analysis) we have been able to begin the quantitative analysis of these events with respect to the spatial and temporal domain. Although AQuA provides more insight into cell activity, the tunning of the parameters to classify events in the cell as large and small events required further exploration with the event size threshold. By classifying of cell activity as large and small events a relationship between the visual stimulus and cell activity can be determined. We propose that as that the visual stimulus would evoke larger events in the cell and the smaller events could be classified as spontaneous events not related to neuronal activity.
Keywords: Astrocyte, calcium events, visual processing
Social Impact: Mental Health

Maria Morales Colon
University of Michigan

Tetramethylammonium Fluoride Alcohol Adduct as a Practical Reagent for SNAr Fluorination

Nucleophilic aromatic fluorination (SNAr) is among the most common methods for the formation of C(sp2)–F bonds on process scale. Despite many recent advances, a longstanding limitation of these transformations is the requirement for rigorously dry, aprotic conditions to maintain the reactivity of fluoride and suppress the formation of side products. This report addresses this limitation by developing tetramethylammonium fluoride-alcohol adducts (Me4NF•ROH) as fluoride sources for SNAr fluorination. Through systematic tuning of the alcohol substituent (R), Me4NF•tAmylOH was identified as an inexpensive, practical, and bench-stable reagent for SNAr fluorination under mild and convenient conditions. A substrate scope of more than 60 (hetero)aryl halides and nitroarene electrophiles is demonstrated.
Keywords: nucleophilic aromatic fluorination TMAF alcohol adducts SNAr
Social Impact: Environment

Monique Noel
Michigan State University

Investigation of Surface Energies of the Zintl Antimonide Ca5Ga2Sb6

Zintl Phases are a class of intermetallic compounds that combine ionic and covalent bonding to form charge-balanced structures, leading to semiconducting properties. The Ca5M2Sb6 family of Zintl compounds, (M=Al, Ga, In), have demonstrated promising thermoelectric efficiency, meaning they can be used to convert a temperature gradient into useful electrical energy. Ca5M2Sb6 compounds crystallize in a highly anisotropic structure comprised of chains of corner-linked MSb4 tetrahedra, in which each neighboring chain is joined via Sb-Sb covalent bonds, forming an infinite

polyanionic “ladder”. In the present study, we used first principles calculations to study various surface terminations of the Ca5Ga2Sb6 structure as a mechanism to understand its crystal growth morphology. Our results indicate that the calcium stoichiometry of the crystal surface plays an important role in surface reconstruction, specifically leading to the formation or breaking of covalent bonds. Our results have shown that surface energy as a function of stoichiometry and crystallographic orientation is only one piece of the puzzle in understanding the growth habits of Ca5Ga2Sb6 crystals.
Keywords: thermoelectric, semi-conductor
Social Impact: Environment

Teavin Harvin
Winston Salem State University

Development of Zn(II) Salts Catalyzed Conjugate Additions of Alkyl Grignard Reagents to Thiochromones

Conjugate addition reactions Grignard Reagents to Thiochromone catalyzed by Zinc (II) salts are investigated in the synthesis of Thiochromanone, an important class of organosulfur compounds with rich bioactivities. Excellent yields of 1,4-adducts – thiochromanones can be isolated (up to 92%) under optimal conditions using zinc Chloride as both an activator of thiochromones and a catalyst for conjugate addition. A large number of commercially available Grignard reagents can undergo conjugate addition to thiochromones to furnish 1,4-adduct in excellent yields. The use of commercially available or easily prepared Grignard reagents will expedite the synthesis of a large library of thiochromanones for further synthetic applications and biological studies.
Keywords: thiochromanones, Conjugate addition, bioactivities
Social Impact: Environment

Sylmarie Davila-Montero
Michigan State University

Exploring the Relationship Between Speech and Skin Conductance for Real-Time Arousal Monitoring

Monitoring human emotions through wearable systems has become an important area of research. Electrodermal activity (EDA), a measure of the changes in electrical characteristics of the skin, has proven to be a good indicator of emotional arousal, and numerous works have focused on using EDA data to predict emotional states. However, to successfully integrate EDA data into real-time wearable emotion recognition systems, several challenges of practical real-life scenarios, need to be addressed. This work explores the relationship between speech signals and EDA reactions and analyzes a new approach for classification of skin conductance reactions elicited by emotional arousal using speech signals as a triggering event. Speech and EDA data was collected from four individuals with EDA sensors attached to their left hand. To elicit emotional responses, a series of images were shown to the individuals. They were asked to rate their emotional responses in an arousal-valence emotional scale and to vocalize their emotions. Results show an average improvement in skin conductance reaction classification accuracy of at least 5.6% when using speech-triggered reactions compared with traditional methods. The use of speech as a triggering event could help improve real-time emotion recognition algorithms implemented within wearable systems. Having wearable sensors with the capability to accurately detect emotional states in real time could greatly improve utility in healthcare and workplace interaction applications, among others.
Keywords: emotion recognition, psychophysiology, wearable sensors, social interactions
Social Impact: Mental Health

Uthman Badatunde

Siena Heights University

Can Pleurotus djamor biodegrade polyester fabric?

The purpose of this experimentation is to test the ability of the mushroom Pleurotus djamor to biodegrade 100% polyester fabric. Plastics substances like polyester are one of the leading pollution problems associated with the Anthropocene. Plastic waste is a major threat to the biodiversity of the planet due to incidental entanglements and ingestion, soil damage, etc. In this experiment, five 2-gallon buckets were established with a mixture of sterilized aspen

wood chips and a nutritional supplement for mushrooms known as spawn mate. An equal amount of Pleurotus djamor grain spawn was added to each of the five buckets. Four of the buckets also had 4 small sheets of sterilized 100% polyester fabric added while the fifth bucket had no polyester fabric added and served as a control. Biodegradability was tested using the difference in mass and appearance of the fabric before and after the experimental growth period."
Keywords: "Bioremediation, Biological recycling, Plastic waste"
Social Impact: Environment

Student Poster Presentation Abstracts
Virtual Location: Easy Virtual Fair
Social Science

Anastasie Lenoir
University of California, Davis

2018 Migrant Caravan: Voices of the People

The options chosen by Central American migrants after hardline migration policies enacted in 2019 by the United States and Mexican governments is largely unexplored. Social, political and economic conditions in Central America contribute to the migration of people in the region seeking asylum in the United States. The fall 2018 migrant caravan claimed global attention, where previously this migration pattern went largely unseen. This study is conducted through research of online news articles, a video documentary database and current literature on United States/Mexico border relations. Mexico, due to heavy economic and political pressure from the United States, has delayed processing of documents and denied migrants the legal status to travel between states. Some migrants head north anyway, risking capture and deportation by the Mexican authorities and hoping to apply for asylum once they reach the northern border. At the United States border, migrants are confronted with narrow criteria that qualify migrants for obtaining asylum. The Migrant Protection Protocol/Remain in Mexico program has forced migrants to wait out their often-lengthy asylum processes in Mexico. By prioritizing migrants voices, this study focuses on migrant testimonials to understand the effects of these new obstacles. This study focuses on the border of southern Mexico and Guatemala, where migrants usually enter Mexico and obtain legal migration documents and Tijuana, one of the main spaces occupied by migrant asylum seekers as they await their court hearings in the United States.
Keywords: Migrants, Asylum, Mexico, Central America
Social Impact: Social equity

David Vargas
University of California, Davis

The Future of the Holistic Examination from a Hispanic Serving Institution (HSI) Perspective

A holistic review admission process may increase equitable access for Latinx students as well as their degree completion rate. Currently, the Latinx community still has the lowest proportion of college and graduate degree earners in California. According to the Campaign for College Opportunity, “more than 15 million (40%) of California’s population is Latinx” (2018). Thus, the success of the Latinx community is critical since it is the biggest ethnic group in the state. This data is significant both statewide and nationally since the academic success of the Latinx population directly affects the socio-economic future of those students. I am addressing and examining this educational discourse within institutional spaces as a way to intervene in the success of students, based on a complete comprehensive individual holistic evaluation. I have interviewed ten administrators, one Ph.D. student, and I have examined documents and publications by institutions that have implemented a holistic review process. Equitable access might lead to higher education rates, free of standardized admissions. The validity of this approach will be based on who can contribute to the academic community in meaningful ways, going beyond the reliance on standardized exams and other requirements.
Keywords: Holistic Review, Latinx, Equitable Access, Comprehensive Review, Hispanic Serving Institutions (HSIs)
Social Impact: Higher Education

Edward Arnold
Tennessee State University

Institution-to-Institution Mutual-Exchange Higher Education Model as a Method to Comply with Legal and Social Requirements for Diversity

Institution-to-Institution Mutual-Exchange Higher Education Model as a Method to Comply with Legal and Social Requirements for Diversity.The Institution-to-Institution Mutual-Exchange marketing model establishes a standardized certificate-based online course in diversity. The standards are based on the concept of Diversity Education Units as a measurable method for higher education institutions to comply with legal requirements for diversity and social obligations for diversity. This model combines the student base of participating higher education institutions to fulfill both the institution and student obligation and forms a process for accountability. In this model, higher education institutions form a Mutual-Exchange to where each participating institution shares in a pool of streaming revenue generated by participating institutions.This marketing model creates standards for higher education certificate-based online courses in diversity. Diversity Education Units (DEU) standards define 16 categories of diversity which includes Social Justice Issues.DEU-5. General Diversity Education Unit Areas: Higher education institutions participating in the Institution-to-Institution Mutual-Exchange are required to establish the number of diversity education units students are required to complete to fulfill the institution and student compliance. The certificate-based online course(s) are within sixteen different areas related to diversity: (1) Age; (2) Color; (3) Disability; (4) Environment; (5) Ethnicity; (6) Gender expression; (7) Gender identity: (8) Government; (9) Income inequality; (10) Life course; (11) Nationality; (12) Race; (13) Religion; (14) Sex; (15) Sexual orientation; (16) Social Justice Issues.DEU-6.1 Acquire Intellectual and Practical Skills: Social issues create emotions which are interception (assesses internal feelings: anger, despair, fear, joy, longing, love, sadness, etc.).

Keywords: Institution-to-Institution, Mutual-Exchange, Diversity
Social Impact: Higher Education

Emani Brinkman
Coe College

The Effect Electronic Bank Transfer Had on Supplemental Nutrition Assistance Program Participation

The Supplemental Nutrition Assistance Program (SNAP) one of the largest transfer programs of wealth in the United States. Yet in 2014, 20% of households eligible for SNAP did not participate in the program and took up these benefits. In the recent literature, there are many reasons why an individual would not take up food stamps, from lack of information, economic conditions, or stigma. The goal of this research is to shed some light on how a decrease in stigma can cause an increase in participation through the change in how the food stamp program administered the benefit. This research investigated if the change from electronic bank transfer (EBT) from the original form of food stamps affected household and individual participation of the SNAP. A change in participation could be from an increase in convenience in using food stamps or a decrease in the stigma associated with the program through being able to pay for groceries using a card. Using county-level data in the US from the USDA, I exploited the variation in implementation timing using a difference-in-difference method. The results showed that participation did increase in the counties that had changed to EBT, but the results are imprecisely measured. The results of this analysis imply that policies that decrease the stigma surrounding government programs will be beneficial to increasing participation.

Keywords: Food stamps, Economics, Difference-in-difference, Stigma
Social Impact: Social Equity

Esther Choe
California State University, Long Beach

Too Young to Be a Leader? Asian American Age Perception Bias and Evaluation of Leadership Ability

We hypothesize that one reason for the underrepresentation of Asian Americans in leadership positions is the perception of Asian Americans as younger than their actual age. Past evidence indicates that Asians are rated lower on leadership ability (Sy et al., 2010) and viewed as younger (Lick & Johnson, 2018), and that more mature/dominant

individuals are perceived as better leaders (Re & Rule, 2017). To test our hypothesis, we recruited 80 participants from Amazon MTurk who rated 40 Asian and White faces (20 Asian, 20 White, split by gender equally) on perceived age and leadership ability. Results indicated that participants over-estimated White targets' ages compared to Asian targets with a significant interaction between Race and Gender for perceived leadership ability, such that Asian men were rated lower on leadership compared to White men, with no significant difference for women. The age bias did not mediate leadership abilities. Overall, results show Asian targets were perceived to be younger compared to White targets and that Asian men were viewed as less of a leader compared to White men, however, contrary to expectations, age bias did not account for leadership ratings.

Keywords: Asian Americans, leadership, age estimation, social perception, underrepresentation
Social Impact: Social Equity

Jaleah Rutledge
Michigan State University

A Comparison of HIV Testing and Associated Characteristics Among Black Cisgender and Transgender Women in the United States

In the United States, Black cisgender and transgender women are disproportionately affected by HIV. HIV testing is one of the primary modes of HIV prevention, but a large majority of the HIV testing literature focuses on individual level risk behaviors. Furthermore, there is little known about HIV testing among Black transgender women. This study aims to contribute to the existing literature by (1) examining the HIV testing behaviors of Black transgender women (2) using socioecological theory to assess what sociodemographic factors are associated with HIV testing among Black cisgender and transgender women. Methods: This study uses secondary data from the 2014-2017 modules of the Behavioral Risk Factor Surveillance System. Analyses included multiple hierarchical regression. Results: There are no major differences in HIV testing between Black cisgender and transgender women. A number of sociodemographic characteristics have been shown to predict HIV testing among Black cisgender women, but only employment status and age were significant predictors of HIV testing among Black transgender women. A moderation analyses suggested that gender identity significantly moderates the association between employment status and HIV testing such that the relationship between employment status and receiving an HIV test differs by gender identity. Discussion: The findings of this study highlight nuances that are useful for improving HIV testing as a mode of HIV prevention. Overall, the findings contribute to our understanding of HIV testing practices among Black cisgender and transgender women.

Keywords: HIV prevention, health disparities, gender
Social Impact: Healthcare

Jesus Ruan
Roosevelt University

Identity Distress and College Adjustment among Freshman Students

The purpose of this study was to investigate how identity distress may correlate with how well a student adjusted in their first semester at college/university. Through the utilization of the Identity Distress Survey and the College adjustment Test, 108 participants responded to a survey distributed through a crowdsourcing service. The data revealed that there were no correlations to the hypothesis that those who score higher on the IDS may correlate with lower scores on adjustment, that those who reported low scores on college adjustment would correlate with lower G.P.A, and tested whether members who identified as BIPOC or LGBTQ+ would be more at risk for higher reports of identity distress. Similarly, a second hypothesis found no relationship between G.P.A and college adjustment. My third hypothesis found slight trends amongst Heterosexual and LGBTQ+ individuals in which the former reported lower scores in college adjustment. The data also revealed that White participants reporter greater levels of identity distress than BIPOC participants. However, these trends were proven insignificant likely due to small cell sizes of minority groups among the overall sample.

Keywords: Identity, College, Distress, G.P.A, Freshman, Adjustment
Social Impact: Higher Education

Kaelyn Sanders
Michigan State University

Examining the Effects of Gender and Race On Probationer/Parolee-Agent Relationship Style

In the U.S., there are 4.5 million people on probation and parole, which is two times higher than the incarcerated population (The Pew Charitable Trusts, 2018). An integral part of probation and parole supervision is the interactions between agents and their clients. Agents regularly meet and speak with their clients to discuss problems they are facing, current behaviors, and other related subjects. Since agents supervise a wide variety of people, it is not uncommon for the agents and their clients to differ in gender and race. However, it is important to examine whether race and gender are related to how agents "do gender" as reflected by the type of relationships they have with clients. For 79 clients on probation or parole, this quantitative study examines the connection of the agent's and client's gender and race to the agent's relationship style (Trusting, Caring-Fair, and Tough). It also examines whether agent and client race and gender are related to client experiences of anxiety or psychological reactance after speaking with their agents. Unexpectedly, when both agents and clients were women, the clients reported the highest level of agent toughness, but this did not translate into greater client anxiety or reactance. This finding shows the need for further research to explain the connection of gender and race pairings in correctional settings.
Keywords: probation; parole; corrections
Social Impact: Criminal Justice Reform

Kalani Gates
Western Michigan University

Racial Disparities in the Access to Mental Health Services for African and Arab American Youth in Michigan

"Introduction: There has been a steady rise in the prevalence of mental health conditions for American youth (Merikangas et al., 2010; Twenge, 2011). Anxiety disorders, depression, and disruptive behavior disorders during this period can disrupt academic performance and relationships. Moreover, youth mental health issues increase the likelihood of suicide, which is the third leading cause of mortality for individuals from this age group (Centers for Disease Control [CDC], 2015). While mental health conditions are ubiquitous among the general population, there is a growing body of evidence indicating that they occur more frequently and with more intensity among individuals from minority groups (American Psychological Association, 2017; Dunalop et al., 2013). For African and Arab Americans, racial disparities exist not only in the prevalence of mental health conditions, but also in the quality of and access to healthcare services (Dunalop et al., 2013; Amer & Hovey, 2012; Algeria et al., 2008; Michigan Department of Health, 2013). Past research has sought to understand the cause of these racial disparities. Provider bias has been found to be one causal factor that may forestall or completely avert African American adults from obtaining mental health services (Shin et al., 2016; Kugelmass, 2016). However, it is unknown whether provider bias affects the accessibility to mental health services for African American youth, as well as youth from other minority groups, such as Arab Americans. Additionally, the role of community variables, such as population density, in access to care for minority youth is unknown. The present study sought to examine the effects of race and ethnicity (i.e., Caucasian, African American, and Arab American), sex (i.e., male versus female), and location (i.e., Metro Detroit versus Southwest Michigan) on mental health care providers' responses to hypothetical clients seeking services for mental health treatment. Methods: In order to accurately measure whether race/ethnicity, sex, and location were factors in the responses of mental health care providers, an audit methodology was used. Audit methodology allows researchers to collect direct, real-world evidence of the differential treatment of minorities. For this study, three voice actors were hired to make audio recordings that portrayed a hypothetical Caucasian, African American, and Arab American mother who was seeking services for her adolescent child. These audio-recordings were then left on the voicemails of practicing mental health therapists in Metro Detroit (N = 180) and Southwest Michigan (N = 180) who were randomly selected from all providers in both regions. Data were collected on: (1) whether the provider called back, and (2) whether the provider left a message prompting services. Results: Differences were observed in both the callback rates and appointment offer rates in Southwest Michigan. In Southwest Michigan, the hypothetical Caucasian clients received significantly more callbacks and appointment offer rates than the African and Arab American clients. Race/ethnicity was not a predictor of whether the hypothetical clients received a callback or appointment offer rate in Metro Detroit. In Metro Detroit, the female clients across each racial/ethnic condition received more callbacks relative to the male conditions; however, appointment offer

rates were similar between both sexes and all racial/ethnic conditions. Conclusion: Provider bias appears to limit access to mental health access for African American and Arab American adolescents in Southwest Michigan and may contribute to the overall health disparities for individuals from these racial/ethnic groups.
Keywords: Racial disparities; Minority health; Provider bias; Access to mental health care
Social Impact: Social Equity

Katherine Jaeger
Adrian College

The Clinician's Perceptions of the Effectiveness of EMDR Treatment for Past or Current Interpersonal Trauma

The prevalence of interpersonal trauma within our society is widespread and non-exclusive to a particular gender, sexual orientation, race, or ethnicity. The present study will focus on the clinician's perceptions of the effectiveness of Eye Movement Desensitization and Reprocessing therapy (EMDR), which is a psychotherapeutic technique used to help clients reduce the stress related to their trauma. Specifically, replacing negative cognitions created by the traumatic event by reprocessing traumatic memories in order to create new positive cognitions (EMDR Institute Inc, 2019). The goal of this study is to explore the experiences of clinicians who use this treatment modality to aid with the social and emotional functioning of their clients. The target population is clinicians who have been trained in EMDR and use this treatment in their practice. Semi-structured interviews will be conducted to obtain information about their experience using EMDR treatment with their clients. Through the use of word mapping, using Dedoose software, the researcher will look for emergent themes within the interviews. Data collection for this study is currently in process.
Keywords: Trauma, EMDR
Social Impact: Healthcare

Kristie DeVlieger
Grand Valley State University

Meaning-making Narratives: The Future of Fairy Tales

The purpose of my McNair research was to examine the elements of fairy tales and what contributes to their continued success. I conducted a broad literature review of fairy tale scholarship as well as structuralism and postmodernism. I found through my literature review that the evolution of fairy tales has allowed the narrative form to take on the role of stories of initiation, or rites of passage, providing a safe space for readers to respond to changing life stages. This is modeled by the hero who undergoes metamorphosis, or a transformation. The structure's spaces in the narrative allow meaning making to occur, as the reader fills them with their own experiences. Through this encounter with the text, unconscious desires and repressed traumas can be safely processed by the reader. This also affirms for the reader that their search for happiness is universal while reinforcing societal values and ideological norms, providing social stability. This shift has occurred because of the deliberate alteration of its tellers, who shaped them for their culture and retained the most relevant features. By developing an understanding of how meaning-making occurs within the spaces of a traditional narrative we can create our own stories that answer our society's needs. As we become more virtually connected there is an increasing sense of dislocation and loneliness, and I believe the narrative form will be important in answering this need. We can learn from the past to re-make and create stories that guide their readers through the challenges of change.
Keywords: narratives, memetics, meaning-making, expressive response
Social Impact: Social Equity

Melissa Ceren
CUNY John Jay College of Criminal Justice

Undermatching in New York City's Public Education: The Consequences of Selectivity in Admissions for Ethnic Minority Families

The New York City Department of Education (NYC DOE) accentuates educational equity and proposals for school reform, however, access to educational opportunities, particularly in NYC public schools, is insufficient and schools lack the necessary resources needed to advise students and their families about selecting appropriate high school choices. For students attending a zoned public school, which is determined entirely based on neighborhood and family income,

their families depend on the quality of the education available for their children to obtain. Therefore, many of these low-income and ethnic minority families whose children apply to high school experience undermatching, which occurs when a student applies to a nonselective postsecondary school, where the student would have had a likely chance of acceptance to a high selective institution based on academic achievements and qualifications. This proposed study will utilize a database consisting of students in NYC public schools within the five boroughs (i.e., Manhattan, Bronx, Brooklyn, Queens, Staten Island) that applied to high school during 2012 in order to examine: if students from ethnic minorities are more likely to undermatch during their high school application process? We expect that the findings will demonstrate that underrepresented students will have a significantly high probability of undermatching in selective institutions after controlling for a set of demographic and academic performance variables. Such research will be able to unpack questions about educational policy and assess the qualification levels and the probability of undermatch rates within the NYC DOE public school system that have impacted minority students' educational experiences.

Keywords: Racial Diversity Representation, Model Minority, Affirmative Action, Social Identity Development, System of Oppression, In-Group Bias, Educational Justice
Social Impact: Social Equity

Michael Levandoski
University of Wisconsin-Milwaukee

Treating Trauma in Male Prisoner Reentry Programs

Over 80% of prisoners return to jail within nine years of release. With over 600,000 being released each year, effectively increasing the success of reentry efforts is important for public safety and cost containment. Reentry programs—those that facilitate the social integration of released inmates—have produced inconsistent evaluation results. Although trauma-informed-care has become commonplace across social and justice services, surprisingly few male-centered reentry programs focus their service efforts on the resolution of trauma and the reduction of traumatic symptomology. However, research consistently indicates that a comparatively high rate of male offenders endured trauma exposure throughout their lives. Therefore, a community-university collaborative team in Milwaukee, WI is in the planning stages of implementing a trauma resolution model within a reentry-like program. Through a quasi-experimental design, 20 qualified participants within a male, batterer intervention program will participate in "Instinctive Trauma Response" (ITR) treatment. The control group will be composed of 20 matched participants. Mental health and PTSD will be measured at baseline, 1-week and 4-weeks post baseline. With a mixed methods analysis of covariance, controlling for several demographic variables, we will assess changes over time across both study conditions. We hypothesize that ITR will reduce symptoms of trauma and improve mental health of the treatment group. This is significant because improving mental health may translate to improved reentry success.

Keywords: Incarceration, Reentry, Trauma, Trauma-Focused Care, Batterer Intervention Program
Social Impact: Criminal Justice Reform

Rachel Rosado
John Jay College of Criminal Justice

Expanding American Narratives: the Novelty of Crazy Rich Asians

In 2018 Warner Bros. released Crazy Rich Asians, a film eagerly anticipated because it features an all-Asian cast in an industry that has a history of stereotyping Asians and Asian-Americans. Prior research has confirmed that yellow peril and the model minority stereotypes have had a negative impact on Asian-Americans. Mainstream movies that portray Asian and Asian-Americans using stereotypes feed the idea that they are foreigners. The film industry (usually led by non-Asians) have used such narratives to maintain a racial order, where Asians have continuously been portrayed as the racialized other. Although existing research validates film as a major contributor to popular culture, there is a lack of studies on recent movies. Furthermore, popular culture is often used as a political tool. This project also examines the limitations of the film's political stance by placing it in the larger context of film studies in relation to the major concepts of independent films. The current study would contribute to the existing research by focusing on Crazy Rich Asians (2018), the latest and most successful example of exploring the complexities of the Asian and Asian-American experience. It uses textual interpretation and historical contextualization to better understand social and cultural history. The current findings show how the audiences responded in commercially viable ways to a more inclusive cast

and production. However, as successful as the movie is, it also continues the idea that Asia consists of a few countries and neglects the broader idea that Asia is made up of 48 countries.
Keywords: race representation in film, politics in popular culture
Social Impact: Social Equity

Rachel Wiltse
Siena Heights University

Examining Stress and Social Support: Primary-Caregiver Parents of Adults with Down Syndrome

Parents that take on the role of the primary caregiver of adults with Down syndrome have a high workload; the severity of symptoms can be a huge stressor and lead to depression if there is not a buffer. There is some evidence that enacted social support is an effective buffer and can impact if the parent has severe or mild depression as their offspring ages.
Keywords: Down syndrome, depression, stress, primary-caregiver
Social Impact: Mental Health

Tasia Bryson
Western Michigan University

The Impact of the Advisor Selection Process Over Time

One of the essential acts in graduate school is selecting the right research advisor (Zhao, Golde, & McCormick, 2007). There is no universal way of choosing an advisor; this process varies by disciplines, departments, and institutions. This study explores how minority STEM graduate students select their advisors and how it impacts their relationship with their advisors over time. Critical Race Theory (CRT) was used to explore minority experiences at Predominately White Institutions as it provides an in-depth understanding of the issues in postsecondary settings (Patton, 2006). Using a qualitative research approach, data was collected through six individual, semi-structured interviews over three years with each participant. The interviews were audio-recorded, transcribed, and analyzed with emergent coding. This study's data emerged from a larger study focusing on the experiences of underrepresented minority students enrolled in STEM/SBE graduate programs at three Predominantly White Institutions in the Midwest. Purposeful sampling was used from this larger population to identify 16 minorities in STEM graduate programs for a more in-depth analysis of how selecting their advisor impacted their relationship over time. Findings suggested students chose their advisors differently. Students who program provided three lab rotations before selecting their advisor could capture a sense of the advisor advising style, lab environment, and become more familiar with the research topic. Conversely, students who chose without lab rotations were more likely to select their advisors based on the research topic and experienced more personality issues. Over time, most students learned to adjust to their advisors advising style, but students who did not participate in rotations experienced more problems adjusting to their advisor advising style.
Keywords: STEM, Minority Students, Graduate Students, Advisor-Advisee Relationship
Social Impact: Higher Education

What is AGEP?

The Alliances for Graduate Education and the Professoriate **(AGEP)** is a National Science Foundation program that supports recruitment, retention, and graduation of underrepresented U. S. minorities in doctoral programs of the natural and social sciences, mathematics, and engineering. Undergraduates, graduate students, post-docs, and faculty who participate in building the AGEP Community at MSU rise to meet the challenge of Diversity, Equity & Inclusion at U. S. colleges and universities, by nurturing and developing world-class STEM and Social, Behavioral and Economic sciences faculty members who fully reflect the diversity in race, gender, culture and intellectual talent of the U. S. population.

National Need

The United States faces a growing demand for a highly educated science and engineering workforce. The annual number of Black, Hispanic, and American Indian citizens earning a PhD must quadruple in order to contribute the science and engineering talent necessary for the U.S. to become self-reliant.

AGEP at Michigan State University – Impact

The AGEP Community represents 75% of doctoral students at MSU who are Black, Hispanic or American Indian citizens that in NSF sponsored departments. Ninety percent of the AGEP Community graduate student participants complete an advanced degree. Over the past 10 years, the AGEP Community has grown from six graduate students in 2006 and faculty to over **250** participants annually with over **400** alumni nation-wide.

The Community began with support from NSF, and AGEP has become a self-sustaining component of the matrix of graduate student support provided by the MSU Graduate School. A cross-disciplinary AGEP Learning Community of graduate students and faculty meets monthly; discusses active research by participants using everyday language; and considers current topics of regional and national importance for public policy. AGEP is a proven strategy for diverse recruitment, retention, and persistence in graduate education. The AGEP Student Success Conference hosted by MSU is cross-disciplinary experience, full of scientists, engineers, social scientists, policy makers and community leaders and students.

For more information, visit us at:

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

MSU AGEP Program Director: Steven Thomas, deshawn@grd.msu.edu