

### **"Improving Our Fundamental Knowledge of Ozone Atmospheric Chemistry over Metropolitan Detroit, Michigan"**

*Presenter(s): Marisa O'Dea*

Faculty Mentor: Yaoxian Huang

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43589>

Urban areas such as Detroit are subjected to higher risks for air pollutants that can cause adverse environmental effects. Through the Clean Air Act, the United States Environmental Protection Agency (EPA) has been working to decrease emissions and control negative impacts on the environment. However, surface ozone concentrations over metropolitan Detroit during the summer months (June, July and August) are still consistently in non-attainment status (greater than 70 ppbv in terms of daily maximum eight-hour averages). This merits further scientific research to explore the chemical and physical driving factors of surface ozone pollution. This project focuses on the effect of anthropogenic emissions from human activities on the ambient surface ozone atmospheric chemistry and air quality over the metropolitan Detroit, Michigan area in the summer of 2021.

### **"Six Reasons to Read Dr. W.E.B Du Bois' First Novel, *The Quest of the Silver Fleece*"**

*Presenter(s): Dominic Colaluca, Elizabeth Donnan, Chloe Kawa, Nicholas Marinescu, Nailah Bowman, Alexis Taylor, Skye Taylor, Alex Roussey, Nitish Khindri, Gavin Baltes*

Faculty Mentor: Dr. Michelle Valerie Ronnick

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43184>

In George Yancy's "Black Philosophy and the Crucible of Lived History" (2013), he tells us that part of the role of Black Philosophy is to conceptualize it within the crucible of lived history: to raise themes of context, situation, and philosophical thought. In W.E.B Du Bois's *The Quest of The Silver Fleece*, he executes Yancy's 'curriculum' with style and flare through a story taking place in the early 20th century south, and inevitably examines systemic prejudices within the heart of post-slavery, sharecropping culture.

Outside of the novel being a genuinely good read, it can also be seen as a useful tool by providing context to better understand that studying classical material is a way to enhance one's general intellectual capacity, not to mention an enhancement of moral reasoning. The novel exemplifies themes still pivotal in contemporary academic conversations. To mention some, the story of Bles and Zora sheds light on thought surrounding intersecting oppressions, pain, embedded whiteness, systemic racism, and protofeminism.

In practical application, *The Quest of The Silver Fleece* also properly reflects early 20th century social tensions. As Black Americans fought for a truly egalitarian country, the National Urban League was created in 1911 in order to assist in the creation and security of funding for equal employment. During this time, racial tension was just as rampant in the north as it was in the south, seeing that many Black Americans migrated north in attempts to build a better life in a seemingly more welcoming area. These political and social phenomena relative to the early 20th century are appropriately reflected throughout the story Du Bois painted for us, and therefore can teach us a lesson about the history of American culture. In examination, we can better equip ourselves to understand current injustices.

Du Bois should be understood in all aspects of his excellence, and *The Quest of The Silver Fleece* is no exception to his grandiose accomplishments. As is clear through his career, philosophy and storytelling, the liberal arts and education of the classics deserve more credit as life building disciplines that enhance the human experience. The fast-spreading idea that the classics are useless is merely a capitalistic deception, and as W.E.B Du Bois tells us himself, "Deception is the natural defense of the weak against the strong..." Let us be 'the strong'.

### **Aging with Hemophilia**

*Presenter(s): Misha Ansari, Samir Al-Khouri, Abeer Gobah, Sukrut Nadigotti, Aisha Patel*

Faculty Mentor: Tam Perry

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43592>

Hemophilia is a genetic blood disorder, where blood clotting doesn't occur due to a lack of a clotting factor typically produced by the liver. The symptoms include sudden and/or prolonged bleeding episodes, and restriction of movement due to joint swelling. Before the 1990s, treatment was through transfusions of donor plasma, however, when the HIV and HCV viruses contaminated blood banks, tragically half of those with hemophilia became infected.

The larger study investigates aging persons with hemophilia (APWH), who are experiencing an unprecedented shift in their lifespan because of access to new technology for treatment. Those who have survived experienced the loss of peers, social withdrawal, medical mistrust, and survivor's guilt. Researchers have documented that perception of a time horizon (i.e., nearness to death) often influences our actions, emotions, and goals (Carstensen, 2006, p.1913). This project will allow us to understand what it means to APWH when nearness to death expands rather than contracts. The findings from this study will contribute to developing the best practices for serving this population.

### **ARE HEALTH AWARENESS MONTHS DEDICATED TO UROLOGICAL DISEASES EFFECTIVE AT INCREASING PUBLIC INTEREST? A GOOGLE TRENDS STUDY**

*Presenter(s): Shane Tinsley*

Faculty Mentor: Naveen Kachroo, MD, Ph.D

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/42154>

**Introduction:** Disease specific health awareness (HA) campaigns have rapidly developed as an important avenue to improve patient education and ideally outcomes. Our study objective was to understand the impact of urological HA months on engaging public search interests in the United States.

**Methods:** We utilized Google Trends to examine public health interest in urologic conditions during monthly awareness campaigns over a 17-year period (2004-2021). Relative Search Volume (RSV) during the annual HA campaign months relative to non-health awareness (NHA) campaign months was calculated. Differences between HA-RSV and NHA-RSV months were compared using t-test.

**Results:** Although small increases in public interest were noted for certain diseases (Prostate Cancer in November, Testicular Cancer in April and Erectile Dysfunction), there was interestingly a comparative decrease in RSV for other diseases (Bladder Cancer, Prostate Cancer in September, Testicular Cancer in November, Kidney Cancer, Benign Prostate Hyperplasia and Male Infertility) in their respective HA months; however, none of these differences were statistically significant ( $p > 0.05$ ).

**Conclusion:** Our study did not find a significant difference in public interest of any urological diseases during their respective HA campaign months. This highlights the critical need for further research to investigate potential improvements in campaign methodology during dedicated HA months to better achieve their goals of increased public health engagement.

### **Augmented Balance Training in Persons with Multiple Sclerosis: A Case Series**

*Presenter(s): Emily Myers*

Faculty Mentor: Dr. Nora Fritz

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43691>

**Introduction/Objectives:** Multiple sclerosis (MS) impacts balance and walking ability. The use of feedback to augment balance training can enhance functional gains in persons with neurologic disorders, but the extent to

which these gains are realized in persons with higher and lower disability is unknown. This case series examined how an intensive video-game based training impacted functional performance in persons with higher and lower disability from MS.

Methods: Physically inactive individuals with relapsing-remitting MS were randomized to either the video-game intervention group (n=4; n=2 with Expanded Disability Status Score (EDSS) >3, n=2 with EDSS3, n=2 with EDSS) Results: Individuals in the intervention group demonstrated greater gains in gait, balance, and dual-task performance than those in the control group. Specifically, individuals with EDSS>3 (i.e., greater disability) demonstrated the largest gains in forward walking velocity (35.2% and 6.7% increase), dual-task walking velocity (17.7% and 8.1% increase), and Berg Balance Scale (39.6% and 3.9% increase). Further, individuals with EDSS>3 met or exceeded established MDCs for the Berg Balance Scale and 6 Minute Walk Test following training. Conclusion: Persons with MS may experience benefits in walking speed, walking endurance, and balance following augmented balance training. In this case series those with greater disability demonstrated the largest gains. The augmented nature of the training may also require increased cognitive demand, as evidenced by post-training improvements in dual-task walking. Thus, intensive balance training is feasible in persons with MS-related disability and may confer greater benefits than in those with lower disability. The study had high adherence levels and no adverse events occurred.

### **Avoidant Anger and Somatic Symptoms in Female Youth: A Proposed Study**

Presenter(s): Haley Hicks

Faculty Mentor: Dr. Robert Ty Partridge

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43155>

The developmental psychology literature reveals theoretical links between young girls' social environment, anger expression, and somatic symptoms. Here, girls are surrounded by images discouraging external expressions of anger that are assumed to influence the heightened levels of self-silencing seen in this population. Additionally, such avoidant anger expression typical of young girls has been linked to several health concerns, including somatic symptoms. However, despite these points consistently seen in the literature, no research has been conducted formally exploring the relationship between anger expression and health in the female population. In an effort to bridge this gap and gain a deeper understanding of these concepts, the proposed study seeks to analyze the research question *Is there a relationship between avoidant anger expression and experiences of somatic symptoms in female youth?* Accordingly, a mixed methods survey will be administered to a SONA sample of female youth via Qualtrics.

### **Bridging the Gap**

Presenter(s): Zaria Coleman

Faculty Mentor: Francesca Pernice

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/44329>

Creating a safe space for students to talk about their college experiences and get connected to resources.

### **Can Cross-Ethnic Friendships Protect Adolescents' Social-Emotional Well-Being during the (Virtual) Transition to High School? Exploring the Role of School Ethnic Context**

Presenter(s): Shivapriya Chandu

Faculty Mentor: Dr. Hannah Schacter

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43978>

Past research demonstrates that friendships promote adolescents' well-being (Bagwell & Schmidt, 2011), and that *cross-ethnic friendships* offer unique protective effects. Adolescents with more cross-ethnic

friendships feel safer, less distressed, and have fewer peer difficulties (Graham et al., 2014). However, less is known about whether the protective effects of cross-ethnic friendships depend on the broader school ethnic context, or whether such effects translate to online school contexts during the COVID-19 pandemic. Therefore, this study examined whether associations between cross-ethnic friendship and adolescent social-emotional adjustment varied as a function of students' ethnic ingroup representation at school during the pandemic.

Participants included 388 ethnically diverse ninth graders (59% female,  $M_{age}=14.02$ ) recruited from 38 high schools across Michigan. In Fall of 2020, when the majority of participants attended online school, students completed online assessments of anxiety, self-esteem, peer victimization, and social competence. They also nominated up to three close friends and indicated if they were a different ethnicity. Participants' percentage of same-ethnic peers at school was derived from publicly available Michigan Department of Education data.

There were nonsignificant correlations between cross-ethnic friendships and the four psychosocial outcomes. However, there were significant interactions between cross-ethnic friendships and proportion same-ethnic peers at school when predicting anxiety, self-esteem, and social competence. Participants with a greater proportion of cross-ethnic friendships reported lower self-esteem and greater anxiety if they had more same-ethnic peers at school, but not if they had fewer same-ethnic peers at school. However, participants with a greater proportion of cross-ethnic friendships reported higher social competence if they had fewer same-ethnic peers at school, but not if they had more same-ethnic peers.

The findings suggest that the effects of cross-ethnic friendships on psychosocial outcomes vary depending on whether adolescents are in the numerical majority or minority ethnic group at their school, even in virtual instructional contexts. Cross-ethnic friendships may be particularly protective for adolescents who have few same-ethnic peers at school.

#### **Cellular events underlying neurodegeneration and recovery in the *Drosophila* eye**

*Presenter(s): Bassem Chamma*

Faculty Mentor: Dr. Tiffany Cook

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43983>

Understanding the mechanisms behind neurodegenerative diseases such as Parkinson's, dementia, and macular degeneration has been the target of medical research for the past few decades. However, the methods to treat them have yet to be developed. Interestingly, studies on vertebrates have demonstrated that zebrafish are able to regenerate their visual system following retinal injury, despite mammals not having such abilities. Nevertheless, while the molecular mechanism responsible for zebrafish retinal recovery is not yet determined, the genetic pathways underlying retinal development and support are conserved among mammals, such as humans, and *Drosophila*. Initial studies in the Cook Lab have shown that flies undergoing light-induced retinal degeneration have a limited window of time, once removed from the light, in which they can recover retinal structure and function. For this study, our central hypothesis is that *Drosophila* flies are able to regenerate their retina after light-induced damage. We will use immunohistochemistry to study changes in proteins involved in cell death control and proliferation during different light exposure and recovery paradigms. We expect that findings of this study will inspire future research to investigate the conserved genetic pathways responsible for retinal regeneration and their potential to be manipulated for therapies in humans.

#### **Characterizing Nerve Fascicular Morphometrics using High-resolution MRI in Polyneuropathies**

*Presenter(s): Alexandar Bezanovski*

Faculty Mentor: Dr. Yongsheng Chen

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43330>

## Characterizing Nerve Fascicular Morphometrics using High-resolution MRI in Polyneuropathies

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### Introduction

Polyneuropathies are a group of diseases that damage peripheral nerves and result in sensory loss and muscle weakness in limbs. These diseases often lead to a pathological finding of nerve hypertrophy with enlarged diameters of individual peripheral nerves. However, this pathology has not been well characterized in patients; in particular, how it affects nerve fascicles and connective tissues. High-resolution magnetic resonance imaging (MRI) can discern the spaces between nerve fascicles that conventional MRI cannot do. This study aims to quantify morphometrics of these pathological changes and to determine whether nerve pathology is associated with disease severity in patients with polyneuropathies.

### Methods

We analyzed the high-resolution MRI images from 24 patients with polyneuropathy and 20 healthy controls. The tibial portion of the sciatic nerve at mid-thigh level was measured for nerve volume by manually delineated nerve boundaries. Hyperintense nerve fascicles were discernable from hyperintense connective tissues using histogram-based thresholding to calculate the fascicle volume and fascicle density. Correlations between nerve morphometrics with age, body mass index (BMI), and neuropathy scores that measured disease severity were performed.

### Results

BMI was moderately correlated with fascicle and nerve volumes, but not fascicle density in healthy controls. There was a moderate correlation between neuropathy scores and nerve/fascicle volumes in patients with polyneuropathies.

### Conclusions

Human peripheral nerve is organized with fascicles where many myelinated and non-myelinated axons are compartmentalized by perineurium. Each peripheral nerve usually has multiple fascicles and inter-fascicular connective tissues, which are encased together by the epineurium to form a nerve. Fat-saturated high-resolution MRI allowed nerve fascicles to be discerned and accurately measured in their sizes. Myelin/axon damages are often associated with proliferation of intra-neural connective tissues. Present data show that nerve hypertrophy may be a surrogate marker for disease severity. Future studies should analyze relationships between nerve morphometrics and longitudinal functional outcomes.

### Acknowledgements

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## Characterizing regulatory regions in a major transcription factor impacting biofilm formation in the bacteria *Myxococcus xanthus*

Presenter(s): Lindsey Kreinbring

Faculty Mentor: Dr. Penelope Higgs

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43673>

Biofilms are complex multicellular communities of microorganisms. Biofilms confer tolerance to physical and chemical treatments including antibiotics. *Myxococcus xanthus* is a Gram-negative, environmental bacterial species that produces a specialized biofilm consisting of spore-filled fruiting bodies. MrpC, a Crp/Fnr family transcription factor is necessary to direct fruiting body formation, and misaccumulation of MrpC has drastic

effects on the timing of fruiting body production and fruiting body morphology. MrpC accumulation is controlled by transcriptional and post-transcriptional regulation, including proteolytic turnover. A genetic screen has identified two potential protease recognition sites within the *mrpC* gene. Site-directed mutagenesis has confirmed a single substitution within MrpC leads to premature accumulation of MrpC and accelerated production of fruiting bodies.

### **Congresswomen of Color & Support for Compassion Issues in the 116th House of Representatives**

*Presenter(s): Zarin Farook*

Faculty Mentor: Dr. Ewa Golebiowska

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/40948>

A record number of women were elected into the body of the 116th Congress, making it ripe for a study on the legislative behaviors of female legislators. While previous studies have already established that women are more supportive than men of “compassion issue legislation” (i.e. legislation that aims to redistribute resources to help the most vulnerable in society, including through federal funding of education, healthcare, and welfare programs), the current body of literature on this matter lacks depth with regards to how distinct groups of female legislators, including those of different races, approach compassion issue legislation. My project explored the question of whether white Congresswomen and Congresswomen of color in the 116th House of Representatives differ in prioritizing compassion issues, as examined through the subject matter of legislators’ sponsored bills. I hypothesized that Congresswomen of color are more likely to introduce compassion issue bills than their white counterparts, in part due to how a greater proportion of Congresswomen of color are members of the Democratic Party, which is comparatively more liberal, and due to how the districts that Congresswomen of color represent tend to be more in need of compassion issue services as demonstrated through their relatively lower median household incomes and lower rates of degree attainment. Following random selection of equal numbers of bills by each of these groups and coding of these bills as “compassion issue legislation” or “not compassion issue legislation”, I found that my hypothesis was not supported. However, after conducting multivariate analysis of the relationship between the bills and various facets of the representatives’ identities and districts, I found that there was a moderately significant relationship between being a Democrat and introducing compassion issue legislation. This study serves as a step towards diversifying the research on women’s political behaviors.

### **COVID-19 effects on pulmonary hypertension and right ventricular function**

*Presenter(s): Safia Haniya Yusuf*

Faculty Mentor: Dr. Jeffrey Ram

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43350>

COVID-19 affects many organs in our body, including the heart and lungs. COVID-19 cases that require hospitalization often exhibit pulmonary hypertension (PH) due to changes in the lung microvasculature in which the blood vessels become stiff, damaged, or narrow, causing increased pulmonary arterial pressure. This review examines the hypothesis that PH can lead to right ventricular hypertrophy (RVH) as a long-lasting aftereffect of COVID-19. Recent studies have shown that significant percentages of hospitalized patients develop right ventricular hypertension and right ventricular dilatation (RVD), which may lead to right ventricular failure and death. Despite recommendations for echocardiogram reports to include right ventricular wall thickness to assess RVH, few published reports have reported this parameter. Relevant studies on animal models of PH in which the timing of PH can be precisely controlled suggest that one to three weeks of PH can cause RVH. Thus, according to the hypothesis proposed here COVID-19 patients who have long-lasting severe disease (e.g., needed to be on a ventilator for one or more weeks) accompanied by PH and RVD may develop RVH as a long-lasting sequela outlasting the infection itself. Echocardiogram studies of recovered COVID-19 patients may determine whether oft-reported cardiovascular sequelae include RVH. All citations are in MDPI format.

### **Dancing Sustainability and Stewardship**

*Presenter(s): Olivia Kimes*

Faculty Mentor: Dr. Biba Bell

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43496>

*Dancing Sustainability and Stewardship* is a movement research undertaking that 4th year dance major Olivia Kimes has spent the past semester working through, culminating into a performance on Wayne State's green space in Gullen Mall. Coming from a dance background for her entire life, Kimes has always investigated how her body moves through the world. This project in particular was rooted in eco somatic practices and embodied movement research in natural environments; these ideologies show how ecology, the moving body, and sustainability/ environment conservation are all intrinsically linked. Why does being in natural environments have the ability to heal us? The movement research that was presented in the form of GRASS STAIN, a duet with Kimes and dancer Nandi Jack, was an investigation into eco somatic ideas: where did this grass beneath us come from? Where did our clothes come from? How can visualizing earth's elements within my body heal it from ailments? Much inspiration of these questions also came from *Braiding Sweetgrass* by Robin Wall Kimmerer, a personal account from a botanist's perspective of the value of science and indigenous traditional wisdom in connection with the earth and humanity. Acknowledging indigenous people and traditions is incredibly important when speaking about the earth and eco somatic practices, and having that perspective from Kimmerer was a huge part of the research and guide of questions. Kimes also partnered with Jenna Steele for this project, intern with Warrior Sustainability on WSU's campus, sharing the audience and presenting the many things they do on WSU's campus for environmental justice and educating on ways to adopt more sustainable lifestyles. Enjoy the performance!

### **Development and Evaluation Of Paclitaxel Nanoemulsions For Intraperitoneal Treatment Of Ovarian Cancer**

*Presenter(s): Kawleen Kaur*

Faculty Mentor: Dr. Haipeng Liu

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43441>

Ovarian Cancer is the fifth leading cause of death in women. Even though patients respond to the first line of chemotherapy, about 75 % patient experience re-occurrence since some residual cancer cells go through genetic changes and reproduce rapidly. These residual cells develop strong chemo-resistance. Most of ovarian cancer cells metastasize in intraperitoneal cavity, therefore, there is a need for a better drug therapy that not only reduces the recurrence rate but also targets the metastasized cancer cells in the intraperitoneal region. This research is directed towards creating an optimized nanoemulsion consisting of Vitamin E and Squalene that can improve the local drug retention and tumor penetration after interaperitoneal injection. This research has the following Specific Aims:

#### *Specific Aim 1*

Evaluate the effect of different Vitamin E to Squalene proportions on the size of the nanoemulsion  
Evaluate the Encapsulation Efficiency (EE%) and Kinetic Release of PTX from the nanoemulsion

#### *Specific Aim 2*

Evaluate the drug efficacy and cell viability at different drug concentrations and compare it with the free drug

### **Development of Model Vaccination Initiative in Detroit Using Evidence from Previous Public Health Crises**

*Presenter(s): Muhammad Tarar*

Faculty Mentor: Patricia McCormick

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43406>

The distribution of COVID-19 vaccines to Detroit residents has faced significant challenges during the ongoing public health crisis. Vaccine hesitancy is not a novel phenomenon, and it is likely that the factors which have influenced people to avoid vaccination for illnesses in the past play a role in the present day. The purpose of this study was to examine existing data on COVID-19, especially regarding vaccination efforts and vaccine hesitancy in the United States. Furthermore, research examining these factors in the context of previous illness outbreaks was examined. Common social factors identified as being associated with vaccine hesitancy were considered in the context of the current public health crisis. Finally, successful vaccination initiatives in other parts of the United States were explored, with emphasis being placed on how these successful initiatives may have addressed the previously identified factors. Using this information, a possible model for how strategies observed to be effective in other parts of the country can be used in Detroit to overcome racial and ethnic disparities in vaccination is discussed.

### **Driving Motown Towards Equitable Transit**

*Presenter(s): Katherine Lucero*

Faculty Mentor:

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43970>

This study aims to make a connection between the history of Detroit, how it has affected public transport reliability, and in turn, affects the way that Detroiters choose to travel. A prominently low-income, developing area, with a history of corruption and bankruptcy. The city has strong ties to the leading car manufacturers in the nation. The Big Three is made up of Ford, GM, and Chrysler. These companies have molded the foundation in which the city has been built and the way that people choose/are forced to travel. The following reading focuses on vast aspects regarding the topic, analyzing how one aspect could be linked to the next.

### **Effects of the Estrous Cycle on Cocaine Self-Administration in Female Rats**

*Presenter(s): Sabrina Khan*

Faculty Mentor: Dr. Shane Perrine

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43640>

Introduction: Female sex hormones, such as estradiol, have been shown to have an impact on cocaine taking behaviors, increasing female rats' consumption. More research is still needed to determine how the natural fluctuation of estradiol impacts a female rats' ability to learn cocaine self-administration and patterns of cocaine consumption. Methods: Catheters were surgically implanted into the jugular vein of 13 female rats who, after recovery, had unlimited access to selfadminister cocaine infusions for six hours per day for four days. Vaginal lavage samples were collected on Days 1 and 4 and were characterized for estrous phase based upon histology. Results: No significant differences were determined between rats in low estradiol phase (estrus) and those in the other phases with high estradiol levels (proestrus, metestrus, and diestrus), as measured at the end of self-administration sessions 1 and 4, in the overall number of infusions or in the percent correct responses. Conclusion: This experiment, using the unmanipulated estrous cycle, does not suggest a significant difference in responses across the different estrous cycle stages, however it does demonstrate the need for further rigorous research.

### **Effects of Viscosity & Flow; the Application of Enamel on Three-Dimensional Forms**

*Presenter(s): Alaina Kraus*

Faculty Mentor: Evan Voltz-Larson



Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43855>

The use of vitreous enamels in decorative items dates back centuries, yet few artists pursue the application of this medium on three-dimensional objects. The goal of this research is to seek to understand the interplay of different softening points of enamel, how the application of layers impacts that interplay, and if or how that changes with the introduction of three dimensional base forms. In particular, this research focused on the phenomenon of 'pull-through' where lower layers of enamel rise to the surface in the heating process and the creation of cells of movement by layering hard enamels over softer enamels. The project culminated in a form focused series of work applying the findings to pieces ranging from low bas-reliefs to more complex three-dimensional forms. Included pieces have been formed using a variety of metal working techniques from the use of a hydraulic press to fold forming to create the levels of dimensionality to be explored.

### **Expansion Microscopy on Platelets**

*Presenter(s): Heather Durfee*

Faculty Mentor: Dr. Bhanu Jena and Dr. Daniel Walz

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43602>

Microscopy is a common technique used by physicians to diagnose a wide variety of diseases, including hematological disorders. This technique can be difficult to use, and thus, difficult to accurately assess and treat a patient's disorder. However, expansion microscopy provides a much more up-close and detailed image of a tissue sample, allowing the physician to get a better understanding of their patient's condition. Thus, our objective is to develop an expansion microscopy procedure on tissue samples and to apply this procedure to much more fragile tissues, like platelets.

### **Get up and Go!**

*Presenter(s): Dezslond Harris, Lynn Nguyen*

Faculty Mentor:

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43931>

This presentation focuses on our campaign we drafted up titled "Get up and Go"! This a physical fitness campaign that will take place within the high school district of Sterling Heights. We hope to partner with these high schools to provide education and resources on exercises and nutrition importance for high school students.

### **How Exercise Benefits People Outside of Building the Physique**

*Presenter(s): Sumaiya Mohib*

Faculty Mentor: Nicole Varty

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43853>

Exercising is a form of activity that has numerous benefits for all people. However, the majority of the population does not take advantage of the value of this activity. This paper reflects on four ways in which exercise can positively impact an individual's life: it alters brain cells which enhances cognitive skills by constantly creating working cells, it improves memory which decreases the chance of memory-loss disorders and improves academic skills, it indirectly and directly leads to a more positive mental state, and, last but not least, it improves the immune system which lessens the chances of disorders, attacks, or even colds. The primary purpose of this writing is to prove the effectiveness of exercise through a multitude of resources. Each claim is backed up with evidence from scholars and proved with work that has been conducted in research

journals. Through the evidence, it is evident that exercise truly is valuable and can improve the quality of life for an array of people. An increase in physical exercise will most likely be linked to an improvement in multiple areas of an individual's life. This research also opens up an avenue for further pursuit on whether people are truly aware of these benefits and what can be done to entice more people to take advantage of the benefits of physical activity.

### **Identifying insulin-like peptides that promote fertilization rates in *C. elegans***

*Presenter(s): Mediha Rovcanin*

Faculty Mentor: Dr. Joy Alcedo

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43596>

Multiple environmental factors, like diet, can impact oocyte physiology and lead to infertility. Thus, understanding the mechanisms that affect oocyte physiology is crucial to produce potential therapies against infertility. Because of its excellent genetic tractability, we are using *C. elegans* here to understand some of these mechanisms.

Previously, we have demonstrated that insulin signaling regulates *C. elegans* oocyte differentiation and physiology. It promotes the early onset of oogenesis in response to a certain bacterial food type. Insulin signaling also enhances global fertilization rates, which are driven by oocyte maturation rates. *C. elegans* has 40 insulin-like peptides (ILPs) that can modulate insulin receptor signaling. We have shown that a specific ILP, INS-6, is sufficient to promote early onset of oogenesis when expressed from a specific taste neuron. However, INS-6 alone appears to have little or no effect on oocyte maturation and fertilization rates. This suggests that other ILPs regulate specific aspects of oocyte differentiation and physiology—e.g., onset of oogenesis versus oocyte fertilization. Thus, we are currently identifying the ILPs that influence *C. elegans* oocyte maturation and fertilization. These ILPs might encode and integrate diverse environmental cues that influence oocyte physiology—a code that might be conserved in higher animals, since they also have multiple ILPs

### **Identifying the Neural Substrates of Gestational Opioid Exposure in Neonates Using Whole Brain Mapping**

*Presenter(s): Surbhi Neole*

Faculty Mentor: Dr. Susanne Brummelte

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/44003>

In the United States from 1999 to 2014, there was a four-fold increase in the number of babies born to mothers who had an opioid use disorder (CDC, 2020). Opioid maintenance therapies are the recommended treatment for opioid use disorder, and one is buprenorphine (CDC, 2020). Buprenorphine (BUP) has been linked to harmful neonatal consequences (Velez et al, 2018), and animal research has revealed a high mortality rate of the offspring if BUP is given to the rat dam throughout parturition (Wallin et al., 2018). Considering the increase in BUP-exposed infants and the lack of long-term data on the developmental outcome of these infants, it is crucial to better understand how this unique opioid treatment during gestation impacts early brain development and possible later cognitive and behavioral outcome. (Byrens & Vassoler, 2018). My project will investigate neonatal responses to pain and the subsequent brain activation in pups gestationally exposed to BUP (opioid maintenance) or morphine (mimicking opioid abuse) using *c-fos* immunohistochemistry and whole brain mapping.

### **Iridium (III) Complexes as Sensors for Cytochrome P450 Enzymes**

*Presenter(s): Justin Ahrens*

Faculty Mentor: Jeremy Kodanko

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/44102>

The main goal of this project is to use IrIII complexes to monitor cytochrome P450 (CYP) activity. CYP P450 metabolism determines how quickly drugs are excreted from the body and what kind of dose is required for pharmaceuticals to be effective. Existing probes for CYPs are non-fluorescent, but when CYPs metabolize them, they are “turned on” and fluoresce. Even though these probes are able to monitor metabolism, once they are metabolized and “turned on” they cannot be reversed or turned off. Therefore, this is no current way to monitor dynamic changes in CYP activity continuously over time. The Kodanko laboratory is addressing this unmet need by developing IrIII complexes that are reversible sensors of CYP enzymes. A chiral resolution strategy with enantioenriched ligands was used to prepare four analogs of IrIII complexes with different stereochemistry. These complexes were evaluated as emissive sensors in human liver hepatocytes to establish which IrIII complex is the lead compound for sensing CYP in living cells. Results from this multi-disciplinary study will be reported.

### **Junk DNA or something more? Investigating the biological role of introns in transcription**

*Presenter(s): Emma Fidler*

Faculty Mentor: Athar Ansari

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43440>

Introns are intervening, non-coding regions of DNA found in the eukaryotic genome. For many years, introns were thought to be “junk DNA”, vestiges of evolutionarily bygone genes that no longer serve a purpose. Recently, several biologically significant functions of introns have been discovered including their role in the regulation of gene expression. We found that introns increase transcription of inducible genes in budding yeast even in the absence of an activator. In the future, we plan to identify splicing factor interacting partners of transcription factors using immunoprecipitation and mass spectrometry.

### **Linking Memory-Related Differences in Functional Brain Connectivity to Individual Differences Across Development**

*Presenter(s): James Wairagu*

Faculty Mentor:

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43532>

Memory is supported by brain activation and by interactions in activation patterns between networks of cortical regions. However, there is still little understanding on how functional brain connectivity, as can be assessed by analyses of resting-state functional MRI connectivity (rs-fMRI connectivity), is related to an individual’s memory performance and how activation and connectivity patterns that change over development can explain age-related improvements in memory ability. In this study, we investigated changes in functional connectivity patterns between two regions involved in visual scene processing: a high-level scene-selective region, parahippocampal place area (PPA), and a lower-level visual processing region (occipital cortex). We included 59 participants aged 7-20 years (14.26 ± 3.26). Utilizing MATLAB and CONN Toolbox software programs, we analyzed rs-fMRI connectivity between the PPA and the occipital cortex at two-time windows: right before (pre-) and right after (post-) an approximately 15 min of visual scene-encoding. We then compared the functional connectivity pattern that supported subsequent memory between pre and post encoding scenes. Our findings show a distinct pattern of rs-fMRI connectivity between the occipital cortices and the PPAs. Increased post-encoding functional connectivity across the PPA and occipital cortices network was associated with an increase in subsequent memory performance. In addition, post-encoding functional connectivity was low among the younger participants and higher among the older participants. In contrast, pre-encoding functional connectivity was high among the younger participants and low among the older participants. These findings suggest that with an increase of age, the ‘cross-talk’ between these visual processing regions, indicative of memory consolidation, show distinct patterns.

### **Luminescent Nanocrystals as optical temperature sensors.**

*Presenter(s): Alyssa Erlenbeck*

Faculty Mentor: Dr. Federico Rabuffetti

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43775>

Synthesis of luminescent nanocrystals utilizing dual source lanthanides Eu and Tb using a dual-halogen source BaFCl precursor is described. These nanocrystals are expected to serve as noncontact luminescent thermometers for intracellular temperature sensing. They were synthesized using solution- phase colloidal routes (hot injection). Lanthanide concentration and ratios of each respective lanthanide were tuned to maximize thermometric sensitivity. Nanocrystals were characterized using X-ray diffraction to determine phase purity and analyzed via TEM to determine sample morphology. Furthermore, their room temperature emission spectra were collected between 500 and 650 nm to probe the incorporation of the lanthanide emitters in the BaFCl crystal.

### **Mapping and Measuring Whole-Brain Activity in Zebrafish**

*Presenter(s): Saba Dubaishi*

Faculty Mentor: Justin Kenney

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43963>

To understand the neural basis of behavior, we use animals as a guide, conducting experiments to better understand the role different brain regions play in behavior. Zebrafish are a popular model organism and have become a valuable neuroscience tool. To measure brain activity, we label *c-fos* expression because its expression is upregulated by neural activity and thus is an indicator that the region was active. A digital 3D model of an adult zebrafish brain atlas, AZBA, will help further the use of zebrafish in understanding brain function. AZBA allows the user to map activity across the whole brain instead of only a few regions. To quantify neural activity across the entire zebrafish brain, we used AZBA in combination with Cellfinder, a program that automatically counts cells in a brain image. AZBA is then used to register the quantified image to visualize the expression of *c-fos* in different brain regions. This project focused on contributing to the completion of AZBA and fine-tuning the parameters for Cellfinder for cell detection in the zebrafish brain. We found that decreasing the soma diameter and the threshold accomplished the project's goal with a few complications. Changing these parameters was not enough to break apart cell clusters in parts of the brain. Further research is needed to explore altering the remaining parameters to resolve this issue.

### ***Mental health consequences of bullying in youth: Effects on anxiety symptoms and potential protective effects of parental warmth***

*Presenter(s): shelley Paulisin*

Faculty Mentor: Dr. Hilary Marusak Ph.D. & Dr. Hannah Schacter Ph.D.

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43224>

Anxiety disorders are the most common psychiatric disorder, affecting nearly one in three, and commonly begin during adolescence. Peer victimization, or bullying, is common (10-30%) among adolescents and has been shown to increase risk of anxiety disorders. Prior research suggests that a healthy parent-child relationship may protect adolescents from anxiety. Here, we examine whether peer victimization is associated with anxiety symptoms in early adolescents, and whether parental warmth can buffer the effects of peer victimization on anxiety. One-hundred and fifty early adolescents ( $M \pm SD = 12 \pm 1.5$ , 45% female) and one parent/guardian completed online surveys. Adolescents self-reported on peer victimization, anxiety symptoms, and parental warmth using validated questionnaires, including the Revised Personal Experiences

Checklist (De Los Reyes & Prinstein, 2004), Screen for Child Anxiety Related Disorders (Birmaher et al., 1997; Monga et al., 2000), and the Parent Child Relationship Scale (Pianta, 1992), respectively. Correlation analyses were used to examine bivariate associations among peer victimization, anxiety, and parental warmth, and hierarchical regression was used to test for interactive effects of peer victimization and parental warmth on anxiety. Peer victimization was positively associated with anxiety symptoms, and negatively associated with parental warmth. Parental warmth was also negatively associated with anxiety. There was no significant interaction between peer victimization and parental warmth on child anxiety symptoms. All results remained consistent when controlling for age and gender. These results suggest that peer victimization may increase risk of adolescent anxiety. Although parental warmth was associated with lower anxiety, we did not find evidence that parental warmth can buffer the negative effects of peer victimization on anxiety. These findings highlight the need to improve mental health outcomes in victims of bullying. They also suggest that parents, in general, can play an important role in supporting adolescents' mental health.

### **Minimizing The Gender Pay Gap**

*Presenter(s): Amanda Bastien, Grace Zimmerman, Aziza Zebari*

Faculty Mentor: Jane Fitzgibbon

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43694>

As three women entering professional careers, we are interested in exploring the contingency of a gender wage gap and introducing new ways to challenge employers to see the value of providing similar opportunities to all genders. One of our group members, Amanda Bastien, has accrued a great deal of personal experience with this topic of interest within her role as a Human Resources Talent Assistant. In this role, Bastien worked directly with a Talent Manager and an HR Director. She facilitated the recruitment process for an enterprise of five different companies. With this experience, Bastien was constantly tasked with presenting candidates of all genders to hiring managers, and she saw firsthand the patriarchal mindset that persists, despite the progress that has been made on minimizing the gender wage gap. Bastien often noticed that although there was a fairly even distribution of men and women within entry level roles, there were predominantly men in higher level roles, especially at the executive level. This has allowed us to question how much progress truly has been made and exploit the implicit bias that remains. Therefore, we are aiming to take a fresh approach to challenging the thoughts and actions of hiring managers, by bringing awareness to the role that they play in allowing the wage gap to prevail.

### **Perceptions of Romantic Partner Emotions are Associated with Interpretations of Sexual Conflict among Violence-Exposed Adolescent Girls**

*Presenter(s): Elena Tsantis*

Faculty Mentor: Dr. Valerie Simon, PhD

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43833>

Interpersonal violence exposure (IVE) is related to a variety of negative outcomes in adolescent girls. Less is known about how IVE impacts the perception of threat and/or aggression following a sexually coercive scenario. The following study investigates the relation between the perception of threat and/or aggression during a virtual reality (VR) simulation and avatar ratings in 67 urban middle school girls. In the current study, participants were assessed during middle school, where at the fourth visit they underwent a VR scenario depicting a partner pressuring them to engage in unwanted sexual activity. Following the simulation, participants were asked for their ratings of the avatar's feelings. It was hypothesized that girls would perceive an increase in threat, anticipate aggressive behavior, and perceive the avatar as angry rather than happy or excited. Findings will be important in understanding how IVE impacts girls' navigation of coercive behavior at a young age.

## **Practical Tools for Implementing Motor Learning Principles in Dance Technique Training**

*Presenter(s): Lisa McCabe*

Faculty Mentor: Hannah Andersen

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/42837>

Rooted in the pioneering research of Gabrielle Wulf, Clare Guss-West, Glenna Batson, M. Virginia Wilmerding, and Donna Krasnow, this work aims to illuminate intersections between research in motor learning and current dance pedagogy practices to support the development of dance educators' technique teaching. Conducted in two phases, the first phase reviews current literature to reveal motor learning tools for implementation in dance technique training in the form of a Preliminary Motor Learning Toolbox. Anchoring motor learning principles are focus of attention, repetition, rest, and feedback. Phase two involved going directly to current dance educators through a questionnaire, and series of interviews to understand dominant and non-dominant uses of motor learning. Based on triangulated data from the interviewees, research pioneers, and researchers, an Enhanced Toolbox reveals uses of motor learning research in dance teaching and highlights blind spots between research and practice. Considering these findings, educators will be better equipped to support dancers' technique, training, and performance through the implementation of the accumulated motor learning tools and strategies.

## **Preferences of Smoking Cessation Interventions for Wayne State University Students: Online Discrete Choice Experiment**

*Presenter(s): Rita Shakory, Jillian Estrope*

Faculty Mentor: Dr. Seung Hee Choi

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43641>

### **Background**

Evidence suggests that most college students attempt to quit smoking without any evidence-based assistance, leading to high unsuccessful quit rates.

### **Aims**

To better understand college students' preferences and decision-making in smoking cessation interventions, a discrete choice experiment (DCE) combined with a think-aloud method was implemented.

### **Methods**

A mixed methods study design using DCE was conducted to examine the preferred format and content of smoking cessation interventions with a convenience sample of 28 college students. Quantitative data was collected through an online DCE survey and analyzed using conditional logistic regression models. Participants used a think-aloud method while completing the DCE survey. This qualitative data was video-recorded, transcribed, and analyzed. Key themes of strategies used to complete the DCE survey were identified.

### **Results**

More than half of participants were female and non-Hispanic White. The DCE data demonstrated that college students preferred an intervention format that included cutting down nicotine (p

### **Conclusions**

The DCE data indicated 6 significant attributes of smoking cessation interventions tailored to college students. The addition of the think-aloud method provided valuable insight into strategies used during decision-making and increased the validity of DCE data.

### **Implications**

A DCE successfully elicited preferences for smoking interventions among college students, suggesting an excellent methodology to use in this population.

### **Producing Independent Work: the semi-truck that blocks my view is still beautiful**

*Presenter(s): Taylor Craft*

Faculty Mentor: Jessica Rajko

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43731>

'The semi-truck that blocks my view is still beautiful' is the debut evening-length work from dancer and choreographer, Taylor Craft. Throughout the presentation, the performers continuously beckon themselves and the audience *'when evolving into our present selves, what of our past do we keep with us and what do we have to leave behind?'* The performance is a series of movement and dialogue-based scenes performed by a fifteen-person ensemble, paired with an original composition by Diego Perez-Cuellar and Sean Monaghan. Reflecting on what it means to come of age in the 2020s, Craft developed the work as a performance of the bildungsroman genre through her writing, creations, and inspirations garnered over the course of the ages of seventeen to the present day. Allowing her performers and creative collaborators to read through years of personal writings and revisit Craft's past choreographic material to create the motifs and dialogue central to the work. All of this is in an attempt to reevaluate the past and leave behind what was been reconciled. The work comes to fruition as the audience is carried through the whirlwind of emotions that comes with existing as a young person in the 21st century and what it could mean to come to terms with our present selves, slowly and maybe, all at once.

### **Protect Her Mental Hygiene**

*Presenter(s): Deborah Trotter, Tatum Alston*

Faculty Mentor: Prof. Jane E. Fitzgibbon, PhD.

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43181>

We want Black/African-American women to take control of their mental health and make it a main priority in their life. The "Her Mental Hygiene" campaign hopes to achieve this by providing valuable resources, promoting healthy, mindful activities, pairing them with certified mental health practitioners of similar backgrounds, etc. We hope to decrease the number of Black/African-American women who report feelings of stress, depression, burnout and such.

### **Quality Matters: A Procedure for Valid and Reliable Hippocampal Subfield Segmentation**

*Presenter(s): Samaah Saifullah*

Faculty Mentor: Ana Daugherty

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/42778>

Automated hippocampal subfield segmentation methods have led to exponential growth in the literature. Although automated segmentation is perfectly reliable, deviations from anatomical definitions are common and weaken their validity. To address the lack of guidance for quality control (QC) of automated segmentation methods, we developed a taxonomy of errors and two-step protocol for 1) identification and 2) manual correction. Raters examined segmentations from a customized atlas to identify errors in six categories with severity ratings; only major severity errors are manually corrected in order to minimize introducing human error. The QC procedure was developed and cross-validated with an independent sample on two MRI scanners. Raters had excellent agreement in QC decisions between- and within-raters on all regions, manual corrections introduced less than 3% error and were unrelated to participant demographic. The feasible and reliable QC procedure allows confident interpretation of hippocampal subfield segmentations, and potential applications to other brain regions.

### **Quantifying Extracellular Vesicle Biomarkers after Experimental Traumatic Brain Injury in Mice**

*Presenter(s): Awab Tanoli*

Faculty Mentor: Dr. Alana Conti

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43950>

Traumatic brain injury (TBI) affects more than 3 million Americans with around 80% of this population being treated for post-injury pain<sup>4</sup>, often with opioids. The complex set of oxidative and inflammatory responses post-TBI is useful as an adaptive immune response, but prolonged oxidative stress and neuroinflammation has been linked to the development of chronic pain syndromes, and therefore, may contribute to pain sensitivity post-TBI. Therefore, it is important to identify mechanisms that mediate these pathways that lead to post-injury pain so that a targeted, safer treatment option for post-TBI pain can be developed. One novel method of studying these processes is by examining the extracellular vesicles (EVs) released by TBI-affected cells, as EVs have been shown to act as mediators for central and peripheral inflammatory responses post-injury. Therefore, this project intends to measure changes in two membrane proteins found in EVs: CD63 and CD81 to elucidate the role of EVs in the TBI-induced oxidative and inflammatory pain pathway. Using Western blotting, we found that there were no significant differences in CD63 and CD81 concentration, compared to the sham controls in both the PFC and dHC.

### **Relative Timing of Flows in the North Shore Volcanic Group in northern Minnesota using Paleomagnetic Measurements**

*Presenter(s): Breauna Murray*

Faculty Mentor: Sarah Brownlee

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43425>

Roughly 1.1 billion years ago the interior of the North American craton experienced prolonged extension resulting in the formation of the Midcontinent Rift System (MRS). The MRS failed after 15-22 million years of active extension accompanied by massive volumes of bimodal intrusive and extrusive igneous rocks. The North Shore Volcanic Group (NSVG) represents the extrusive portion of these rocks in northern Minnesota. Many outstanding questions remain regarding the emplacement and failure of the MRS. How long was the rift active? How rapidly were extrusive and intrusive units emplaced? To begin to address such questions at the outcrop scale, we will focus on the relative timing between a basalt flow and a cross-cutting dike using a paleomagnetic baked-contact test. We collected a profile of samples from a NSVG outcrop near Lutsen, MN where a basalt flow is cross-cut by a near-vertical feeder dike. The dike shows hydrothermal alteration and contains xenoliths of brecciated basalt. Oriented samples were collected within the dike and from the adjoining basalt at increasing distances up to 10 m from the dike contact. We plan to compare paleomagnetic directions recorded across the baked contact to determine if the dike was emplaced shortly after the basalt flow erupted (in which case paleodirections would be similar), or if sufficient time had elapsed to resolve secular variation, which would imply that centuries to thousands of years passed between the emplacement of the lava flow and dike. In addition to paleomagnetic directions, we will characterize the magnetic mineralogy in both rock units using high- and low-temperature magnetic measurements, hysteresis loops, and petrographic analysis of thin sections. Determining the relative timing of these two rock units will contribute to our understanding of the relative rate of eruption of the North Shore Volcanic Group, and perhaps the rate of effusive eruptions in the later stages of the MRS.

### **Religious Sermons and Support for the Sanctuary Movement**

*Presenter(s): Santiago Garcia- Leco*

Faculty Mentor: R. Khari Brown



Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43436>

For this project, I examine the relationship between hearing sermons on immigration and support for the Sanctuary Movement. I rely upon the 2020/2021 National Politics Study (NPS) data that assessed respondents' views on immigration. My project results show that whites, blacks, and Hispanics that hear sermons about immigration are more likely to support the sanctuary movement. However, these analyses also seem to suggest that this relationship is stronger among Whites than it is for Blacks and Hispanics.

### **Robust 3D Skeleton Extraction from Highly Sparse and Noisy Image Data**

*Presenter(s): Iniyavel Rajeswaran*

Faculty Mentor: Zichun Zhong

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43365>

undamental motivation of the proposed work is to present a new geometry-guided computing method to effectively extract microstructures. However, due to the high sparseness and noisiness in vasculature data, it is still extremely challenging to extract the complete 3D vessel structure and visualize it in 3D with high fidelity. In this project, we will investigate the 3D median, a simple and powerful statistical tool, that extends the univariate median to the multivariate setting. It represents a unique global center of a given set of points, with the prominent property that it is robust to outliers and noise. In this project, we will adapt L1-medians locally, instead of globally, to a set of points representing a geometric shape, which gives rise to a one-dimensional structure. The structure can be seen as a localized center of the shape, i.e., a medial curve skeleton. We will introduce such a structure which we call the L1-medial skeleton; it amounts to a spatially localized version of the L1-median with conditional regularization. We will evaluate the developed method by using public and real patient vessel image datasets. The application of this accurate segmentation and visualization of sparse and complicated 3D microvascular structure facilitated by our method demonstrates the potential in a powerful diagnosis of vascular disease. There are several key steps in the proposed project: (1) build and set up the project development environment; (2) generate and prepare the semantic 3D vessel volume images from the raw MRI datasets; (3) develop the core method of L1-medial skeleton for 3D vessel data; (4) design the graphics-based implementation, and C++, OpenGL, Qt programming will be used; (5) design an interactive 3D GUI for the proposed system.

### **Role of Novel Automated Methods to Detect Sleep Disorder Breathing Using Heart Rate Changes**

*Presenter(s): Nabila Ahmed*

Faculty Mentor: Dr. Abdul Ghani Sankari, MD

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43583>

#### **ABSTRACT**

**Research Question:** How can novel automated methods to detect heart rate accelerations during sleep be used in the diagnosis of sleep disordered breathing?

**Research Context:** The severity of sleep disordered breathing (SDB) is defined by recurrent apnea and hypopneas during sleep. The diagnosis is made using the apnea-hypopnea index (AHI), which is the number of all apnea and hypopnea events per hour of sleep. SDB can be diagnosed using laboratory polysomnography (PSG)—the gold standard method—or portable monitoring, called home sleep apnea testing (HSAT). HSAT is more accessible, but hypopnea events are only scored if associated with de-saturations. HSAT is usually unable to detect other respiratory events that can lead to physiological disturbances, including changes in heart rate or arousals. Elevated nocturnal heart rate is known to increase the risk of negative cardiovascular outcomes later in life. Recent studies examined the relationship of heart rate changes on long-term cardiovascular outcomes in retrospective community cohorts. The studies discovered that individuals with elevated heart rate per hour values during sleep had a higher probability of suffering from cardiac-related events.

**Methodology:** PSG recordings from 1617 participants in the Sleep Heart Health Study (SHHS) were analyzed using an automated method to detect heart rate changes using electrocardiogram (ECG) and pulse signals. Cohort participants were included in the study if they were aged 40 years and older, had complete PSG, no history of a cardiovascular event, and were not using beta blockers prior to enrolling in the study. Using PSG, nocturnal respiratory-related heart rate accelerations were analyzed for any correlation to AHI. Studies were eliminated if they had poor ECG signal quality or if an arrhythmia was present.

**Conclusion:** The novel automated detection method for respiratory-related heart rate changes correlates with AHI and may play a role in the detection of SDB.

### **Saving the planet and your pockets**

*Presenter(s): Veronica Weisenbach, Katherine Fisher, Kateri Wagner*

Faculty Mentor: Jane Fitzgibbon

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43649>

The goal of this campaign is to spread awareness of water usage in homes. We will be presenting the campaign step by step.

### **Seder Plates: Viewing Objects of the Seder Table Through Clay**

*Presenter(s): Ev Christie*

Faculty Mentor: Jessika Edgar

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43563>

Ceramic artworks of dinnerware elements used during the ritual dinner of Passover.

### **Speak Now. Help Now.**

*Presenter(s): Leah Pavone, Shelby Ripple, Austin White*

Faculty Mentor: Dr. Jane Fitzgibbon

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43848>

Social Marketing Campaign about the opioid crisis.

### **Synaptic local enrichment of CaMKII $\alpha$ for memory improvement in mice**

*Presenter(s): Sana Latif*

Faculty Mentor: Joongkyu Park

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/42964>

Learning and memory are critical functions that allow organisms to adapt to and respond to their environment. Long-term potentiation (LTP) is an important model for memory and involves the persistent strengthening of synapses. Ca<sup>2+</sup>/calmodulin-dependent protein kinase II alpha (CaMKII $\alpha$ ) is a kinase that has been identified as essential for the establishment of LTP. Due to its critical role in synaptic plasticity and memory formation, the enhancement of CaMKII $\alpha$  function has been studied as a mechanism to improve memory formation. The novel intrabody VHH Anti-GluN1 (VHHAN1) developed by our lab has been shown to localize to and bind to endogenous N-methyl-D-aspartate receptors (NMDARs) in mouse models. The influx of Ca<sup>2+</sup> was expected to activate the downstream target CaMKII $\alpha$  which has been implicated in LTP. Previously, we showed that VHHAN1 could bind endogenous NMDARs in mouse brains, and that we could bring CaMKII $\alpha$  to the NMDAR location, where LTP initiates. This molecular approach was termed CLEVIR (CaMKII $\alpha$  Local

Enrichment by VHH for Improvement of memory). This local enrichment of CaMKII $\alpha$  by the intrabody in the hippocampus improved contextual memory. Nevertheless, many questions remain. Since long-term memory is linked to the cerebral cortices, it is possible that applying the CLEVIR approach to broader regions of the brain can improve contextual memory better. We hypothesized that global expression of the CLEVIR (VHHAN1-CaMKII $\alpha$ ) approach in CaMKII $\alpha$  expressing neurons of the hippocampal CA3, dentate gyrus, and cortices could improve memory processes more effectively as compared to CaMKII $\alpha$  alone.

### **Syntheses, Structural Characterization, and In-Vitro Analysis of TAB2 Derivatives as Potential UCHL5 Inhibitors to Treat Triple-Negative Breast Cancer**

*Presenter(s): Livia Philip*

Faculty Mentor: Dr. Young-Hoon Ann

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/44983>

Triple-Negative Breast Cancer, also known as TNBC, is the most aggressive phase of breast cancer. Its ability to spread rapidly to the lungs, brains, liver, and other vital organs makes TNBC very fatal. There are chemotherapeutics that repress TNBC, but these agents often lead to resistance. Developing TNBC-targeted therapeutics is vital to alleviate and increase the survival rate of those battling against TNBC. Members of the Ahn Research Group have applied in-silico molecular modeling and discovered that Tiaprofenic Acid (TA) is a weak inhibitor of UCHL5, a prevalent enzyme in TNBC. Furthermore, members have developed TA derivatives, where TAB2 showed the best inhibition. Our goal was to develop stronger inhibitors by making TAB2 derivatives. We developed 3-fluoro and 4-fluoro TAB2 derivatives that are currently under analysis.

### **Synthesis of Aspartimide-Prone Peptides Using an o-Aminoamide as an Aspartic Acid Protecting Group**

*Presenter(s): Ryan Snyder*

Faculty Mentor: Jennifer Stockdill

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43275>

The development of solid phase peptide synthesis has expedited the synthesis of many pharmaceutical peptide natural products while avoiding major side-reactions by the use of protecting group chemistry. However, a persistent challenge that plagues the peptide community is the aspartimide forming event from aspartyl-containing peptides through repetitive exposure to basic conditions. Aspartimides are known to be the cause of epimerization and unfavorable ring openings that lead to impurities that are indistinguishable from the desired product or difficult to purify through chromatography. Previous approaches to hinder the formation of aspartimide required backbone modifications or bulky ester  $\beta$ -carboxyl protecting groups which are either not commercially available or synthetically challenging. Herein we scope the utilization of an ortho-aminoamide protecting group as a method to avoid aspartimide formation in the synthesis of our scorpion toxin II model peptide.

### **Technology and the Key to Sustainability**

*Presenter(s): Laura Cazacu*

Faculty Mentor: John Heinrichs

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43371>

This project aims to investigate the relationship between technology and sustainability. It focuses on concepts such as Artificial Intelligence and Quantum Computing and delivers use business cases that will have an environmental impact on the future.

### **The Epidemic**

*Presenter(s): Nada Elkheshen*

Faculty Mentor: Dr. Mark Greenwald

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43945>

Deaths caused by overdose have been dramatically spiking in the past two years. Opioids are the major cause of death by overdose, which is where our role comes in. PDS is concerned with patterns of opioid abuse among patients diagnosed with opioid use disorder that are currently in treatment. Our goal is to explore patterns of emotionality and cognition to find out whether patients with OUD have affective/hedonic dysregulation, meaning that they may struggle with emotional regulation. In order to test this hypothesis, we interview the patients and run cognitive, behavioral, and psychological tests to measure the levels of function in each area, in addition to assessing the history of the patient through the administering the SCID. So far, our results show a significant relationship between emotion dysregulation and OUD. However, results will be clearer as we progress further in the study.

### **The Impact of Digital Art Therapy on Adolescent Patients**

*Presenter(s): Jeren Ghoujehgi*

Faculty Mentor: Dr. Aaron Martin

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43972>

Art therapy is a common rehabilitative service used in healthcare for patients with life-changing illnesses. Following a patient-centered care approach for adolescent patients, this research project focuses on the effectiveness of digital art therapy programs in comparison to conventional art therapy. This particular research assesses both the current state of art therapy and its potential to become more digital through field research in two major Metropolitan Detroit hospitals and a literature review of three scholarly articles. The expected results and conclusions lend ideas for future research on the potential modes of digital art therapy and how these can be implemented in practice.

### **The Maiden in the Tower: Tales Obstructing Female Sexuality and Maturity**

*Presenter(s): Veronika Vucaj*

Faculty Mentor: Dr. Anne E. Duggan

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43915>

First published in seventeenth-century Italy, “The Maiden in the Tower” tale has been shared and retold through the centuries, taking on new elements in France and in Germany as time passed. Today, the popularity of the tale has resulted in the production of key films such as Disney’s *Tangled* (2010) in the United States. Furthermore, public interest in the tale was revived during the COVID-19 pandemic due to similarities between the maiden’s isolation and the nature of quarantine, contributing to a rise in commercial advertisements and videos released that featured the protagonist, Rapunzel.

“The Maiden in the Tower: Tales Obstructing Female Sexuality and Maturity” is a critique of the popularly called “Rapunzel” tale-type and an analysis of how these stories create stark division between the sexes. By placing tales such as Giambattista Basile’s “Petrosinella” (1634), Charlotte-Rose de La Force’s “Persinette” (1698), and Friedrich Schultze’s “Rapunzel” (1790) into their socio-historical contexts, I detail how these stories criticize or otherwise seek to control female sexuality and maturity. In this paper, I will analyze three female characters present in the Rapunzel tale type, namely, the birth mother, the heroine, and the antagonist. Their descriptions, behaviors, and their fates in these tales speak volumes to the reigning gender stereotypes and societal values at the time of publishing. Furthermore, I will trace how “Maiden in the Tower” tales have

changed over time, from Basile to Disney, and address the glaring issues of gender stereotyping and female control in these different works. I will draw from leading scholars in fairy-tale and gender studies, historians, and both the print and film retellings of this tale. Overall, this paper will contribute to a greater understanding of the intentions behind the story, the three central female characters, and its socio-historical influences.

### **The making of Trend Anomaly Collection Zero.**

*Presenter(s): Daynah Grant*

Faculty Mentor: Margaret Hull

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43896>

Daynah Grant explains the making of the brand Trend Anomaly and the process of making Collection Zero.

### **The Silent Shahadas: An Interactive Online Digital resource capturing Black Muslim Experiences featuring a short Docu-Series**

*Presenter(s): Aaron Shields*

Faculty Mentor: Dr. Jennifer Hart

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/44038>

Black American Muslims face disconnections at multiple levels, specially many of them might feel distant from the so called "heartlands of Islam." But that feeling can be compounded as their collective experiences struggle to be presented in ways accessible to the public. If Muslim communities in America are disconnected from the broader "Heartlands of Islam" in Africa and the diaspora then Black American Muslims face an additional layer of disconnection I argue that this disconnection limits the social and cultural resources as well as the capital available to them in addressing shared challenges.

Rather than a conventional research essay, this research will be presented through an online open-source website that will enable others to explore this history. The goal is a publicly-accessible website, informed by primary and secondary research, which will facilitate historical study of experiences of Islam in Africa, America, and the African-American experiences. I intend to create this digital resource with concise historical summaries of such experiences so viewers won't find the resource too broad in scope. The main presentation of this digital resource will be a short YouTube Docu-Series, embedded in the website itself, which will feature conversations with leading contributors who explore Africa, Islam and Blackness. This will give the intended research a wider audience through the use of popular public spheres such as social media and YouTube, rendering it accessible to all levels. Black Muslim Experiences will informally function as an all access point, a "one stop shop" for viewers to engage with concise oral and written histories of Islam, Africa and Blackness.

### **Throwing Out Vaping**

*Presenter(s): Rosalyn Reese, Bailey Chrivia, Clara Bielawski*

Faculty Mentor: Jane Fitzgibbon

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43878>

This is a campaign proposal made with the intention to influence teens and young adults to quit vaping, as well as educate our target audience on the physical, psychological, and financial harms of vaping.

### **Ultrasound and Photoacoustic Guided Tissue Temperature Mapping during Ablation Therapies**

*Presenter(s): Angad Ghag*

Faculty Mentor: Dr. Mohammad Mehrmohammadi

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43955>

Successful laser ablation treatment procedures require the accurate placement of the ablation catheter tip within the diseased tissue, real-time tissue temperature and estimating the heat diffusion from the catheter tip to the surrounding tissues. Poor catheter tip visualization due to ultrasound (US) imaging artifacts and poor contrast, lack of real-time thermometry and heat diffusion maps leads to unsafe or incomplete treatments. During laser ablation studies, the continuous wave (CW) laser light energy exiting the catheter tip is converted into heat and is diffused into the surrounding tissue following bioheat transfer model. Using US imaging and tissue classification, it is possible to develop a tissue heat diffusion map. PA can also measure the temperature at the catheter tip. Therefore, combination of US and PA imaging can provide a near real-time tissue temperature maps that could be overlaid over US structural image and guide the operators to achieve successful treatment.

### **Understanding the Effect of External Military Interventions on Insurgency Outcomes**

*Presenter(s): Laura Lynch*

Faculty Mentor: Dr. Frederic Pearson

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43470>

External state military interventions within civil conflicts frequently occur around the globe but remain an understudied phenomenon. Specifically, while studies on these interventions exist, there is insufficient research on how external state military interventions both in favor and in opposition to rebel groups affect the outcome of civil conflicts. Conflict outcomes for the purpose of this study are distinguished as government victories, conflict abatement, rebel victories, or the establishment of an agreement or ceasefire. In order to help bridge that gap, this study uses quantitative analyses with supportive evidence from case studies to investigate the relationship between external state military interventions in support of and in opposition to rebel groups and civil conflict outcomes. For this project two cross tabulations with chi-square tests were conducted in order to compare the difference in civil conflict outcomes between cases of civil conflicts that include external state intervention in support of rebel groups with cases that do not, as well as to compare cases that include external state military intervention in opposition to rebel groups with cases that do not. The result of these cross tabulations and their respective chi-square tests indicate that there is no significant overall relationship between external military interventions in support of a rebel group and the outcome of civil conflicts or between external state military interventions in opposition to rebels and the outcome of civil conflicts. Beyond this, the first cross tabulation conducted comparing the outcomes of cases of military interventions in support of rebel groups with cases without this type of intervention showed substantial differences in the percentage that ended in agreement/ceasefire and abatement. These findings suggest that in cases with external military intervention in support of rebels there's more likely to be an agreement or ceasefire established, and in cases without this form of intervention there is more likely to be an abatement of the conflict.

### **Understanding the Parent-Infant Relationship: A Qualitative Analysis of the Thoughts and Feelings of Fathers Toward Their Infants**

*Presenter(s): Jacob Caywood*

Faculty Mentor: Carolyn Dayton

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43759>

The care from parents and others during the first three years of life shapes a child's later development. When parents are exposed to risk factors such as poverty and violence, however, they are less likely to provide sensitive and nurturing care to their infants, toddlers, and young children, placing them at risk for poor developmental outcomes. Research that explicates the progression of the developing parent-infant

relationship in risk-exposed parents provides essential information that can inform early interventions with parents who are at risk for harsh and insensitive parenting. One window into this early relationship is the parent's narrative or "internal representation" of their infant. The current study aims to uncover the psychological factors that underlie both healthy and unhealthy parent-infant relationships and, subsequently, the psychological development of the child by examining parental thoughts and feelings toward their 6-month-old infants in a sample of fathers who have been exposed to contextual adversity, including poverty and violence. The current study is part of a larger, longitudinal study entitled, "Baby on Board: The WSU Early Parenting Study," directed by Dr. Carolyn Dayton. NVivo data-analysis software was utilized in an inductive coding approach of Working Model of the Child Interviews of risk-exposed fathers in a midwestern urban city. This approach to coding provides an opportunity to develop theoretical understandings of psychological phenomena in fathers exposed to contextual risks, such as poverty and violence, and suits the goal of gaining an in-depth understanding of early parenting and relationship formation. Results provide insight into the father's side of the parent-infant relationship and inform strategies for intervention services to fathers of young infants.

### **Upregulation of Advanced Glycation End-Product Receptor and TNF-Alpha Receptor Genes Indicates Early-Stage Diabetic Vasculopathy**

*Presenter(s): Christopher Spencer*

Faculty Mentor: Mai T. Lam, Ph.D.

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43778>

Over 34 million Americans suffer from diabetes (including type 1 and type 2)—about 10.5 percent of the US population. An additional 88 million Americans have prediabetes, an alarming indicator of rising diabetes prevalence and need for preventive and curative treatments (CDC, 2020). In the lead-up to innovation of upstream solutions that prevent or cure diabetes, scientists, physicians, and patients are seeking to improve diabetes management tools. Even with progress in continuous glucose monitoring systems, closed-loop insulin delivery systems, and improvements in medicinal and nutritional regimens, the volatility of patients' everyday lives, the arduous demands of carbohydrate counting, and the exhaustive state of burnout contribute to development of long-term complications, namely vasculopathy.

*Diabetic vasculopathy* is macro- and microvascular injury associated with prolonged hyperglycemia and accompanying inflammation (Mota et al., 2020). With vascular complications, more serious comorbidities, such as cardiovascular disease, neuropathy, and retinopathy can develop; however, the mechanisms of vasculopathy remain unclear (Bhat et al., 2019). To increase scientific understanding of these mechanisms and their timing, I conducted *in vitro* experiments on human patient-derived dermal fibroblasts (HuDFs) under two distinct hyperglycemic conditions compared to a euglycemic control. These included analyses of growth rate and cell viability in each condition, as well as quantification of pro-inflammatory cytokine receptor expression in HuDFs seeded in ring-shaped fibrin gels (a tissue-engineered model of vascular adventitia). HuDFs in cell culture exhibited similar growth rates between glycemic conditions from days 1-5 of the weeklong exposure, then diverged as the confluence eclipsed 85 percent; concurrently, their glucose consumption between daily media changes quickened, and trypan blue staining results left no serious concern that experimental conditions induced excessive cell death before tissue glycation can be achieved. Real-time polymerase chain reaction (RT-PCR) results for Advanced Glycation End-Product receptor (RAGE) and TNF-alpha receptor 1A in HuDF rings exposed to experimental conditions indicated overexpression of the genes in both hyperglycemic groups.

### **Vesicle Transportation of Zymogen Granules by Myosins**

*Presenter(s): Hetviben Patel*

Faculty Mentor: Dr. Takeshi Sakamoto

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43600>

Zymogen granule is an enzymatic vesicle in the pancreas. The surface of the zymogen granules (ZGs) has several different kinds of myosin molecules, such as myosin Ib, VI, VIIb, and Vc. These molecular motors may contribute ZG's transportation in cells. To understand the molecular motors involved in the vesicle trafficking, we observed the *in vitro* motility of the purified ZGs from rat pancreas and exam the stepping manner and force that is used by a single beam optical tweezer. The average speed of the ZGs is around 100 nm/sec, which is similar to our previous study that two myosin Vc molecules tagged with the DNA origami. The average force and maximum force in the optical tweezer are  $0.3 \pm 0.1$  pN and  $5.0 \pm 0.8$  pN, respectively. A typical force of a single molecular motor was a range of 1 pN to 5 pN. Thus, the result in the unidirectional movement suggested that the stepping force can be created by a single molecule motor. However, different myosins may be able to generate force simultaneously. To understand which molecular motor exerted a force on ZGs, myosin inhibitor, PCIP, and TIP) were used in this study. Less than 10  $\mu$ M of and more than 100  $\mu$ M of PCIP inhibit the motor activity of myosin Ic and Vc, respectively, but not inhibit myosin VI and VIIb. TIP (10~100  $\mu$ M) inhibits Myosin VI activity but does not inhibit other myosins. Using only PCIP or TIP or a combination of PCIP/TIP, stepping movement of ZGs by using the optical trap has been observed. Successful results will be present about the directionality of the movement as well as stepping kinetics.

### **Volatility, Naivety, and Decay (Amongst Other Things)**

*Presenter(s): Najah Thomas-Young*

Faculty Mentor: Margrette Hull

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/44068>

In this short video, I document some of my creation process while reciting a poem by Louise Gluk, which gives a more concise description of the concept of the project as a whole. My goal is to artistically recreate the experiences that have sparked this skepticism and my responses to those experiences. At this stage, the pieces for the collection are coming together and the space has been selected, but the experience is still molding.

### **World Mental Health Day**

*Presenter(s): Travis Nevison, Dally Sacko, Haylee Higgins*

Faculty Mentor: Dr. Jane Fitzgibbon

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/43686>

How single parents in Metro Detroit could benefit from an app geared to help with Mental Health.

### **WSU CAPS Resource: Mental Health Screening Utilization**

*Presenter(s): Vivian Truong*

Faculty Mentor: Jeffrey Kuentzel

Link to the presentation: <https://symposium.foragerone.com/warrior-scholars-conference-spring-2022/presentations/42130>

Young adults (18-25) have the highest prevalence (29.4%) of any mental illness and the lowest rate of receiving mental health services (38.9%; NIMH). WSU CAPS provides Wayne State students with an online mental health screening opportunity. The numbers of screenings were of interest for this project. COVID-19 has been shown to negatively impact students' social and academic engagement, as a result, screening usage during the pandemic was expected to increase. Additionally, the literature on gender and racial/ethnic disparities in mental health service utilization suggest that screening tools may be used less by men and underrepresented minorities. We also expected gender and racial disparities in use, despite the anonymity provided by online screening.



We examined screening use during the pandemic from 3/15/2020 to 6/15/2021 in comparison with pre-pandemic use from 3/15/2018 to 6/15/2019. It is found that the rate of screening is slightly elevated during the pandemic. Secondly, the rate of screening use among different demographic groups, specifically racial/ethnic groups, and gender groups during the Fall of 2020 was explored. Of the 897 screenings that were completed, White completed more than 50% of them. Black students were less likely to be screened (12.2% versus 14.8%, p