



# Undergraduate Research Symposium **May 17, 2019 Mary Gates Hall**

## Online Proceedings

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### **BRIDGING IDENTITIES: PERFORMING ARTS RESEARCH INTERVENTIONS**

*Session Moderator: Juliet McMains, Dance*

**MGH 389**

*12:30 PM to 2:00 PM*

\* Note: Titles in order of presentation.

#### **Finding Freedom in Jazz: Bebop as the Bridge Between Rhythm Tap and Beat Poetry**

*Rachel Lauryn Zuraek, Freshman, English*

*Mentor: Juliet McMains, Dance*

Beat poetry and rhythm tap are two interests I have had for several years. Through my separated exposure to and analysis of both, I noticed a similarity in their manifestations of improvisation and rhythmic complexities. Initially, I assumed these resemblances were due to the heavy influence of jazz music both beat poetry and rhythm tap dance underwent in their formulations. However, when examining the jazz music more closely, it became clear that the characteristics of the specific form of jazz beat poetry emulated (bebop jazz) purposefully opposed the characteristics of the form of jazz rhythm tap was danced to (big band swing). This research henceforth sought to find how the rhythmic complexity and improvisation in rhythm tap and beat poetry could manifest themselves so similarly despite their rootedness in fundamentally contradicting forms of jazz music. Through analyzing the historical shift from swing jazz to bebop jazz, it was found that the contrasts between the genre were actually essential, as they allowed for a different relationship with jazz music to develop per art form: rhythm tap integrated itself into swing music, while beat poetry emulated bebop. Because of this, rhythm tap had the autonomy to add improvisation and rhythmic complexity atop mainstream swing music's lack of both, while beat poetry could echo the improvisation and rhythmic complexity of bebop without losing its individuality. This resulted in both having sonic similarities to bebop: the unintentional musical bridge between between beat poetry and rhythm tap which resulted in the two mirroring one another.

### **POSTER SESSION 1**

**Commons West, Easel 5**

*11:00 AM to 1:00 PM*

#### **Assessment of International NGOs on Humanitarian Mine Action Program and Its Impact on Local Recipients: The Case Study of PeaceTrees Vietnam in Quang Tri Province**

*Xuan Huynh, Senior, Public Health-Global Health*

*Mentor: Anjolie Ganti, School of Social Work*

Over 30 years after the Vietnam War ended, Quang Tri province was still affected by explosive remnants of war (ERW), which killed and injured more than 8,000 people, about 1.4% of its total population 2011 since 1975. Peacetrees Vietnam is an international non-profit organization, collaborating with local partners in Quang Tri Province to clear dangerous explosives from Vietnamese land, and return healthy land, and building sustainable communities. My internship at Peacetrees Vietnam in Seattle provided a value resources to accessing the impact of Community-based Explosive Remnants of Wars program in Quang Tri Province. Methodologically, I had informal interviews with the staffs, collecting statistics through their annual reports, read intensively literature reviews about remanats, and developed a visual population profile. I chose a qualitative interview method by developing questionnaire to understand the Peacetrees Vietnam's project. I traveled to Vietnam, Quang Tri province to interview and observe staff, mine clearance teams in Peacetrees Vietnam, the residents in Quang Tri Province, and others sustainable projects such as kindergarten, libraries, black pepper projects. In addition, I developed communication strategies for the organization to reach broader donors, by researching representatives who participated in UXO Caucus, then matched with donor's Peace trees Vietnam. The purpose was asking those donors representative to support for demining humanitarian program in Vietnam, particularly Peace trees Vietnam organization.

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### **SESSION 1F**

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#### **IDENTITY AND DIFFERENCE IN THE CONTEMPORARY MOMENT**

*Session Moderator: Ralina Joseph, Communication*

**MGH 234**

*12:30 PM to 2:15 PM*

\* Note: Titles in order of presentation.

## **Becoming Homeless: Identifying and Understanding Mechanisms of Identity Adoption in Homeless Young Adults**

*Sierra (Sie) Baker, Senior, Sociology*

*UW Honors Program*

*Mentor: Julie Brines, Sociology*

Within the past decade, scholarly and media attention regarding the “homelessness crisis” across the country has increased. However, recent developments in the field have problematized much of the previous research done on homeless identity, due to the fact that “homelessness” has been treated as an unambiguous defining characteristic of the individual. Past research relied on the assumption that these individuals saw themselves as homeless upon entering a state wherein they were without stable housing. Contemporary research seeks to revisit the conceptualizations of homeless identity, and this project will investigate how individuals without shelter, or at risk of being without shelter, come to define their situation and identify themselves – as “homeless” or otherwise – in relation to that status. This study focuses primarily on homeless identity as self-acquired, rather than ascribed, by researching an understudied group: homeless young adults. Studying identity within the dynamic frame of emerging adulthood provides a suitable environment for understanding identity development and adoption. This project utilizes ethnographic interview techniques conducted with individuals aged 18-25 with a range of time spent homeless. Analysis of these interviews seeks to examine key mechanisms in negotiation between socially-ascribed identity and self-acquired identity among homeless individuals, and to shed light on the mental reasoning that informs such a process. By determining how and why people come to see themselves as homeless, this research project will inform modes of early-intervention social service outreach while simultaneously complicating traditional lenses of viewing and researching homelessness.

## **POSTER SESSION 2**

**Commons East, Easel 64**

*1:00 PM to 2:30 PM*

### **Euphausiid Layer Homogeneity in Puget Sound**

*Zeta Lai, Senior, Oceanography*

*UW Honors Program*

*Mentor: Julie Keister, Oceanography*

Euphausiids (krill) are zooplankton that play a large role in Puget Sound’s marine ecosystem. They are widespread and numerous and have been suggested to play a large role in energy cycling and food web dynamics. Vertical layering of species is not uncommon, and patterns can persist between years, suggesting a significance to the layering. During the day, euphausiids form deep layers in the water column with

a thickness in the tens of meters where ecosystem dynamics may differ between the top and bottom of the layer. These layers can be detected by acoustic systems, but characteristics of individuals cannot be resolved. In this study, we used net tows to sample euphausiids at different relative depths within a layer. We recorded the length, sex, and species for statistical analysis to assess the homogeneity of the layer. Comparisons against other locations in Puget Sound will allow us to see if vertical structures are consistent or if other factors such as the presence of predatory fish can explain for differences. This project will provide insight on ecosystem dynamics and carbon cycling.

## **POSTER SESSION 2**

**MGH 258, Easel 180**

*1:00 PM to 2:30 PM*

### **Identification of Optimal Peptide Sequences for a Canine IFN $\gamma$ ELISpot Positive Control**

*Ai N. Che, Senior, Biochemistry*

*Leeseok (Lee) Song, Junior, Biochemistry*

*Mentor: Julie Crudele, Neurology*

Interferon-gamma Enzyme-Linked Immunosorbent Spot Assay (IFN $\gamma$  ELISpot) is a laboratory technique that quantifies the number of cells producing interferon gamma (IFN $\gamma$ ) by utilizing antibodies that selectively bind to IFN $\gamma$  molecules, resulting in spot formation corresponding to individual IFN $\gamma$ -producing cells. Since cytotoxic T cells (CD8 T cells) and their helper Th1 cells (CD4 T cells) produce IFN $\gamma$  to activate macrophages and inflammatory responses, quantifying IFN $\gamma$ -producing cells allows for characterization of host immune responses. Our lab utilized a canine IFN $\gamma$  ELISpot to test for immune responses against novel proteins expressed following gene therapy in dogs. Currently, we used a routinely given vaccine for canine flu, distemper, adenovirus, and parvovirus as a biological positive control. However, we tested our experimental proteins with peptides, making a whole-protein positive control, which required internal processing, flawed. Our goal was to optimize this ELISpot by identifying peptides from the vaccine that stimulates an IFN $\gamma$  immune response in peripheral blood mononuclear cells (PBMCs) and splenocytes. Utilizing a commercially available canine IFN $\gamma$  ELISpot, we stimulated PBMCs and splenocytes. These cells included lymphocytes (T cells) and macrophages, which acted as antigen presenting cells. We compared stimulation with the entire vaccine and various vaccine peptides in order to identify peptides that can be used as a biological positive control. These were compared to traditionally used mitogens that indiscriminately activated all lymphocytes. This optimization allows for greater confidence in the results obtained from our canine IFN $\gamma$  ELISpot. The improved technique serves as a powerful tool to assist in preclinical trials of vaccine production and gene therapy. It is utilized in our

lab to test for CD8 T cell-mediated immune responses against novel dystrophins following gene therapy in Duchenne muscular dystrophy dogs.

## POSTER SESSION 2

MGH 258, Easel 181

1:00 PM to 2:30 PM

### Optimization of Canine Flow Cytometry Panel

*Griffen Tyler Girvan, Senior, Biology (Molecular, Cellular & Developmental)*

*Tommy Henry (Tommy) Taslim, Senior, Biology (Molecular, Cellular & Developmental)*

*Mentor: Julie Crudele, Neurology*

Flow Cytometry is a quantitative data collection method which utilizes a laser and optics system to measure forward and side-scattering light from single cells in a heterogeneous solution, which when analyzed describe the structure and internal complexity of the cells in solution. Additionally, varying wavelengths of light emitted from the cytometer excite particular fluorescent dyes that can be conjugated to known antibodies, so that when cells contain the known antibody's antigen, the dye color will be present. This allows for cell identification and/or protein expression to be determined and quantified within a heterogeneous mixture of cells. With the given technology, we optimized a flow cytometry panel for the use of analyzing immune responses to gene therapy treatments in canines. We stained extracellular and intracellular protein markers on canine peripheral blood mononuclear cells (PBMCs) with fluorescent dye conjugated antibodies thought to recognize canine antigens. This entailed staining the extracellular markers with conjugated antibodies, fixing and permeabilizing the cell, and doing the same to intracellular markers. Once this had been carried out, the cells were run through a flow cytometer to excite the dyes with varying wavelengths of light to highlight separate dye colors. Analysis of multicolored dye presence in cells post-excitement allowed for identification and quantification of cell types. We identified antibodies that recognize canine antigens and developed a multicolor panel identifying T helper cells, cytotoxic T cells, T regulatory cells, and B cells in canine samples. Once optimized, we used this panel to characterize immune responses in dogs following gene therapy. With a reliable canine cytometry panel, future canine immune responses, both broadly and in isolated muscular tissues, can be characterized.

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## SESSION 2C

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### ASSESSING THE SOURCES: WOMEN, IDENTITY, AND PRACTICES OF EMPIRE

*Session Moderator: Mira Green, History*

MGH 231

3:30 PM to 5:15 PM

\* Note: Titles in order of presentation.

#### **"White Supremacy, Protection of Womanhood, and Defense of the Flag": White Women as Active Participants in the 1920's Ku Klux Klan Movement**

*Catarina Papagni Terrill, Senior, History: United States History (Tacoma)*

*Mentor: Julie Nicoletta*

This project looks to understand the role of women in the second rise of the Ku Klux Klan in the 1920s to understand why this manifestation has been categorized as the largest right-wing movement in the history of the United States. I argue that the addition of women as active participants in Klan activity, unlike the first rise during Reconstruction which was a strictly fraternal society, transformed the movement from a domestic terrorist organization into a political club with immense social influence on the white Protestant population in America. Primary sources used to build this argument came from Klan documents such as pamphlets and newsletters as well as local and national newspapers from across the U.S between 1918-1927. Women in this time period were emboldened to participate in politics after their victory with the suffrage movement, and those who employed racist and nativist ideology easily transitioned into the white supremacy of the Klan, who desperately sought to recruit blocs of voters. Using coded language such as "100% American" to describe themselves, the Women's Ku Klux Klan (WKKK) utilized issues such as poor education, alcoholism, and immigration as a silk screen to vilify their ever-growing list of "enemies" (a tool used to recruit membership from a larger base) among them Catholics, Jews, Bolsheviks, blacks, labor unions in the North, and immigrants. The addition of women allowed the Klan to become an organization that supported nuclear family structure and encouraged all to be involved, including children, which served to develop "Klan culture" to recruit and retain members by building community. While Klanswomen were different from their male counterparts, they worked within social networks that maintained consistent growth, starting chapters in almost every state and amassing political and social influence on a local and national level.

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## SESSION 2D

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### BIOLOGICAL RESPONSES TO ENVIRONMENTAL FACTORS

Session Moderator: Frieda B. Taub, Aquatic & Fishery Science

MGH 234

3:30 PM to 5:15 PM

\* Note: Titles in order of presentation.

#### Measuring Microplastic Abundance in Pacific Sand Lance (*Ammodytes personatus*) Habitat on San Juan Island

Kaitlyn Conway, Senior, Envir Sustainability: Envir Comm (Tac)

Mary Gates Scholar

Mentor: Jan Newton, Applied Physics Laboratory, Schools of Oceanography and Marine Affairs

Mentor: Julie Masura, Environmental Science, Interdisciplinary Arts & Sciences, University of Washington Tacoma

Pacific sand lance (*Ammodytes personatus*) are important to the diets of sea birds, other predatory fish, as well as mammals. Microplastics (plastics < 5 mm) have been found in spawning and deep-water habitats for these organisms. This project explored if microplastics are found on beaches near Friday Harbor Labs on San Juan Island, WA., and if so, to determine their concentration and distribution. Nine sediment samples were collected from two beaches (Jackson and South) and a wave field known to be Pacific sand lance habitat in this area. Samples were processed according to NOAA's Microplastics Methods Manual. Presence, abundance, type (fiber, fragment, film, pellets) and size class (< 0.5 mm, 1-5mm, 6-10mm, > 10mm) of microplastics were determined from sediment samples collected. Microplastics were found in all samples. Microfibers were the most abundant microplastic type (86%), and Jackson beach had the highest concentration of microplastics (17 microplastics/m<sup>2</sup>). On average the sizes were between 1-5 mm, and the number were 13 microplastics/m<sup>2</sup> in the study area. Larger pieces (5-10 mm) were not present at the wave field located on the seafloor, although found at both beaches. This research helps connect microplastic presence to Pacific sand lance habitat. Considering the main prey type of Pacific sand lance and microplastics found in their environment overlap in size classes, it is highly likely that Pacific sand lance are consuming microplastics.

### POSTER SESSION 3

Commons East, Easel 54

2:30 PM to 4:00 PM

#### Beach Plastic Analysis of Pacific Atoll

Amelia Lingle, Senior, Environmental Science, UW Tacoma  
Mentor: Julie Masura, Environmental Science, Interdisciplinary Arts & Sciences, University of Washington Tacoma

Plastic debris in large water bodies such as oceans and seas has become a prominent issue. Microplastics (polymers less than 5 mm) can be primary, manufactured (i.e. microbeads from facial exfoliants), entering water bodies through runoff / drainage systems, or secondary (i.e. clothing fibers or fragments) and overtime undergo weathering and breakdown. These microplastics are often small enough to pass through water treatment filters, thus ending up in watersheds. Aquatic organisms are known to ingest microplastics, and while the impacts are currently unknown, interest in the matter is growing. Contaminants in microplastics are also a concern and could have harmful effects on the environment and the organisms that ingest them as well. This study evaluated the concentration and distribution of microplastics collected from sandy beaches on islets (motus) of Tetiaroa, an atoll located in the Pacific Ocean. Thirty-six samples were collected from 8 of the islets. The analysis included density separation using a high-density fluid, filtration to .3-mm, examination under a microscope, and gravimetric analysis to determine concentration and type of microplastics in each sample. Sixty percent of the samples processed contained microplastics including fibers, netting, and a fragment. This preliminary study shows that microplastics continue to be ubiquitous in the natural environment, and continues to heighten the need for disposal management throughout the world.

### POSTER SESSION 4

MGH 241, Easel 141

4:00 PM to 6:00 PM

#### Engaging Teenagers and Clinicians in Asynchronous Remote Communities to Design for Mental Health

Ria Rajeev Nagar, Senior, Psychology

Mentor: Julie Kientz, Human Centered Design & Engineering

Mentor: Arpita Bhattacharya, Human Centered Design and Engineering

Mentor: Jessica Jenness, Psychiatry and Behavioral Sciences

Mentor: Sean Munson, Human Centered Design & Engineering

About 3.1 million adolescents are diagnosed yearly with depression. Adolescent onset of depression is associated with acute or chronic difficulties in physical, mental, and psychosocial functioning. However, over 60% of adolescents with depression do not receive mental health care, and, among those who do, treatment engagement is low. Behavioral Activation (BA) is an evidence-based psychosocial in-

tervention for individuals with depression. While BA holds promise as an effective treatment, researchers have found that adolescents may be better reached and engaged through social and mobile technologies. In addition, BA requires frequent interaction from patients over time, which can be difficult and costly to administer in-person. There is an opportunity to improve the usability of and engagement with EBPIs via online technologies. Asynchronous Remote Communities (ARC) is a promising technology-based approach for engaging adolescents that leverages technology's reach while providing support, social interactions, and motivation. ARCs are private online groups on which researchers can deliver weekly research tasks to participants and gather information about their perceptions in a format that is lightweight, accessible, usable, and low burden. We have used ARC to both discover design requirements and to design/build a platform for administering BA, which we have tested with clinicians and adolescents. We used ARC with 10 mental health clinicians specializing in treating teens with depression to discover their needs. Specifically, we worked with mental health clinicians to better understand their needs and to identify facilitators and barriers to adapting BA to ARC. We used the Slack online platform to create an accessible, anonymous environment where we posted 20-minute long design activities each week for 10 weeks to be completed asynchronously. We were then able to recruit teenagers to understand their needs. Based on the results, we are adapting BA to ARC settings and then testing out the feasibility.