LOYOLA UNIVERSITY CHICAGO

THE GRADUATE SCHOOL’S 16TH ANNUAL INTERDISCIPLINARY SYMPOSIUM

SATURDAY, APRIL 22ND, 2023

★★★
HOSTED BY THE GRADUATE SCHOOL &
THE GRADUATE STUDENT ADVISORY COUNCIL

The Graduate School and the Graduate Student Advisory Council host an annual interdisciplinary research symposium on the Lake Shore Campus organized around the diverse research methods exhibited in scholarly work. The symposium is an excellent forum for Loyola graduate students to present their scholarly work. Any current graduate student within The Graduate School is eligible to submit a presentation. Monetary awards are given based on research category and student’s program status.

GSAC OFFICERS
LILLIAN PLATTEN, PRESIDENT & SYMPOSIUM COORDINATOR
ELISA D’AMICO, VICE PRESIDENT
EMMA KELLEY, TREASURER
JULIE SZAMOCKI, SECRETARY

VOLUNTEERS: The Interdisciplinary Research Symposium cannot operate without the help of volunteers who assist with moderating as well as judging paper and poster sessions. The Graduate Student Advisory Council would like to recognize and show appreciation for those who have kindly offered their time and assistance.

MODERATORS
ELISA D’AMICO       EMMA KELLEY
JULIE SZAMOCKI      MEGAN WINES
JADE RIEDEL        ZAHRA NAQI-HASNAIN

JUDGES
BRIDIE HULSEBOSCH   ANITA EVANS
KAJAL PATEL        ZAHRA NAQI-HASNAIN
DANNY BLOUGH       JULIE SZAMOCKI
ELISA D’AMICO      JADE RIEDEL
EMMA KELLEY        MEGAN WINES
MARJORIE COLINDRES
REGISTRATION AND WELCOME
9:00 – 9:30 – 4TH FLOOR INFORMATION COMMONS

PAPER SESSION A
9:30 – 10:45

IC 215
Maggie Jones Building Strength Versus Getting Lean: An Analysis of the Gendered Nature of Fitness in CrossFit, Barre, and Personal Training.
Bruna Tatematsu The Rise and Fall of Uterine Tissue-Resident NK Cells During the Female Reproductive Window
Megan Wines Defining Performance

IC 216
Fatima Rasoul The Path to Jin, Jiyan, Azadi: Kurdish Feminist Resistance Throughout History.
Samantha Chipman Welcomes in the Archive: Textual Variants in Dickinson’s Poetry

IC 230 (Virtual Presentations)
Han Na Lee Asian Americans’ experiences of COVID-related discrimination: collective identity, critical consciousness, and intergroup solidarity.
Yewon Rhee Conformity to Expert Opinion in Visual Aesthetic Preferences

BREAKFAST AND COFFEE
4TH FLOOR INFORMATION COMMONS

POSTER SESSION
11:00 – 1:00 – 4TH FLOOR INFORMATION COMMONS

Surovi Mohona Elucidating Mechanisms of Coronavirus Egress
Faith Lewis Kinetically Controlling Surface Reconstruction on a c-Ag(111) Model Catalyst
Madelyn Smith Elucidating the Ca2+ binding in site III of Troponin C: A Molecular Dynamics Study
Ronit Goswami THE POTENTIATING EFFECT OF ACCOMMODATING RESISTANCE ON BACK SQUAT PERFORMANCE
Claire Baxter Effect of binding site mutations on the binding affinity and specificity of the anti-Fluorescein Antibody

Megan Beulke Discovery of Novel Antibiotics by Evaluating DapE Inhibitors Utilizing the DapE Ninhydrin-based Assay
Alyssa Peer From Sensors to Insights: Understanding the Spatial Distribution of PM2.5 in Chicago
Monika Purohit Global Prevalence Patterns of Anti-Asian Prejudice on Twitter During the COVID-19 Pandemic
LUNCH
1:15 – 2:15 – 4TH FLOOR INFORMATION COMMONS

PAPER SESSION B
2:30 – 3:45

IC 215
Marjorie Colindres  The Educational Experience of Multicultural Doctoral Students Developing Mutual Aid in a Research Course
Bianca Aldrich  Parental Autonomy Support and Children’s STEM Engagement during an At-Home Tinkering Activity
Elliott Brugger  Gendered Differences in Autism Diagnoses

IC 216
William Mastin  Hemingway’s In Another Country—Aionic Time and the Dark Side of Becoming
Willow Tomkovicz  Cairo Street: America’s Tangled Embrace of Arab-Islamic Egypt at the 1893 World’s Columbian Exposition.
Harper Stewart  Something (somewhat) Wonderous: Jimmie’s Incomplete Interpretive Arc as a Function of Crane’s Own Literary Dissatisfaction and Questioning

IC 230 (Virtual Presentations)
Oluwasayo Adaramoye  Gender And Women Political Participation: An Assessment of Nigerian Fourth Republic (1999- till date)
Keyla Navarrete  Cook County Community Survey: Police Trust and Neighborhood Characteristics

Theodore Barnes

RECEPTION AND AWARDS CEREMONY
4:00 – 5:00 – 4TH FLOOR INFORMATION COMMONS

Outstanding Paper Presentation in the Humanities  Outstanding Research Poster
Outstanding Paper Presentation in the Sciences  Honorable Mention Research Poster
Outstanding Paper Presentation in the Social Sciences  EDGE Award for Integrating Diversity & Inclusion
**Paper Abstracts**

**Adaramoye, Oluwasayo.** *Gender And Women Political Participation: An Assessment of Nigerian Fourth Republic (1999- till date).*

The write-up discusses gender inequality in Nigerian politics and its effect on women’s participation in politics. It highlights the importance of democracy in providing equal opportunities and a platform for political participation and decision-making, and how gender inequality subjugates women, making them reproductive tools and pleasurable objects in the other room. The study analyzes women’s participation in Nigerian politics and determines the extent of government commitment to gender imbalance in politics. The study employs qualitative and quantitative methods to analyze data sourced from texts, journals, monographs, newspapers, and other relevant sources. The findings are presented using tabulation and sample percentages. The study's findings reveal that most respondents believe that the Nigerian government is not committed to addressing gender imbalance in politics. This lack of commitment contributes to the low level of women’s participation in seeking elective offices. Despite the limited scope of the research, this calls for practitioners and inclusiveness on the part of women and the government to enhance women’s participation in politics, particularly in seeking elective offices. By emphasizing the importance of democracy in providing equal opportunities and a platform for political participation and decision-making, the study underscores the need for gender equality in Nigerian politics.

**Aldrich, Bianca.** *Parental Autonomy Support and Children’s STEM Engagement during an At-Home Tinkering Activity.*

In this project, we explored how parents support children’s engagement in Science, Technology, Engineering, and Mathematics (STEM) through language that grants children with high autonomy to make decisions (i.e., autonomy supportive language), or low autonomy (i.e., directive language). Specifically, we asked how parents’ autonomy supportive and directive language were associated to children’s STEM talk during a tinkering activity. Sixty-one parents and their 4- to 10-year-old children (M = 8.10) were observed at home via Zoom while they built a playground ride for a toy friend using materials available at home. Behaviors were coded using a time sampling method. Through a time-series analysis using Hierarchical Linear Models, we examined if parents’ language in one (1-minute) interval were associated to children’s STEM engagement in the next interval. We found that parents’ STEM talk alone was not associated to children’s subsequent STEM talk, but parents’ autonomy supportive STEM talk was. That is, the more autonomy supportive STEM talk parents used in one minute of the activity, the more children talked about STEM in the next minute. Parents’ directive language was not associated to children’s subsequent STEM engagement. Children’s STEM talk did not predict parents’ subsequent language, suggesting that the effects are unidirectional. Finally, we found that parents who were prompted to plan prior to tinkering used more autonomy support over time compared to parents who were not prompted to plan. In sum, the study suggests that parents’ autonomy supportive language can promote children’s STEM engagement during informal learning.

**Barnes, Theodore.**

Not only are African Americans underrepresented in enrolling in STEM fields, but they are also less likely than non-Black peers to complete college degrees in STEM (National Science Board, 2012). These ongoing trends significantly impact the broader scope of stereotypes in which Black men see themselves as unfit for STEM degrees and careers. This critical phenomenological (Guenther, 2019) qualitative study investigates Black men’s aspirations for STEM education through their experiences participating in the Illinois Louis Stokes Alliance for Minority Participation program (IL-LSAMP). Utilizing Dr. Shaun Harper’s (2010; 2012) Anti-Deficit Achievement Framework, this study was conducted with 15 AA men at both 2-year and 4-year Alliance institutions to understand what specific
behaviors, experiences, environments, interactions, and relationships of the ILSAMP program contribute to or inhibit their success while in college. From the narratives of Black men STEM collegians participating in LSAMP programs, this study aims to illuminate approaches that seek to garner improved access, success and retention of STEM degree completion within these higher education institutions.

Brugger, Elliott. *Gendered Differences in Autism Diagnoses.*

Historically, in western cultures women have not been listened to; their perspectives have been ignored, dismissed of value, and their experiences discarded. This reality has had a lasting impact on research and diagnosis in social work and related mental health professions. This paper will focus specifically on Autism through an intersectional lens, drawing from Feminist Theory to evaluate the issue at hand. Autism Spectrum Disorder, or ASD, is “a neurodevelopmental condition characterized by persistent deficits in social communication and interaction and a pattern of restricted interests and/or repetitive behaviors” (Gesi, Migliarese, Torriero, et al., 2021). However, as the name implies, autism is a spectrum disorder which means it appears in varying degrees amongst autistic individuals. Restated, the autistic experience is shaped by the individual and how it impacts their life specifically. Autism diagnosis in the assigned female at birth (AFAB) population is disproportionately lower than diagnostic rates amongst assigned male at birth (AMAB) individuals, for reasons that stem from structural racism, ableism, and sexism (Gesi, et al., 2021). The disproportionate diagnostic rates contribute to misdiagnosis, prevent access to resources, limit autism research about or including women and girls, and create a cycle of undiagnosed autistic AFAB individuals. The issue of having different diagnosis rates for boys and girls with autism is not solely in that they are different, but expands to a larger issue in how we treat the disabled, neurodiverse, and women in general.


The archive is a bizarre site for which to consider developing and implementing an ethics and values code. Since the archive and the role of archivists have evolved over time, conceptualizing an ethics code must address these subsequent turns in thought to reimagine questions of diversity, equity, inclusion, and accessibility. The ultimate aim of an ethics code is to create a groundwork to inform moral policies and practices, and I offer three textual ethics values to reformulate a textual ethics for the present. These values are Stewardship and Preservation, Equity and Justice and Access and Accountability. After briefly outlining the urgency of our current context to create a new textual ethics framework, I will transition to a systematic literature review of public health ethics and archival sources. Then, I will examine the connections and crossovers between healthcare ethics codes and an archival code of ethics to formulate these three textual ethics values.

Colindres, Marjorie. *The Educational Experience of Multicultural Doctoral Students Developing Mutual Aid in a Research Course.*

This panel aims to share the lived experiences of four doctoral students engaged in research in a group format for an academic school year. The doctoral students used reflexive journals (RJ) while working on two research projects (qualitative and quantitative). The group composition consisted of a male from Ethiopia, a White female from the United States (U.S.), and a female from Honduras. Multicultural classrooms create a learning environment where students can think critically while researching. Classroom diversity can reduce bias or change people’s stereotypes while working collaboratively. RJs encouraged students to engage in mutual aid, develop emotional intelligence, create meaning for the research process, and gain writing insight while enrolled in a research practicum doctoral course.

Jones, Maggie. *Building Strength Versus Getting Lean: An Analysis of the Gendered Nature of Fitness in CrossFit, Barre, and Personal Training.*

Like many industries in contemporary society, the fitness sector is heavily gendered. Fitness facilities
need to be examined as a site that both creates and reinforces gendered bodies. Building on previous single-method studies, I utilize a multi-methods approach of ethnography and interviews to analyze organizational and individual experiences with gender and fitness. Using West and Zimmerman’s concept of “doing gender,” embodiment theory, and the theory of gendered spaces, I analyze fitness organizations as a setting where gender and inequality are actively reproduced. My research aims to answer the following questions: (1) How do different fitness organizations produce messages about gender, health, and the body? (2) How do individuals of different gender identities conceptualize fitness and health within these organizations? By analyzing three fitness organizations (a barre studio, a CrossFit gym, and a personal training facility) I look at how gender and fitness are understood in organizations historically associated with femininity or masculinity. At a time when feminist and body positivity movements continue to challenge the gendered body and the binary, this study analyzes whether the fitness industry continues to reflect binary gender relations and societal body ideals.

**Mastin, William.** *Hemingway’s In Another Country—Aionic Time and the Dark Side of Becoming.*

In In Another Country, Hemingway fashions a world without chronological time. The time of the story does not march forward, nor does it stand still. It is an infinite time, at once progressing backwards into the past and forward into the future. "Today" and "tomorrow", "before" and "after", and "now" and "later" collapse into one another and lose all definite meaning in the process. The characters in the story, being embedded in this time, are stripped of their identities, if they ever had any; the space Hemingway creates does not admit of the possibility of stability. They are alienated, not only from their surroundings and each other, but from themselves and from time itself. They are perpetually and inescapably in another country. This paper gives a reading of Hemingway's short story through Deleuze’s conception of becoming and Aionic time in *Logic of Sense.*

**Navarrete, Keyla.** *Cook County Community Survey: Police Trust and Neighborhood Characteristics.*

Police trust among residents of Cook County is vital for the institution of policing to succeed. If residents do not trust local law enforcement, they cannot expect to rely on them in crucial situations. Previous literature shows that people of color, gender, and neighborhood characteristics are associated with police trust. Police trust is an important social issue because it lies at the intersection of public safety and racism. In the Cook County Community survey, we ask residents to rate how much they trust their local law enforcement agency. Early findings suggest that levels of police trust is associated with race, gender, and neighborhood characteristics. Future avenues for the data include multinomial logistic regression models with a three-category independent variable of police trust that test blocks of variables (perceptions of neighborhood safety, neighborhood characteristics, sociodemographics) using stepwise regression methods. Full regression models are expected to be ready for presentation at the symposium.


Previous research on resurgent ethnicity and spatial assimilation has primarily focused on identifying demographic trends in neighborhood change for immigrant groups. This study builds off current literature to extend qualitative understandings of how second-generation Asian Americans form ethnic identities, considering the emergent importance of Asian ethnic co-habitation. While spatial assimilation theory remains important when considering Asian American residential patterns, weakening links between suburbanization and acculturation, weakening native-born advantages, and the growth of suburban Asian communities indicates that Asian Americans may not fit as neatly into the spatial assimilation model as previously thought. As the United States’ Asian second-generation grows, understanding their ethnic identity has implications for broader contexts of assimilation, acculturation, and socioeconomic mobility. This research addresses the questions: (1) How do second-generation Asian Americans understand Asian American ethnicity in the United States? (2) How do contemporary ethnic
communities contribute to this understanding? Participants were initially recruited though Asian multicultural organizations at a Chicago-area university. Using a snowball sampling method, I leveraged personal networks with the goal to recruit and interview 20 to 25 second-generation Asian Americans. At the preliminary stages of analytic coding, I analyze how the diverse experiences of second-generation immigrants may better fit resurgent ethnic communities in order to fulfill their adaptive assimilation needs. Findings may emphasize segmented assimilation and suggest a contemporary understanding of Asian American ethnic identity tied to new ethnic communities.

The Kurds have been resisting oppression for over a century, using many tactics and strategies to revolt against powerful established nations that severely oppress them. For a long time Kurds felt as though they were a forgotten people because the international community often does not recognize their struggles and their never-ending fight for sovereignty. It was not until the rise of ISIS in 2014 that Kurds began dominating the news and media because of the Kurdish Peshmerga becoming the main military force on the ground resisting ISIS. Although the Kurds have a long history of resistance against colonialism, imperialists and corrupt power, this was a moment of global recognition for the Kurds. Within this long history of Kurdish nationalist resistance movements, Kurdish women have been actively engaging in feminist thought and action that was heavily linked to, and overshadowed by, the larger nationalist movement. The “Kurdish question” and the “woman question,” were occurring simultaneously and these Kurdish women found avenues to express and act on their desire for change and resistance through magazines, poetry, language and education, along with military action. This paper explores how Kurdish women have engaged in feminist activism and art throughout history, while also contributing to the broader nationalist movement. There is also discussion of the foundations of Kurdish feminism and how the current Jin, Jiyan, Azadi movement in Iran was influenced by the activism of Kurdish women from the generations past, but is once again being diminished.

Stewart, Harper. *Something (somewhat) Wonderous: Jimmie’s Incomplete Interpretive Arc as a Function of Crane’s Own Literary Dissatisfaction and Questioning.*
The “Maggie” in Stephen Crane’s Maggie: A Girl of the Streets is often at the center of scholarly debate regarding Crane’s conception of the sociological-paradigm. Other characters in the novella, however, prove to be equally compelling case studies, particularly when thinking about modes of reading and worthwhile interpretive methods. In particular, Maggie’s brother Jimmie is a useful character to study when considering literary shifts in Crane’s own historical era that are then reflected in Crane’s construction of the novella. Like Crane and his contemporaries, Jimmie struggles to engage with position and perspective interpretive models that dominate literary theory. Jimmie goes from that of a system-oriented Stanley Fish in Is There a Text in This Class? to encountering wonder as Greenblatt describes in his introduction to Marvelous Possessions. Each mode of interpretation proves fleeting and ineffective in the face of the sociological-paradigm Horwitz describes in Maggie and the Sociological Paradigm. By the end of the novella, Jimmie has been reduced to simply a “man” of no agency or merit. Rather than suggesting interpretation at large as worthless, Jimmie’s struggle for “right” readings mirrors Crane’s own dissatisfaction with current modes of interpretation. Through Jimmie, Crane challenges current scholarship and theoretical precedents, but is unable to suggest an adequate alternative. Maggie proves a useful project for Crane to begin grappling towards pragmatism as the elusive “third” interpretive mode Jimmie could not fully realize. Thus, Crane was engaging with tensions between perspective, position, and pragmatist approaches to literature early on in his career.

Tatematsu, Bruna. *The Rise and Fall of Uterine Tissue-Resident NK Cells During the Female Reproductive Window.*
Women’s fertility progressively declines with age. It has been postulated that immune cells might play a role in fertility outcomes. Natural killer (NK) cell is one type of immune cell present in the uterus.
NK cells are found in the peripheral blood and reside in various organs. While the peripheral NK cells participate in innate immunity, the NK cells living in the organs—called tissue-resident NK (trNK) cells—have a less defined function. Our study aimed to determine factors that regulate the uterine trNK cells and their relationship to peripheral NK cells. We used C57BL/6J mice and surgical techniques, such as ovariectomy and parabiosis to identify factors that regulate the uterine trNK cells. Analysis of female mice at different ages showed that trNK cells emerged at the onset of puberty, fluctuated throughout the estrous cycle, and declined in aged mice. Mice ovariectomized at three weeks of age and analyzed as adults, did not have trNK cells in the uterine tissue, similar to the prepubescent mice. To identify what steroid hormone influenced the emergence of uterine trNK cells, we exogenously administered 17β-estradiol, progesterone, or both to ovariectomized mice and analyzed the trNK cells by flow cytometry. Exogenous delivery of progesterone increased the local proliferation of trNK cells. Moreover, intravascular labeling assay and parabiosis model showed that peripheral NK cells migrate to the uterine tissue, become trNK cells, and proliferate in response to progesterone. Our findings indicate that proliferation of uterine trNK cells is regulated by progesterone during the female reproductive window.

**Tomkovicz, Willow.** *Cairo Street: America’s Tangled Embrace of Arab-Islamic Egypt at the 1893 World’s Columbian Exposition.*

My research centers on the most popular attraction of the 1893 World’s Columbian Exposition: “Cairo Street.” 370 concessions dotted the fairgrounds. Cairo Street made more money than them all, surpassing even the Ferris Wheel. 2,250,000 visitors flocked to Cairo Street, the most of all attractions found on the Midway collection of foreign villages. The exhibit consisted of an imagined neighborhood representative of Arab-Islamic Cairo, populated by 166 Egyptians tasked to go about their daily lives and trades. Once visitors entered this bustling village, they needed to complete five turns among its winding thoroughfare before reaching the exit. For the American visitors, surrounded by Arabic-speaking Egyptians and unable to even glimpse the world outside, Cairo Street conjured a powerful illusion that transplanted them to the banks of the Nile. Strikingly, Cairo Street was home to the first practicing mosque in the United States history, where Americans could witness the rites and rituals of Islam. Guidebooks, letters, photographs, and over one hundred contemporary newspaper accounts from across the nation illustrate the responses of Americans. Due to the attraction’s employment of Orientalist, sexist, and racist tropes, Cairo Streets’ legacy is paradoxical. While the humanity of the Egyptians in Cairo Street prompted Americans to seek connections with its Arab inhabitants as individuals, the attraction perpetuated harmful stereotypes about Arabs. With Islamophobia taking root in America post-9/11, Cairo Street being an early example of Americans celebrating Egyptian culture provides a glimmer of hope that the tides of hatred can someday be reversed.

**Wines, Megan.** *Defining Performance.*

What is “performance”? It is a slippery term that is regularly used to indicate different phenomena across disciplines: for scholars working in the European/United States academic context “performance” often initially evokes the image of a European-theatre style proscenium stage with drawn red curtains, or, for scholars of the Ancient Mediterranean, perhaps a large stone amphitheater in which the Greco-Roman dramatists presented their works. However, as the field of performance studies has begun to grow and gain traction since the 1980’s, the parameters about what one is referencing when discussing “performance” have widened. Now theatre and performance studies scholars complicate how to define “performance” in a similar way to how scholars of religion complicate the meaning of term/category of “religion.” This paper will be an exploration of a variety of ways in which “performance” has been defined in the genealogy of how the term has been used by biblical scholars, particularly in light of the newer sub-discipline of “biblical performance criticism.” The paper will ultimately suggest a working definition that I use, but also suggests that perhaps instead of seeking a singular, static definition of performance, the better question might be what can performance be?
**POSTER ABSTRACTS**

**Baxter, Claire.** Effect of binding site mutations on the binding affinity and specificity of the anti-Fluorescein Antibody 4-4-20.

Antibodies are useful in disparate fields like enzyme catalysis and medicine because of their binding affinity and specificity. In order to engineer antibodies for these purposes, a firm understanding of the underlying mechanisms is needed to control their binding affinity and specificity, so these properties can be tightly controlled and taken advantage of. We introduced eight point mutations of the mature anti-fluorescein antibody 4-4-20 in the binding site to determine their effects on both the affinity for the antibody’s native ligand (fluorescein) as well as the specificity for fluorescein over other similar molecules. Surprisingly, several mutations on heavy chain residues increased the specificity of the 4-4-20 antibody by changing the affinity for either the fluorescein or the non-native ligand. Mutations on light chain residues reduced the affinity for both ligands without much effect on the specificity. Thermal stability assays showed destabilizations for all but two of the mutations. Finally, time-correlated single photon counting (TCSPC) was used to measure the fluorescence lifetimes and anisotropy of the antibody bound fluorescein. Initial results for lifetimes and anisotropy of the heavy chain mutations show the most variability from the wild type. Overall, our data shows that residues on the heavy chain side of the binding site (involved in side-chain interactions, backbone flexibility, and packing interactions) have the most influence over the specificity of binding, while light chain residues (involved in H-bonding to ligand) are more influential for the affinity of the antibody.

**Beulke, Megan.** Discovery of Novel Antibiotics by Evaluating DapE Inhibitors Utilizing the DapE Ninhydrin-based Assay.

An ongoing effort continues against the rising tide of antibiotic resistant bacteria, underscoring the urgent need to discover antibiotics with a novel mechanism of action. To this end, we have focused on the inhibition of the bacterial enzyme N-succinyl-L,L-diaminopimelic acid desuccinylase (DapE). Guided by docking with the computational suite Molecular Operating Environment (MOE) and lead molecules obtained through a HiTS (High Throughput Screening) assay, several lead molecules and analogs were identified, synthesized, and optimized by our research group. These potential new inhibitors are tested in our recently described and updated biochemical DapE ninhydrin assay, with IC50 data obtained for inhibitors including cyclobutanone, tetrazole, pyrazole, N-aryl acyclic sulfonamide, and indoline sulfonamide analogs. Thus far, we have conducted our assay and obtained results utilizing the bacterial species H.influenzæ and A.baumannii, working toward confirming broad spectrum antibiotic activity. This research was supported in part by the National Institute of Allergy and Infectious Diseases of the National Institutes of Health Department of Health and Human Services under contract HHSN272201700060C.

**Goswami, Ronit.** THE POTENTIATING EFFECT OF ACCOMMODATING RESISTANCE ON BACK SQUAT PERFORMANCE.

Post-activation Potentiation (PAP) refers to the increase in muscle fiber twitch and force that improves performance following subsequent conditioning exercises. Though PAP has been associated with rate of force development (RFD) and suggests that it is beneficial for short-term performance, the use of accommodating resistance as a conditioning vehicle in increasing muscle power has become prevalent. PURPOSE: The purpose of this study was to examine the effects of heavy free weight and accommodating resistance back squats on the power characteristics on ensuing free weight back squat sets. METHODS: This study included 16 resistance trained males (age = 25.5 ± 2.3 years; height = 179.6 ± 4.2 cm; body mass = 92.7
± 5.6 kg; 1RM back squat = 150.9 ± 10.7 kg; relative 1RM back squat to body mass= 1.6 ± 0.2). Following a one-repetition (1RM) maximum back squat and 7 minutes of recovery, back off sets were performed with 1, 2, 3, and 4 repetitions at 90, 70, 50, and 30% of the 1RM with 7 minutes of rest between sets. Accommodating resistance (AR-1RM) was implemented by looping three resistance bands around the hole(s) on both sides from the top of a power rack and followed the same 1RM protocol. The control day (CON) session did not include a 1RM, but followed the same 1, 2, 3, and 4 repetitions at 90, 70, 50, and 30% of the 1RM with 7 minutes of rest between sets protocol. Mean velocity (MV) and mean power (MP) were recorded using a commercially designed linear position transducer. Statistical Analysis was carried out by utilizing a repeated-measures one-way analyses of variance (ANOVA) to determine whether MV or MP significantly differed during each time point. If a significant interaction was detected, a paired samples T-test was conducted post-hoc to determine the specific level of interaction. An independent samples T-Test was run to examine the differences between the 1RM and AR-1RM loads. Alpha criterion was set at p ≤ 0.05. RESULTS: Results of the Repeated Measures ANOVA showed a significant difference in MV and MP for only the 50% condition (p < 0.011-0.013). No other significant differences in MV and MP were found at any other time point (p > 0.05 for all other conditions). Post hoc paired samples T-test determined that MV and MP were significantly different in the 1RM and CON, when compared to the AR-1RM day (p = 0.005-0.030). No significant differences in MP and MV during the 50% load were found between 1RM and CON (p > 0.05). CONCLUSIONS: The study found that a free weight 1RM, as compared to an AR-1RM, showed an increase in performance in subsequent submaximal squats completed seven minutes after a 1RM is reached, when compared to a control. PRACTICAL APPLICATION: The use of this kind of training may increase the performance of subsequent squats following a 1RM, potentially leading to a positive performance increase in MP and MV in subsequent submaximal back off sets.


The outbreak of the coronavirus disease (COVID-19) has stirred fear and panic with a surge of anti-Asian hate in the United States. Racial discrimination was exacerbated by labeling COVID19 as “the Chinese virus” and blaming Asians and Asian Americans as the source of the virus. Previous literature on Asian Americans focused on cultural experiences (e.g., acculturation) rather than racial experiences (e.g., racial identity), possibly due to their relatively brief history of immigration and the diversity of their subgroups. Within the exacerbated xenophobic and racist rhetoric since the COVID outbreak in 2019, racial discrimination is amplified towards anyone who phenotypically presents as “Asian.” It is unclear, however, how various Asian ethnic individuals actually identify with their Asian American identity. For example, experiencing COVID-related racism and group-based rejection may increase or decrease Asian Americans’ collective racial identity. The central question in the current context is how collective identity as Asian Americans can be shaped by one’s awareness of systemic racism (e.g., critical consciousness) and how it can promote solidarity among marginalized groups. The current study examines Asian Americans’ racial experience in relation to discrimination and how it is associated with their collective identity as Asian Americans and, in turn, with attitudes towards other marginalized groups in the context of the COVID-19 pandemic. In particular, this study explores the moderating role of critical consciousness, which is the ability to recognize and attribute social injustice and inequality to social structure. This exploration furthers existing literature on Asian Americans’ racial experiences, identity, and intergroup solidarity.

Lewis, Faith. Kinetically Controlling Surface Reconstruction on a c-Ag(111) Model Catalyst.
Curved crystals allow for systematic investigation of the roles of terrace widths and geometries in surface reactions. We seek to understand how the (111) terrace width affects the growth and morphology of oxygen-induced surface reconstructions on Ag(111). Scanning tunneling microscopy (STM) was used to obtain atomic scale images of oxidized c-Ag(111) surfaces to determine what phases were present after various exposures to gas-phase atomic oxygen (AO). My project specifically looked at absorption patterns, in particular the low-temperature striped phase and the p(4x5√3)-O adlayer, and under what conditions and step widths they were favored.


As of December 5, 2022, the causative agent of the COVID-19 pandemic, SARS-CoV-2, has infected ~645 million people worldwide and claimed ~6.64 million lives [source: WHO Coronavirus (COVID-19) Dashboard]. Despite mass vaccination efforts and testing strategies, several SARS-CoV-2 variants are still actively circulating among us. Many survivors of SARS-CoV-2 infection exhibit persistent COVID-19 symptoms which have been termed as long-COVID. It is not well understood why or how these patients show COVID-19 symptoms long after clearing the actual virus infection. Upon encountering its receptor on the host cells, viruses enter the cell and utilize essential host resources to successfully replicate. The replication cycle of viruses can be divided into distinct stages. Each stage is defined by unique virus-host interactions. My dissertation focuses on the “assembly” and “egress” stages of the SARS-CoV-2 life cycle, for their mechanisms are unknown. Using molecular approaches, we hope to determine the virus-host interactions required for successful virus assembly and egress. Additionally, my dissertation project will have insights into the molecular determinants of long-COVID. It is likely that during the acute infection phase, damage sustained by the host cell renders key host pathways nonfunctional. We want to know whether the host exocytic pathway is compromised during the assembly and egress processes of SARS-CoV-2. We hypothesize that following SARS-CoV-2 infection, the exocytic pathway of the cell gets corrupted, which promotes uncontrolled secretion of cellular “debris”. This putative uncontrolled secretion of cellular materials can explain the constant pro-inflammatory response in patients, which is a major hallmark of long-COVID.

Peer, Alyssa. *From Sensors to Insights: Understanding the Spatial Distribution of PM2.5 in Chicago.*

We have seen a rise in combustion engine transportation, factories, and forest fires because of an industrialized society and changing climate. Each of these entities goes through a process that burns carbon which can form particulate matter in the air. Some particulate matter can be harmful to humans as it can be small enough to enter the lungs and bloodstream and cause adverse health-related side effects. PM2.5 is one of these air pollutants, and it can be especially harmful to those with pre-existing heart and lung conditions and may cause long-term health side effects in others. CARE, Community Air Research Experience, is a program in partnership with Loyola University Chicago and others that aims to help place low-cost sensors to track these air pollutants around the Chicagoland area. These low-cost air quality sensors are from Purple Air, and they track various sizes of air pollutants, including PM2.5. Given the health concerns associated with short-term and long-term exposure to this minute air pollutant and the socioeconomic disparities from one Chicago neighborhood to the next, it is imperative to analyze this data and its levels spatially. The spatial analysis of PM2.5 in the Chicagoland area will help tell the story of who is affected by higher concentrations of PM2.5 and where it is happening. One method of analyzing this data is to measure spatial autocorrelation. Spatial autocorrelation will be critical in helping us to understand how one area’s air pollution in Chicago is related to another.

Purohit, Monika. *Global Prevalence Patterns of Anti-Asian Prejudice on Twitter During the COVID-19 Pandemic.*
Prejudice and hate directed toward Asian individuals has increased in prevalence and salience during the COVID-19 pandemic, with notable rises in physical violence. Concurrently, as many governments enacted stay-at-home mandates, the spread of anti-Asian content increased in online spaces, including social media. In the present study, we investigated temporal and geographical patterns in social media content relevant to anti-Asian prejudice during the COVID-19 pandemic. Using the Twitter Data Collection API, we queried over 13 million tweets posted between January 30, 2020, and April 30, 2021, for both negative (e.g., #kungflu) and positive (e.g., #stopasianhate) hashtags and keywords related to anti-Asian prejudice. In a series of descriptive analyses, we found differences in the frequency of negative and positive keywords based on geographic location and type of tweet (tweets vs. retweets). We also analyzed the trends of the frequency of positive and negative tweets produced by the top 10% contributors. Using burst detection, we also identified distinct increases in negative and positive content in relation to key political tweets and events. These exploratory analyses shed light on the role of social media in the expression and proliferation of prejudice as well as positive responses online.

**Rhee, Yewon. Conformity to Expert Opinion in Visual Aesthetic Preferences.**

Social conformity has long been studied as a conserved force across many species, driving many behaviors. For example, social conformity has been observed to be a driving force of animal cultures by shaping foraging decisions or mating practices. Similarly, humans often change their actions and beliefs to align with perceived group norms in society. Thus, unsurprisingly, the brain has evolved special mechanisms dedicated to conformity behaviors. For instance, reinforcement learning and reward centers in the ventral striatum and orbital prefrontal cortex contribute to the experience of conformity when met with social approval and acceptance. However, we still do not know whether neural effects of conformity are long-lasting or more transient, limited to immediate interactions with others. To address this question, we studied the effects of conformity in the context of visual-aesthetic preferences. Towards this goal, we developed computer-generated, abstract artworks with well-controlled symmetry and complexity. Observers rated the artworks as a function of these variables before, during, and after artificial “experts” expressed their opinions about the art. The results showed that individuals exhibited significant conformity to “expert” ratings. Participants adjusted their preference ratings after a single session of observing the experts, who conflicted with the original opinions. In addition, the effect of expert conformity was significant in systematically changing both preference and dislike of artworks. These conformity effects persisted even after the participants stopped interacting with the experts. Our findings suggest that humans are prone to conform their preferences to agree with perceived norms.

**Smith, Madelyn. Elucidating the Ca2+ binding in site III of Troponin C: A Molecular Dynamics Study.**

Proteins are responsible for carrying out all functions of cells, and therefore are important to the organism. Some proteins rely on calcium binding to function properly. In other words, Ca2+ must bind to the protein before the protein is functional. Proteins that are Ca2+-dependent are essential to biological functions such as muscle contractions, transduction signal pathways, or cancer lines. However, the overall mechanism of how Ca2+ binds to the Ca2+-dependent proteins is not fully established. Elucidating this binding mechanism will provide insight for how to synthesize drugs that target Ca2+-binding proteins. Herein, we investigated the Ca2+-binding in Troponin C (TnC), a Ca2+-dependent protein that regulates muscle contractions, using computational chemistry methods. Specifically, we studied TnC peptides of four different lengths. The computational results indicate that the longer peptides have more favorable free energy of binding (ΔGbind) than the shorter peptides, agreeing with experimental data. Why does this phenomenon occur? We hypothesize that shorter peptides lack certain residues (building blocks of the peptide) that
contribute favorably to $\Delta$Gbind. Specifically, these residues in the longer peptides help rigidify hydrogen bonds, decrease solvent exposure, and impact the structure of the peptide that hence promote more favorable $\Delta$Gbind.