



# URCAD 2025

**Program**

# URCAD 2025 Schedule of Events

**1:00 pm – 2:35 pm      Oral Presentations**

Philbrick Room 120 and Sprague Carlton Room (Student Center)

**2:00 pm – 4:00 pm      Poster Session**

Alumni Hall (Student Center)

## Research Award Winners: Congratulations!

### URCAP Research Award

**Yein Cho & Erica Dewey**

Psychological Science - Carol Ammon College of Liberal Arts & Social Sciences

Project: *Examining the Role of Intergenerational Living in Shaping Ageist Beliefs*

**Nigel Crundwell**

Chemistry - School of Engineering, Science & Technology

Project: *Structural and spectroscopic characterization of novel metal complexes with oxime ligands.*

### Elihu Burritt Library Undergraduate Research Award

**Ashley Carter**

Paper: *What Does Your Emotional Intelligence Tell You About Your Academic Achievement*

# Poster and Oral Presentation Abstracts

## Undergraduate Level Posters

### ***Carol Ammon College of Liberal Arts & Social Sciences (CLASS)***

#17 Boucher, Emily

Psychology

#### **Relationships Between Confidence in Safety on Social Media and Unsafe Posting Habits**

This study examines the relationship between the perception of social media safety and posting habits that release an unsafe amount of personal information. The purpose of this study is to find a correlation between confidence in online safety and unsafe posting habits to address how misjudging one's safety of private information can lead to things such as harassment or stalking. For this study social media pertains to platforms through applications or websites where users can upload information or content to communicate with others via the internet. The Risky Shift Phenomenon will be used to drive the primary hypothesis that seeks to determine the percentage of social media users that have an unsafe amount of information posted on major social media platforms. The Social Cognitive Theory combined with the Overconfidence Barrier Theory will be used to support the secondary hypothesis that seeks to determine the percentage of unsafe social media users that overestimate their ability to keep their personal information safe. The Overconfidence Barrier Theory will be used for a third hypothesis that aims to find if social media users with elevated levels of confidence are at a higher risk than those with less confidence. Results will be used to bring awareness to the dangers of overestimating individual safety on social media.

#12 Casey, Morgan

International Studies

#### **Syntactic Bootstrapping Supports Semantic Interpretation of Abstract Adjectives in English**

In early acquisition, adjectives, a word category defined by abstract and internalized states, present a challenge in the word-to-world mapping process. Considering adjectives share attributes with other word categories (i.e. verbs), they arguably rely on the same acquisition processes, such as syntactic bootstrapping. This can also be related to parametric variation, including presence/absence of a degree variable in the language. We complement previous research with additional data from parental reports. We examine the age of reported emergence of several adjective categories in relation to one another in Wordbank compiled from MacArthur-Bates CDI responses. The dataset consists of administrations to 12,530 participants (age:7-47ms; American English). We predict that a) different adjective categories emerge at different ages (understands/produces); further, b) syntactic information related to degrees (represented by the presence of comparative "more" and equative "same" would be evident: children must figure out how gradability works independently from adjectival categories, but comparatives should precede equatives. Results demonstrate that, in line with the literature, English adjectives under examination emerge at different ages: non-abstract categories (size:"big"; subjective:"good") precede abstract states (cognition:"scared"; emotion:"happy"). Further, analytic comparative "more" precedes any of the adjectives and emerges much earlier than "same."

#8 Devonish, Indya

Psychology

### **Feminist Identity, Partner Preferences, and Relationship Desire Among Women**

As marriage rates decline, census data show single women seeking relationships fell from 38% in 2019 to 35% in 2022 (Pew Research Center, 2023). While romantic partnerships boost self-esteem and health (Gomez-Lopez et al., 2019), singlehood affords personal time, goal pursuit, and autonomy (Apostlou & Christoforou, 2022). These opposing benefits warrant examining factors that influence relationship preferences. Women with stronger feminist beliefs often prioritize independence and view traditional masculine traits as undesirable (Backus & Mahalik, 2011), potentially shaping partner choices and discouraging relationships that reinforce traditional roles. This study tested whether feminist identity relates to romantic desire and preferences. We hypothesized that higher feminist identification predicts lower relationship desire. A sample of 540 adult women completed surveys assessing relationship perceptions and perceived costs and benefits of pursuing romance. Bivariate correlations revealed a small but significant negative association between feminist identity and relationship desire ( $r = -0.090$ ,  $p = .036$ ). Feminist identification was largely unrelated to overall cost-benefit appraisals, except for lower value placed on exclusivity ( $r = -0.088$ ,  $p = .041$ ) and time/effort investment ( $r = -0.102$ ,  $p = .018$ ). These results suggest feminist identity plays a modest role in shaping romantic desire but does not broadly alter perceived relationship costs and benefits.

#23 DiNapoli, Arianna

Psychological Science and Biomolecular Science

### **Perceptions of acne vulgaris and academic stress severity in college students**

Acne vulgaris is one of the most common inflammatory skin diseases and is responsible for a greater global burden of disease than certain cancers including malignant melanoma and keratinocyte carcinoma. While multiple studies have demonstrated the positive correlation between acne vulgaris severity and stress levels, there is a lack of research examining perceived types of academic stress and perceived acne appearance in college student samples. This study examined biological sex and academic stress severity as predictors of perceived acne appearance using a large, non-clinical, college student sample. Results revealed that those who identified as biologically female were more bothered by their facial acne and acne scars than those who identified as biologically male. Additionally, distress pertaining to academic workload and examinations was largely associated with only the back and chest areas, which comprise the truncal region of the body, as well as acne symptoms concerning whichever area of the body bothers the participant most. These findings should raise attention to the potential need for psychological intervention in treatment for acne vulgaris. Therapies like stress management therapy coupled with traditional acne vulgaris treatment may offer more promising results for students experiencing truncal acne. Future studies could aim to longitudinally track self-reported and objective ratings of acne severity with the aid of dermatological medical professionals.

#26 Foran, Mary

Psychological Science

### **Cultural and Religious Backgrounds and Attitudes Toward Mental Health**

This study's purpose is to understand the relationship between culture, religion and attitudes toward mental health. This study will measure collectivism, individualism, religious behavior, and religious and cultural identity. This study will reference Hofstede's Theory of Cultural Dimensions Which states that all cultures exist on six spectrums, focusing on individualism versus collectivism. Individualism versus collectivism is defined by whether an individual's identity is derived from the self or from a collective group. This study will also look at the social influence theory that states behavior is influenced by others intentionally and unintentionally. The hypothesis is that individuals with higher scores in spiritual bypass perceive abnormal behavior as a spiritual phenomenon more than a psychological one. Furthermore

individuals who are more collectivistic have more external support for mental health, however they may also prioritize the needs of others. This study will be used to provide understanding into how an individual's understanding of mental health is heavily influenced by their religious and cultural identity. The hypothesis was not supported, however significant relationships between individualism and the spiritual wellbeing scale with negative attitudes towards mental health were found. Results of this study will be used to better understand how diverse populations perceive mental health.

#1 Gagnon, Daniel

Sociology

### **Title IX, PAMS, and LGBTQ+ Education**

This article will examine Title IX, its original purpose when sexual harassment was considered a form of gender discrimination, protections for pregnant and mothering students (PAMS), and how it can be further used to protect LGBTQ+ students. It will also focus on the restrictions of Title IX, the limitations of the law, and what changes need to be made. Title IX is a civil rights law that prohibits sex-based discrimination in any school or any other education program that receives funding from the federal government. The research discusses how Title IX was imperative in creating opportunities for female students who were often discriminated against based on gender, how Title IX was further developed and interpreted to protect students from sexual assault, and has been used more recently in protecting LGBTQ+ and pregnant and mothering students in higher education. This information showcases the importance of Title IX and why it's a crucial aspect of the legislature in protecting and giving opportunities to students in Higher Education. It also reflects on the current political climate and the implications that arise from the new administration.

#3 Jacobs, Roxanne

Sociology

### **Mobilization, Manipulation, and Misinformation: The Weaponization of Social Media in American Politics**

In an era defined by rapid technological advancements and constant digital connections, social media has dramatically transformed the formation of identity and how politics function. This paper examines how social media platforms have become powerful tools for manipulation, the spread of misinformation, and the erosion of privacy. Despite growing concerns, little has been done to combat disinformation, or secure data, information, and privacy. This research traces the recent rise of widespread conspiracy theories, political radicalization, and algorithm manipulation in order to understand how power structures are being redefined. By analyzing recent events such as the January 6th Insurrection and Facebook-Cambridge Analytica Scandal of 2018, this paper uncovers how the intersection of the real world and digital world have collided and how morals, identities, and collective beliefs are altered. Ultimately, it argues that politics are at the mercy of algorithm-driven social media platforms, posing a threat for our collective present and future. Without proper digital literacy and accountability, misinformation threatens to overtake our society and become one of the most dominant tools of control in the digital age. It will redefine truth itself."

#4 Larkin, Alyssa

Sociology

### **Exploring the Socioeconomic Differences Within the School Food System**

As concerns for the state rise regarding the federal aid funding for educational programs, it has become apparent the necessity of research regarding the difference that federal funding makes on the public school system. I will use a comparative analysis to examine various socioeconomic aspects of the school nutrition programs through exploring the income gap in CT and the supplemental aid given to schools. Through comparing the contents of school lunches, I will determine if there are any differences

present between the menus in Hartford and Darien elementary schools. This research speaks to the larger aspect of unequal programs and calls upon policymakers to ensure that federal funding programs are not only maintained but improved upon in the coming years.

#22 Lepak, Kelsey

Psychology

### **Bridging Indigenous Language and Technology: Reviving Quechua Through Machine Learning and Morpheme Analysis**

This research addresses the challenge of indigenous language preservation in the digital era, focusing on Quechua—the most widely used indigenous language of Latin America. While most NLP systems prioritize dominant languages, Quechua’s agglutinative and morphologically complex structure leaves it digitally underrepresented, a phenomenon known as “digital colonialism” leading to Quechua being “digitally starved.” We analyzed 5,000 pre-annotated lexical items from Dr. Susan Kalt’s (2016) Chuquisaca corpus and 20,000 words from the SAIPM-HQDA Cusco corpus, applying a computational morpheme segmentation algorithm to Quechua’s unique morphology. The algorithm’s results were compared against human-annotated data, revealing consistent agglutination patterns and word lengths across both annotated and unannotated datasets. Using Universal Dependencies for morphological annotation, we established a consistent grammatical framework for Quechua NLP applications. Our findings show that building foundational language models from small, high-quality indigenous datasets is key for future digital inclusion. By centering these efforts within indigenous communities, we promote cultural rights, data sovereignty, and balanced standardization—ensuring that digital integration supports, rather than erases, cultural preservation.

#20 Morales, Brianna

Psychology

### **How Personality Traits Impact Quality of Life and Success**

Personality traits, defined as distinct patterns of thoughts, feelings, and behaviors, play a significant role in shaping students’ academic experiences and overall well-being (Corazzini et al., 2021; Komarraju et al., 2009). Using the Big Five Personality Traits Inventory (Morizot, 2014), this study explores how traits such as openness, agreeableness, and neuroticism influence academic success and quality of life. The research examines the relationship between intrinsic motivation, as described by Self-Determination Theory (Burton et al., 2006; Wang et al., 2024), and academic success. It is hypothesized that students with positive personality traits such as, happiness, creativity, and openness will report higher academic performance, motivation, and overall quality of life, while students with more negative traits like, neuroticism will report lower scores of academic success and quality of life (Kamtsios, 2023; Verbree et al., 2021). A survey, including measures of personality traits, academic motivation, and quality of life, will be administered to 30 undergraduate students from Central Connecticut State University. Results from this study will aim to show how personality impacts both academic outcomes and overall life satisfaction.

#5 Nelson, Randi

Psychological Science

### **Differences in Romantic Relationship Desires and Expectations Based on Family Structure**

Research suggests that individuals learn relationship skills from their parents, and those raised by both biological parents tend to develop stronger desires for romantic relationships and expect more benefits than costs compared to those raised by single parents (Amato & DeBoer, 2001; Valle & Tillman, 2012). This study surveyed 791 adults raised by both biological parents, a single mother, or a single father to examine how family structure impacts views on romantic relationships. A one-way ANOVA revealed that individuals raised by both parents placed significantly more importance on romantic

relationships than those raised by single mothers. No significant differences were found between those raised by single fathers and the other groups. A second ANOVA showed that those from two-parent homes perceived more relational benefits—like companionship, support, and emotional security—than those from single-parent households. Participants raised by single mothers perceived more costs, including identity loss and emotional stress. Meanwhile, those raised by single fathers expressed more concern about restricted socializing and increased dependence on partners. Overall, being raised in a two-parent household is associated with more positive expectations and desires toward romantic relationships than those from single-parent households, particularly those raised by single mothers.

#6 Nelson, Randi

Psychological Science

### **Black Attitudes Toward Mental Health Treatment and the Help of Ethnically Linked Coping Strategies**

The purpose of this research was to explore the impact of racial socialization and ethnically linked coping mechanisms on Black Americans' mental help-seeking attitudes. Previous research indicates racial socialization is essential to endorse Africultural coping. Africultural coping mechanisms such as collective and religious coping were strongly used by Black people to cope with stress and led to negative attitudes toward seeking mental help (Avent et al., 2021; Wilson & Gentzler, 2021). Participants were Black and recruited from a regional university in the Northeast or various resources using word of mouth and social media. The measures used were the Mental Help Seeking Attitudes Scale (Hammer et al., 2018), the Adolescent Racial Socialization Scale (Brown & Krishnakumar, 2007), and the Africultural Coping Systems Inventory (Utsey et al., 2000). Findings revealed that collective and religious coping led to more positive attitudes toward seeking mental help. For racial socialization, cultural embeddedness led to positive attitudes and African American heritage led to negative attitudes. The findings of this research suggest that Black people who use Africultural coping have more positive attitudes and are more willing to seek therapy. This research can help us identify the strengths and prevalence of the use of varying coping behaviors that are linked to Afrocentric culture, being socialized as Black, and predictors of Black people's mental help-seeking attitudes.

#7 Nelson, Randi

Linguistics

### **'Knowledge Circle': Collaboration in Documentation of Ecuadorian Sign Language (LSEC)**

About 75,000-213,000 Ecuadorians are Deaf or Hard of Hearing (Izquierdo-Conodoy et al. 2023); the majority of these individuals use Ecuadorian Sign Language (LSEC) as their first language. This language is being taught at various universities/colleges/institutes. However, there is limited information describing LSEC from the linguistic standpoint, and there is no known research done by members of the Ecuadorian deaf community.

Historically, American Sign Language (ASL) has had a great influence across the Americas because of its early establishment of the deaf education system in the U.S and the transmission through missionaries, educationalists, colonists, members of the Peace Corps, and others who have traveled to other countries (Kusters 2021). Eberle et al. (2021) estimate that LSEC is composed of 30% ASL, 20% Spanish SL, and 50% signs original to Ecuador. This study is a part of a larger project on the documentation of LSEC and involves an analysis of a small corpus of 2-5min videos released by the National Federation of the Deaf in Ecuador during the COVID-19 pandemic.

The data were analyzed using ELAN (Crassborn & Sloetjes 2008). LSEC signs were annotated and compared with ASL across the five Sign Language parameters: handshape, orientation, movement, location, and handedness. Findings revealed several observations about LSEC in terms of word order and related phenomena. Directly, we find a 71% similarity rate between LSEC and ASL.

We attribute the discrepancy between the previous research and the current findings to the a) topic, b) genre, and c) difference in methodology.

#25 Norton, Brianna

Psychology & Criminology

### **Stigma Against Borderline Personality Disorder and Bipolar Disorder Associated With Social Media Use**

The purpose of this study is to determine the correlation between stigma rates and social media use. As technology advances, people are more able to easily access information on the internet. However, this ability also makes it more difficult to identify what is truth and what is fabricated. As a result, when false views are shared, they are incorporated into individual beliefs, causing stigma. In regards to individual views of bipolar disorder and borderline personality disorder, social media has a role. The goal of this study is to fill the gap in literature by determining the role of social media in regards to stigma. In order to determine the size of that role, participants will be randomly given two vignettes that replicate a social media post- one will label the disorder of a patient, while the other will simply state the dysfunctional behavior. They will then answer a set of questions regarding their thoughts about the patient and how seeing this information on social media rather than a different context may impact their beliefs. Based on social comparison theory, individual beliefs can be influenced by the thought processes of those around them. From this study, the believed conclusions are to be that stigma against those with a personality disorder is associated with social media use. It is also hypothesized that directly stating the diagnosis of an individual with a personality disorder through a vignette will not elicit as much stigma as a vignette that only-

#15 Pinero, Alanis

Sociology

### **Cultural Scars and Inherited Wounds: Intergenerational Trauma in Latina Women**

This project explores the impact of historical and intergenerational trauma in Latina women, focusing on how migration, cultural expectations, and societal structures have shaped their lived experiences. Through interviews with three generations of women from two different families- one Ecuadorian and one Puerto Rican- this study seeks to understand how each generation interprets their familial and cultural narratives and their psychological effects. This study also highlights the complex relationship between personal memory, collective identity, and resilience. There will be a focus on how the gendered expectations and cultural stigmas around trauma affect the way stories are told, and how past historical and societal events may still impact generations today. This study will contribute to broader conversations about the importance of recognizing underrepresented histories within the Latina community, while also acknowledging the diversity in experiences among different subcultures.

#14 Tulier, Jonathan

Psychological Sciences

### **Racial Differences in Romantic Relationship Desires in Men**

Romantic relationships have benefits for men, including higher well-being but racial differences in gender-based beliefs and roles may influence romantic relationship dynamics (Gomez-Lopez et al., 2019; Salvatore et al., 2020; Carter et al., 2009). Men of different races may vary in their value of romantic relationships, influencing the desire to build long term partnerships. This study sought to examine racial differences in romantic relationship importance and the desire for them in men. 301 men across seven races were included in a survey-based study on romantic relationships. A one-way ANOVA was conducted to explore racial differences in romantic relationship importance, desire for a long-term romantic relationship, desire for marriage, and conformity to romantic relationship feminine norms. The results indicate a significant racial difference in romantic relationship importance ( $F(3,297) = 2.847, p =$



.038). White men scored significantly higher on romantic relationship importance than Black men. There was not enough significance to conclude a difference in conformity to romantic relationship feminine norms  $F(3,297) = 1.016$ ,  $p = .386$ , desire to marry  $F(3,297) = 1.818$ ,  $p = .144$ , nor be in a long-term relationship  $F(3,297) = .831$ ,  $p = .478$ . The racial differences found in this study may contribute to the pursuit of and success in romantic relationships across different racial groups.

## ***School of Education & Professional Studies (SEPS)***

#18 Goodell, Mason

Exercise Science

### **Percentile Norms for Push-Ups in the Standard Position in Females Aged 30-69**

**PURPOSE:** Push-ups are a traditional measure of upper body muscular endurance, but since many females lack the strength to perform a single standard push-up, they are often tested and trained using push-ups from the modified knee position. Accordingly, the available normative data for females use the modified knee position. The purpose of this study was to develop percentile norms for push-ups in the standard position in females aged 30-69. **METHODS:** Healthy, non-pregnant females ( $n=64$ ) were recruited from the faculty and staff populations of CCSU. Subjects were excluded if they had any medical conditions that would prevent them from participating in strenuous activity. After a brief warm-up, subjects completed push-ups to exhaustion from the standard position, with weight supported on the hands and balls of the feet. A repetition was counted only if the subject's chin met the 1" pad on the floor. **RESULTS:** The subjects were divided into four age ranges: 30-39 ( $n=13$ ), 40-49 ( $n=17$ ), 50-59 ( $n=23$ ), 60-69 ( $n=11$ ). Norms were determined for each age range using the following percentiles: 10th, 20th, 30th, 40th, 50th, 60th, 70th, 80th, 90th, 100th. A Shapiro-Wilk test was performed showing no statistical significance across all four age ranges. **CONCLUSIONS:** The present data demonstrate that females aged 30-69 can perform push-ups from the standard position. However, additional data should be collected from this population to develop statistically significant normative data.

#17 Izzi, Mia

Athletic Training

### **Tibia and Fibula Fracture of a Division I Collegiate Football Athlete**

**Background:** A 19-year-old football player sustained a direct contact injury to the lower leg during a game. On field assessment presented with an angulated gross deformity to the left lower leg. Extremity was splinted and athlete was transported to the nearest Level 1 trauma center. X-rays revealed a closed shaft fracture to the tibia and fibula. The athlete was admitted for next day intramedullary rodding surgical procedure of the tibia. **Treatment:** This athlete underwent an open reduction and internal fixation (ORIF) for the tibia/fibula fracture. A second surgery was required to address an acute anterior compartment syndrome. Five-week follow-up X-rays showed his intramedullary rod alignment of the tibia and fibula fracture to be in good position. Athlete was to begin weight bearing with crutches and placed in a walking boot. Nine weeks, X-rays showed the fibula fracture developing boney callus, evidence of healing. To further promote bone healing, the surgeon stressed the importance of advancing from two crutches to one crutch with full weightbearing. **Uniqueness:** The uniqueness of this case revolves around the development of acute anterior compartment syndrome that required an immediate fasciotomy. **Conclusion:** Treatment of a tibia/ fibula fracture, along with the development of anterior compartment syndrome requiring immediate fasciotomy added challenges to this case.

#24 O'Neil, Kathryn

Athletic Training

### **Arthroscopic Anterior Labral Repair in A Division I Football Player**

Background: 19-year-old football athlete reported multiple shoulder subluxations during the 2024 season that included a significant dislocation that occurred before a game in November. Spontaneous reduction allowed return to play with a shoulder spica. Post injury evaluation noted weekly bilateral instability. Abduction, internal, and external rotation were painful. Instability tests were positive apprehension, relocation, sulcus, and load and shift. No neurological deficits were noted. Differential

Diagnosis: Glenohumeral instability, labral tear, SLAP lesion, Hill Sachs or Bankart's lesion.

Treatment: Post-season, an MRI confirmed a left shoulder labral tear, and a scheduled repair in January 2025. Post-op, the athlete was told to wear a sling for four weeks before starting rehabilitation. Weeks 4-

6 focused on motion in flexion, abduction, and rotations. Weeks 6-10 progressed strengthening, scapular stabilization, and range of motion. Weeks 11-12 emphasized cardiovascular training and upper body ergometer. Non-contact drills, and modified lift were started. Week 12, the surgeon advanced abduction and external rotation advanced to 90 degrees. Uniqueness: The athlete had multiple subluxations throughout the season, raising suspicion of an AMBRI like condition Conclusion: Anterior labral repair requires up to a 9-month recovery, and can be career-shifting for many athletes. Highly motivated to return, the athlete wanted to progress faster but remained compliant with the protocol.

## ***School of Engineering, Science & Technology (SEST)***

#2 Campbell, Lasania

Biochemistry

### **Design of a Synthetic Catalytic Triad**

Enzymes serve as nature's catalysts, accelerating biological reactions and thereby enabling life itself. Among them, hydrolytic enzymes play a particularly vital role in the human body by facilitating the breakdown of lipids, starches, and proteins. Efforts to replicate these natural systems have led scientists to explore the development of synthetic enzymes. Despite significant progress, replicating the exceptional catalytic efficiency of natural enzymes remains a formidable challenge. In this work, we present the design, synthesis, and evaluation of a new class of synthetic molecules inspired by hydrolases and constructed on a peptoid scaffold. Our findings aim to advance the understanding of enzyme mimicry and inform future approaches in catalyst design.

#9 Castillo, Lianne

Chemistry

### **Development of an Anti-Adhesive Agent Against Uropathogenic Escherichia coli (UPEC)**

Urinary tract infections (UTIs) affect approximately 150 million people globally each year. The rising resistance of uropathogenic Escherichia coli (UPEC) to conventional antibiotics underscores the urgent need for novel therapeutic strategies. One promising approach is anti-adhesive therapy, which targets the initial step of infection, the bacterial attachment to host cells rather than killing the bacteria directly. Unlike traditional antibiotics, anti-adhesive agents are neither bacteriostatic nor bactericidal and thus are less likely to exert selective pressure that drives resistance. This mode of action offers a potential path to overcoming multidrug resistance and provides an alternative to conventional UTI treatments. UPEC, a Gram-negative pathogen, initiates infection through type 1 fimbriae, which mediate adhesion to  $\alpha$ -D-mannose residues on the bladder epithelium. In this study, we report the rational design and

synthesis of carbohydrate-based inhibitors aimed at disrupting the lectin–mannose interactions essential for UPEC adhesion, thereby preventing bacterial colonization and infection.

#27 Guarco, Keira

Chemistry

**Resolving racemic aldehydes and ketones with a chiral amine via diastereomeric imine formation**

Enantiomers are mirror-image compounds that have identical physical properties and cannot be separated by standard purification techniques. Most drugs are marketed as enantiomerically pure because the racemates may have unknown effects on the body. It is crucial to resolve racemates using more involved purification techniques such as chiral chromatography or diastereomeric formation with a resolving agent. Diastereomers are non-superimposable, non-mirror image compounds that do not share physical properties and can be separated via recrystallization or column chromatography. Enantiomers of aldehydes and ketones can be reacted with chiral amines to form diastereomeric imines, which once separated, can be hydrolyzed to recover the resolving agent and individual enantiomers. In this work, a chiral amine derived from camphor was used as a resolving agent for racemic aldehydes and ketones by forming diastereomeric imine derivatives. As a proof of concept, a simple aldehyde, 1,4-dichlorobenzaldehyde, was refluxed with the chiral amine and a catalytic amount of p-toluenesulfonic acid in 15 mL of toluene for 4 days to yield 41% of the imine product. The imine was recrystallized in ethyl acetate and characterized via MP, IR, <sup>1</sup>H NMR, and <sup>13</sup>C NMR. With this synthesis method verified, future directions involve reactions with chiral, sterically hindered aldehydes and ketones such as (R)-myrtenal and racemic piperitone.

#10 Lowry, Alicia

Biology

**Quantifying serotonin levels from complex matrices using fluorescence and LC-PDA-MSn**

Serotonin (5-HT) is a neurotransmitter crucial for behaviors such as aggression, social dominance, feeding, sexual activity, and mental health disorders like depression, anxiety, and schizophrenia. Crayfish have served as a model to study behavior, as fluctuations in serotonin levels influence their responses, similar to humans. Elevated serotonin has been linked to increased aggression and anxiety-like behaviors. Studies in our lab suggest prolonged daily blue light exposure induces light aversion in crayfish. However, quantitative detection of serotonin from complex tissues remains challenging. To examine serotonin distribution from eye to brain, we enriched, detected, and quantified serotonin from crayfish eyes, brain, and hemolymph. Tissues were macerated, extracted, sonicated, centrifuged, and filtered (0.22 µm). Samples were processed through X-strata strong cation exchange solid phase extraction (SPE) tubes. Enriched eluates were first analyzed via fluorescence (λ<sub>ex</sub>: 297 nm, λ<sub>em</sub>: 337 nm), then further characterized using LC-MS/MS with a Kinetex XBridge C18 column (100 × 2.1 mm, 1.7 µm). Fluorescence analysis revealed higher serotonin levels in the brain compared to the eye. Internal standard-based quantification using serotonin-d4 is underway to correct for processing bias and matrix effects. We believe combining fluorescence and LC-MS/MS will enhance bioamine quantification from complex biological samples.

#13 Lukaszczyk, Tomasz

Biology

**A comparison of mineral content in crayfish exoskeleton and stream water**

Freshwater crayfish are important bioindicators of aquatic ecosystems, especially in lakes and streams. Their sensitivity to water chemistry provides insight into environmental conditions, as they cannot survive in low-mineral habitats. Crayfish absorb toxic elements like lead into their exoskeletons, shedding contaminants during molting and indirectly improving water quality. They require high water hardness to stay healthy, using minerals to rebuild their exoskeletons after molting; failure can result in

death. *Procambarus clarkii*, the species used in this study, is a widely distributed invasive crayfish found on all continents except Antarctica. Its exoskeleton, made primarily of chitin and calcium carbonate, gains calcium through feeding and direct absorption from water. This project analyzed the chemical composition of *P. clarkii* exoskeletons and corresponding water samples to understand mineral interactions during molting. Preliminary results showed calcium as the most abundant element in both crayfish and their environments, followed by magnesium, sodium, and potassium. Further research will compare crayfish from different water bodies, aiming to replicate optimal conditions in the lab to support healthy crayfish populations for future scientific studies.

#19 Marshall, Cassandra  
Chemistry

### **Structural Studies of T-cell Protein Tyrosine Phosphatase**

T-cell Protein Tyrosine Phosphatase (TCPTP) is a cytoplasmic enzyme that modulates cellular signaling by dephosphorylating tyrosine residues on various target proteins. It is implicated in controlling immune responses and regulating cell proliferation. A recent study reported that deletion of TCPTP rendered melanoma cells sensitive to immunotherapy. This suggests that the inhibition of TCPTP could be used to promote anti-tumor immunity in this type of cancer. However, the design of protein tyrosine phosphatase inhibitors can be challenging due to the potential adverse effects stemming from cross-reactivity with other phosphatases (PTPs). This project aims to determine a co-crystal structure of TCPTP and PTP-targeted inhibitors in order to identify unique intermolecular interactions that can be used to optimize TCPTP-targeted drug design. Here, we present the purification of recombinant TCPTP from a bacterial source. Briefly, the 6xHis-tagged recombinant protein was isolated from bacterial proteins using Ni-NTA affinity chromatography. The affinity tag was excised, and the tag-free protein was further purified by Ni-NTA affinity and size exclusion chromatography. Purified TCPTP will be used for crystallization screening and further structural analysis.

#21 Rocha-Flausino, Talita  
Biology

### **Characterization of the pigment of colored nectars of *Jaltomata* species using LC-PDA-MSn**

Several plant species of neotropical genus *Jaltomata* are found in the southwest United States and along the Andes mountains of South America. Many species of *Jaltomata* produce colored nectar that contains one or more pigment(s). Pigmented nectar is incredibly rare as there are only about eighty known species of plants that produce pigmented nectar. Recent studies suggest that the pigment which act as a visual cue for pollinators could be a conjugate of amino acid proline and sinapaldehyde named nesocodin. In this study, we investigated the effect of pH on nesocodin in nectar and developed a method for quantifying nesocodin in four species of *Jaltomata*, namely *J. quipuscoae*, *J. calliantha*, *J. weigendiana* and *J. antillana*. Nesocodin and nectar were dissolved every 0.5 pH point between pH 6.0 to 8.5 and analyzed using UV-visible spectroscopy. We observed a  $\lambda_{max}$  of 508 nm for nesocodin at an alkaline pH of 8.5. Both nesocodin, its precursor sinapaldehyde and nectar samples were separated using a ThermoFisher Accucore C18 column (150 × 4.6 mm × 2.6  $\mu$ m) using a pH 8.5 buffer and acetonitrile. The limit of detection and limit of quantitation for nesocodin were 9.3 and 28.6 ppm, respectively. Two out of four species *J. quipuscoae* and *J. weigendiana* showed the presence of nesocodin. Furthermore, a stability study on geocoding and on the nectars was performed. This is the first quantitative study of nesocodin in pigmented nectar.

#30 Shahzad, Rumman  
Computer Science

### **Exploiting the Absence of Authentication in ROS 1-Based Robotics Systems**

This project explores the lack of authentication in ROS 1 (Robot Operating System 1) environments by demonstrating a node injection attack in a real-time telerobotics project originally developed by Robotics Lab Graduate Intern Ryan Sharp. The system involves an ABB IRB 1200 industrial robot controlled via a VR controller that replicates human hand motions. Its architecture includes Unity (for capturing motion input), ROS 1 (as the middleware bridge), and RobotStudio (interfacing with the robot). In normal operation, “Alice” (a legitimate operator) sends VR inputs through Unity. These are passed to ROS 1 and received by RobotStudio over TCP/IP, where they are executed by the robot in real time. However, since ROS 1 lacks built-in authentication or node-level verification, “Trudy” (an adversarial actor) can inject a malicious ROS node into the network. This rogue node floods the ROS environment with spoofed motion commands, overriding Alice’s intended inputs. ROS 1, unable to verify source legitimacy, forwards all messages to the robot—making the system trivially vulnerable to node injection. This live demo underscores the fragility of unauthenticated ROS 1 deployments and calls for tighter security measures—such as publisher authentication, namespace isolation, and message integrity verification. As industries slowly migrate to ROS 2, systems relying on ROS 1 remain exposed to serious risks, especially when paired with other vulnerabilities like remote access.

#29 Shahzad, Rumman; White, Zerhye; Sheldon, Carter; Gjini, Gerti  
Computer Science

### **Automated 3D Airfoil Scanning with Industrial Robotics**

This project presents an enhanced proof of concept for automating the inspection of turbine engine airfoil blades using an ABB IRB 1200 robot and a FocalSpec high-resolution line scanner. Building upon a prior prototype, our team extended the system’s functionality with the goal of reducing human error in a process that demands micrometer-level precision. We developed routines in RAPID (ABB’s robot programming language) to automate the robot’s movement, enabling it to pick up an airfoil, align it with the scanner, and move it at a consistent speed for accurate scanning. Partial communication was established between the robot controller and a programmable logic controller (PLC) to synchronize motion with sensor activation—crucial for preventing scan distortion. Preliminary tests of the automated routine demonstrate reliable and repeatable robot motion, establishing the foundation for consistent scan data acquisition. We also began unifying previously separate control interfaces into a single C# application to improve usability and streamline future development efforts. This project represents a foundational step toward fully automated, high-precision airfoil inspection and sets the stage for future integration of scan merging and defect detection.

#28 Tranquilli, Nicholas  
Computer Science

### **ROS Robot Teleoperation API**

This is a team-based project for the course CS-498. Team members are: Nicholas Tranquilli (nicholast@my.ccsu.edu), Shah Qureshi (qureshi.s@my.ccsu.edu), Mark Rodriguez (mark.rodriguez@my.ccsu.edu), and Saif Rashid (saifrashid@my.ccsu.edu). This project proposes a proof-of-concept teleoperation API designed to unify the communication methods used across the robotics research group’s various projects into a single, intuitive interface. The prototype will focus on controlling an ABB IRB 1200 robotic arm using a stream of target coordinates. Built on the Robot Operating System (ROS2) and MoveIt, this system will enable real-time robot motion control and feedback. Development will occur primarily within a Linux virtual environment due to ROS2 compatibility requirements. The project requires the team to gain proficiency in ROS2, MoveIt, and both Python and C++. It will also include hands-on testing, both in simulation and on the physical robot. A key deliverable is thorough documentation covering API functionality, limitations, and guidelines for future expansion. By transitioning to a ROS2-based system, the research group aims to streamline communication

workflows and reduce the learning curve for incoming students, ultimately increasing productivity and collaboration across ongoing and future robotics projects.

#16 Villanueva, Jenna  
Biochemistry

#### **Optimization of Expression of Recombinant SHP-1 N-SH2 in Escherichia coli**

Src homology region 2 (SH2) domain-containing phosphatase-1 (SHP-1), also known as tyrosine-protein phosphatase non-receptor type 6 (PTPN6), is a protein that contains two tandem SH2 domains at its N-terminus. These SH2 domains bind phosphotyrosine (pTyr) residues using two binding pockets, one of which carries a positively charged arginine residue that binds directly to the negatively charged phosphate group. Previous studies with p120-RasGAP (Ras GTPase activating protein), a protein also containing two SH2 domains, identified that the canonical binding mechanism was used by the N-SH2 domain, but not the C-SH2 domain. To better understand how the SH2 domains in SHP-1 recognize their targets, we are interested in carrying out structural studies of N-SH2 and C-SH2 domains with previously identified binding partners. Such studies require large amounts of pure protein. Here, we present the optimization of the expression of recombinant SHP-1 N-SH2 domain. The adjustable parameters in this process involved the use of different strains of competent Escherichia coli, different expression induction temperatures, and different growth media.

## **Graduate Level Posters**

### ***Carol Ammon College of Liberal Arts & Social Sciences (CLASS)***

#33 McCall, Elizabeth  
Health Psychology

#### **It's Nothing New: Humanizing Consensual Non-Monogamy**

Consensual non-monogamy (CNM) encompasses relationship styles in which everyone consents to engage in multiple romantic or sexual relationships. Despite growing visibility, CNM relationships are widely misunderstood and carry stigma due to mononormative values. However, there remains a gap in effective interventions that reduce the stigma of this specific group. Existing research on debiasing techniques through context and exposure may help to reduce prejudice through increased empathy and understanding. While these interventions have been used for other minority groups, they have yet to be applied to the CNM population. This study aims to address this gap by evaluating the hypothesis that humanizing CNM relationships through historical, narrative-based exposure can help to reduce stigma and increase social perceptions.

Participants will be recruited through the Prolific crowdsourcing platform. This research will assess participants' beliefs about perceived sexual behaviors and the political legitimacy of CNM individuals before and after exposure to historical narratives. The experimental group for this study will be exposed to a narrative with biographical information about a CNM individual and the control group will not. To test the hypothesis that both groups will express more negative beliefs about the sexual relations of CNM individuals than monogamous individuals, I will be using a two-way mixed ANOVA analysis.

#32 Slater, Kaye

Psychological Science, MA

### **How Social Media Intensity Drives Financial Stress: The Mediating Influence of Negative Consumption Behaviors**

Existing research highlights that social media intensity (SMI) among Americans significantly correlates with negative consumption behaviors such as impulse, conspicuous, and compulsive buying (Pellegrino et al., 2022; Thourmrungrroje, 2018). As a result, failure of self-control over SMI increases the likelihood of consumers spending beyond their means which may spark financial stress among consumers (Achtziger et al., 2015). The study aimed to show an indirect relationship between SMI and financial stress, through mediation of the three negative consumption behaviors by applying Preacher and Hayes' (2008) bootstrapping method. Quantitative data was collected and analyzed from 126 participants identified as full-time undergraduate students in the United States. Approximately 76 participants were from Central Connecticut State University and recruited through SONA, while the remaining 50 participants were recruited through Prolific. Results showed no evidence of the hypothesized indirect effects. However, SMI predicted two of the three negative behaviors, such as impulse buying and conspicuous consumption, with impulse buying uniquely contributing to increased levels of financial worry. Evidence was not strong enough to show that SMI indirectly led to financial stress through negative consumption behaviors. Based on the data, researchers could examine various strategies to help students think critically before making a purchase when engaging with social media.

## ***School of Education & Professional Studies (SEPS)***

#34 Jacobs, Amanda

Master of Athletic Training

### **Ulnar Collateral Ligament Reconstruction in a Collegiate Baseball Catcher**

Background: A 20-year-old baseball catcher reported a “pop” in the medial right elbow after a throw from home plate to second base during a fall 2024 game. Diagnostic test revealed a negative x-ray and a positive MRI for a UCL rupture. A month of conservative treatment with rest, rehab, and anti-inflammatories was prescribed by the orthopedic surgeon. Surgery was performed in December 2024 utilizing a gracilis tendon autograft. Intraoperative findings included significant ulnar nerve entrapment, which was addressed by transposition. Treatment: Four weeks post-operative, the athlete presented with limited and pain free active elbow and wrist range of motion. Left hamstring tightness was noted at the graft site. Weeks 4–7: Wrist ROM, grip and shoulder strengthening, active-assisted elbow flexion. Weeks 8–12: advancing wrist & elbow ROM, Thrower's Ten program, elbow strengthening. Weeks 13–26: Advanced elbow ROM and strength, throwing interval program, upper extremity power and sport-specific drills. Uniqueness: This case is notable due to the athlete's position as a catcher—a role less commonly linked to UCL injuries—and his additional experience at third base with sidearm throwing mechanics. Conclusion: This case demonstrates the importance of early diagnosis and individualized, position-specific rehab. Athlete was highly compliant and dedicated to their recovery. Athlete is expected to make a full return to competitive play by fall of 2025.

#38 Larson, Joseph

Master science in athletic training

### **Achilles Tendon Repair of a Division I Collegiate Football Player**

Background: During football practice, a 22-year-old defensive cornerback sustained an Achilles tendon rupture. Physical examination demonstrated severe pain to the Achilles tendon, a “popping” sound/sensation was described, with a palpable gapping to the mid portion of the Achilles tendon. A positive Thompson test confirmed the suspicion of a complete Achilles tendon rupture. The athlete was provided with a controlled ankle motion (CAM) walking boot and crutches as ambulatory aids. Diagnostic imaging included X-ray and MRI. MRI results showed partial tearing of the proximal/mid Achilles tendon. Surgical options were discussed with the patient. Differential Diagnosis: Complete Achilles tendon rupture, Partial Achilles tendon rupture, Fascial Tear, Plantaris rupture, Achilles tendon strain, Calcaneus fracture. Treatment: Two weeks post-injury the athlete underwent surgical repair of the Achilles tendon. Post-op the athlete was casted and instructed to remain non-weight-bearing. Ten days post-op he was placed in a CAM walking boot and remained non weight bearing. Seven weeks post-op a gradual full weight bearing progression in sneakers with a heel lift was permitted. Rehabilitation sessions began five weeks post-op. Conclusion: An Achilles tendon rupture can be a season-ending injury for college athletes, due to the length of recovery. This athlete is on target for a full return to sport one full season following the injury.

#31 Santacroce, Maggie

M.S. Athletic Training

### **Osteochondral Defect of the Medial Femoral Condyle in a Division I Men's Soccer Athlete**

Background: During a match, a 20-year-old male soccer athlete sustained contact-related injury to the outside of his knee while attempting to make a pass. Initially diagnosed with a grade II MCL sprain and subsequent MRI revealed an osteochondral defect. He underwent several months of conservative rehabilitation without improvement. Physical exam demonstrated limited range of motion (ROM), positive McMurray's test, and point tenderness to the medial femoral condyle. Treatment: MRI readings conveyed osteochondral lesion 8 mm in size and fragmentation of cartilage. Surgery involved a microfracture procedure that required a non-weightbearing gait for four weeks. Initial rehabilitation focused on regaining knee ROM and quadriceps strength. Weeks 5 - 8 focused on increasing muscular strength and endurance. Weeks 9 - 12 introduced functional activity and a return to run program. Weeks 13 - 24 will gradually return the athlete to unrestricted functional activity dependent on pain-free movement with all exercises and passing return to play testing within normal limits. Uniqueness: The uniqueness of this case was the mechanism of injury. A forced valgus load created a medial osteochondral defect that was covered by a medial collateral ligament sprain. Conclusion: An osteochondral defect of the medial femoral condyle requires six months of rehabilitation with an additional one to two months for full cartilage maturation. The smaller size of the lesion enabled a faster recovery process.

#39 Tayler, Larisa

Master of Science Athletic Training

### **Anterior Cruciate Ligament and Posterolateral Corner Repair in a Division I Football Player**

Background: A 20-year-old offensive lineman sustained left knee injury during a game. Physical exam revealed positive Lachman's, positive varus stress tests, joint line edema, and significant abnormal swelling extending into the ankle and foot. On-field management included ice, compression, and immobilization. The athlete was transported to the emergency department for a suspected tibial femoral subluxation.

Treatment: MRI confirmed ACL rupture, PLC tear, lateral meniscus tear, and avulsions of the biceps femoris tendon and iliotibial band. Four weeks of pre-surgical rehabilitation, including a lymphatic pump



and kinesiotape, aimed to reduce swelling and restore range of motion. Pre-surgical goals were unmet. Surgery was performed with a bone-to-bone patella tendon autograft and tibialis anterior allograft. Post operatively, the athlete was non-weightbearing for 4-6 weeks while beginning rehabilitation. At week four, failure to achieve 90° flexion and 0° extension, along with arthrofibrosis, led to knee manipulation under anesthesia.

Uniqueness: Uniqueness is found in the ACL and PLC reconstruction surgery – accounting for only 10% of complex knee injuries – and post injury swelling raised concern for severe subluxation and ankle injuries.

Conclusion: Complex knee injuries can be season- or career-ending. The need for multiple surgeries complicate recovery. At 6 months post-op, the athlete advanced to functional rehabilitation.

## ***School of Engineering, Science & Technology (SEST)***

#36 DuBois, Micaela

STEM

### **STEM Survey**

STEM has been up and on the rise in the last decade as technology has advanced. This has greatly increased since the Covid-19 pandemic where technology was heavily relied on for communication, teaching, social interaction, work, etc. During the pandemic, if you weren't laid off you worked from home. People soon realized that their jobs can be completed outside of the office which has encouraged the job requirements to be STEM focused even if people didn't realize it. This very much seeped into the education world where STEM has become a primary focus in most schools. Educators may have mixed feelings about STEM based on their exposure to it.

This research study investigated the perspectives of elementary educators on STEM education along with their background. An anonymous survey with a rating scale was given to gauge their belief on STEM and experience with it. The results of this study could influence STEM being taught in schools and provide insight to change requirements for educators in the future.

#35 Duve, Ayla

STEM Education

### **Will the use of game-based learning supplement science skills for students in the middle school classroom?**

This study investigates the effectiveness of digital game-based learning, specifically using the platform Kahoot, to remediate basic science skills among 7th-grade students. The research focused on skills such as graph reading, analyzing charts, determining claims, and using evidence, which are not explicitly taught in the middle school science curriculum but are essential for success in later science assessments. One hundred and one 7th-grade students participated in the study, with at least 81 completing a pre and post assessment based on questions from the NYS Regents Grade 5 Science test. Students were divided into two groups: one group used Kahoot for science skill practice, and the other received regular curriculum instruction. Data collection involved a pre-assessment and post-assessment consisting of 20 questions focusing on graphs, charts, diagrams, claims, and evidence. Initial results indicate an overall improvement in student scores from the pre-assessment (mean: 8.76, standard deviation: 3.26) to the post-assessment (mean: 11.43, standard deviation: 3.87). This suggests that digital game-based learning may be a viable tool for reinforcing basic science skills in the middle school classroom.

#37 Oquendo, Monica

Master of Science: STEM Education

**Which of two mathematical concepts review processes used as part of an Engineering Design class can help students better understand and use Computer Aid Design (CAD) programs in class?**

The definition of engineering that best aligns with my experience is the systematic application of scientific knowledge, math, and empirical evidence to design and improve technology for societal benefit. This philosophy guides the Engineering Design curriculum at Manchester High School (MHS), where students explore industry-relevant tools like SolidWorks (CAD) and 3D printing as part of the Engineering Design Process. Over six years of teaching grades 9–12, I observed students often struggle with the mathematical concepts required to use CAD effectively. This led to the question: What is the most effective way to review math concepts to support CAD learning? To explore this, I divided three classes into two groups. Both completed identical math exercises—Group 1 worked collaboratively, while Group 2 worked independently. Afterward, both groups took the same test and completed a voluntary survey to assess their confidence and experience. Results showed no significant difference in average test scores between the groups. However, students across both groups reported increased confidence in using CAD following the math review. This suggests that while group style may not impact performance, reviewing key math concepts beforehand helps students feel more prepared and confident in applying CAD tools.

## Oral Presentations (Undergraduate and Graduate)

### School of Engineering, Science & Technology

#### Location: Philbrick Room 120

1:00 - 1:15 pm

Joshua Plaag (Mathematics)

**Structured Disorder: Chaotic Dynamics from Minimal Nonlinear Systems in Three Dimensions**

We investigate chaotic behavior in three-dimensional systems of nonlinear ordinary differential equations while restricting our analysis to systems with minimal nonlinear terms. Through the use of analytical techniques and numerical simulations, we identify key structural features that allow chaotic behavior in such systems, and demonstrate how relatively simple models can result in complex and seemingly nonperiodic motion in phase space. This irregular yet still deterministic behavior finds applications in fields such as chemistry, meteorology, and signal processing.

1:20 - 1:35 pm

Brody Desouza (Chemistry and Biochemistry)

**Synthesis and Characterization of Amino Acid Decyl Esters as Prebiotic Vesicles**

The creation of protocell models help to provide understanding of what prebiotic life may have looked like and serve as models for experimentation. Therefore, creating a model cell accounting for biomolecules found in prebiotic settings is crucial. Using decanol, a known vesicle/membrane former, and various combinations of amino acids, which esterify to form membranes, vesicles can be created. Vesicles can be observed through various means with microscopy as a key method of analysis. The use of UHPLC-MS as means of confirming decyl ester products is also employed. Overall, the research provides some foundational insight into what prebiotic vesicle structure compositions could be.

1:40 - 1:55 pm

Jason de la Cruz (Chemistry and Biochemistry)

### **Characterization of Phenolics of Three Species of Jaltomata Fruits using Ultra High Performance Liquid Chromatography – Tandem Mass Spectrometry**

Jaltomata is a South American genus that is a member of the Solanaceae family. The fruits of various species of Jaltomata are consumed in the United States and in South America. However, there is little or no information available on the nutritional value of Jaltomata fruits. Fruits from different species of Jaltomata are of different colors and sizes. Phenolic compounds are common in fruits which provide nutritional value and have antioxidant properties. Due to this genus's unique phytochemical profile, in this research, we aim to perform a comprehensive metabolites characterization from fruits of three species of Jaltomata, namely *J. quipuscoa*, *J. grandiflora*, and *J. weigendiana*. Fruit tissues were pulverized to a fine powder using liquid N<sub>2</sub>, extracted using methanol with butylated hydroxyanisole as an internal standard, sonicated and centrifuged. Supernatants were collected, syringe filtered and analyzed using ultra high performance liquid chromatography with tandem mass spectrometry (uHPLC-MS/MS). Photodiode array data were normalized using BHA signal. MS and MS/MS profiles were compared to analyzing the traits. Extraction durations of 30 minutes and 24 hours were employed to understand the efficiency. Longer extraction times led to the detection of larger compounds across all three species. We observed a common fragment with a *m/z* value of 381.11 to be present in all three species with both extraction conditions.

2:00 - 2:15 pm

Evan Avery (Chemistry and Biochemistry)

### **Design of a chiral primary amine for use in the resolution of racemic aldehydes/ketones**

Chirality is a cornerstone of organic and pharmaceutical chemistry, as the biological and toxicological effects of certain enantiomers require the production of enantiomerically pure compounds. This study looks at a chiral reagent to selectively resolve enantiomers. Specifically, to create a chiral reagent capable of efficiently converting racemic mixtures of aldehydes and ketones into separable diastereomeric derivatives. The chiral precursor to this reagent, 11,11-dimethyl-6-nitro-1,2,3,4-tetrahydro-1,4-methanophenazine, was synthesized via reflux with glacial acetic acid and purified using column chromatography, recrystallization and vacuum filtration. Characterization by <sup>1</sup>H NMR and TLC revealed that the high-purity (1*R*,4*S*) enantiomer was isolated at a low yield (11.2%), while the remaining product was predominantly racemic (88.5% (1*S*,4*R*) and 11.5% (1*R*,4*S*), 21.8% yield). These preliminary findings suggest that further methodology and purification optimization are necessary. They also reveal the potential of our approach to develop a reusable resolving tool, paving the way for more efficient production of enantiomerically pure compounds in pharmaceutical applications.

2:20 - 2:35 pm

Avion Valentin (Chemistry and Biochemistry)

### **Synthesis of Chlorine and Bromine Quinoxalines Crystals**

This experiment involved the synthesis of chlorine and bromine quinoxaline crystals and studying their structure and bonding before and after combining them with silver nitrate (AgNO<sub>3</sub>). Once the compounds were synthesized, an IR spectra was taken of the all samples, while a <sup>1</sup>H-NMR and <sup>13</sup>C-NMR spectra was taken of the non-silver samples. The results show the synthesis of a 2-(5'-bromothien-2'-yl)-6,7-dibromoquinoxaline and 2-(5'-bromothien-2'-yl)-6,7-dichloroquinoxaline.

## **Carol Ammon College of Liberal Arts & Social Sciences**

### **Location: Sprague Carlton Room**

1:00 - 1:15 pm

Giovanni Mason-Brookes (Art)

#### **Willard L. Metcalf's Anti-orientalist Painting: Jewish Girl, Tunis**

Willard L. Metcalf (1858-1925), an American Impressionist known for his landscape paintings, is less known for his Orientalist paintings. In 1887, he depicted life in North Africa, specifically Tunisia and Algeria. Metcalf's Jewish Girl, Tunis, raises questions about his motives for depicting this specific model. Who was this girl? Why did Metcalf travel to North Africa? As an American who studied in Paris, Metcalf absorbed French Orientalism. Whereas the French painters viewed North Africans through an imperialist and sexualized lens, Metcalf looked to the Orient with curiosity. Although he employed his classical French training to paint Jewish Girl, Tunis, and strove to be featured in the Paris Salon, Metcalf rejected French Orientalist and antisemitic beliefs. Instead, Metcalf rendered his Jewish Girl, Tunis with sympathy and an apparent lack of bias.

1:20 - 1:35 pm

Ardyn Lezak (Criminal Justice)

#### **Mass Shooters: Understanding the Relationship Between Prejudice, Firearm Choices, and Victim Count**

In the past decade, mass shooting incidents have become more prevalent in the United States. As the problem continues to grow, more research is necessary to identify demographic, personality, and contextual characteristics associated with perpetration. The current study intended to investigate how perpetrators' prejudicial beliefs may be related to victim count and weapon choice. This study relied on the Violence Project Mass Shooter Database Version 6.1 (Peterson & Densley, 2022) to analyze the relationship between prejudicial beliefs, firearm characteristics, and victim count (both injured and killed). The results of this study found that the number of firearms, the type of firearms, and prejudicial beliefs have a statistically significant relationship with victim count, respectively. Further, assault firearms serve as a partial mediator to the relationship between prejudice and victim count. These findings contribute to the body of research concerning mass shootings and suggest policy implications regarding firearm legislation, raised awareness and prejudice-based education.

1:40 - 1:55 pm

Tha May Paw (Communication)

#### **The Impact of Technology and Environmental Factors on the Mental Health and Perceived Loneliness of College Students**

Loneliness among college students is a growing concern, with significant implications for mental health. According to the American Psychological Association, over 60% of college students reported experiencing at least one mental health issue during the 2020–2021 school year. Research has established a strong connection between loneliness and negative mental health outcomes. As artificial intelligence (AI) becomes a part of students' lives by means of social media, academic tools, and other digital platforms, it is important to examine its role in shaping mental well-being.

2:00 - 2:15 pm

Samantha James-Brown (Psychology, Graduate)

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Socioeconomic status (SES) is thought to be a combination of education, income, and job. At extremes, it may be easy to determine high or low SES, but the reality is much more nuanced as people with advanced degrees can earn much less than people with lesser education, such as a therapist with a master's degree making \$50,000/year and a nuclear power reactor operator with a general equivalency diploma making \$100,000/year. A total of 284 participants were recruited via Prolific and by direct invitation from a curated list of published authors on topics in SES. A conjoint design was used to compare randomized side-by-side combinations of the three indicators, and participants were asked to decide which person had the higher SES. Our research questions probe which factors matter most and found, as predicted, that income held the most weight for non-academic participants, followed by education and then job. However, our remaining results were inconsistent with our predictions. We found that all academic participants, not just economists, favored income the most and surprisingly, academics valued education significantly less than non-academics. No differences were noted in the prioritization of income between academic and non-academic participants and no evidence was found that people tend to favor the SES traits they hold. This complexity contributes to a bigger conversation about what makes up SES, and our findings suggest that income is the predominant factor.