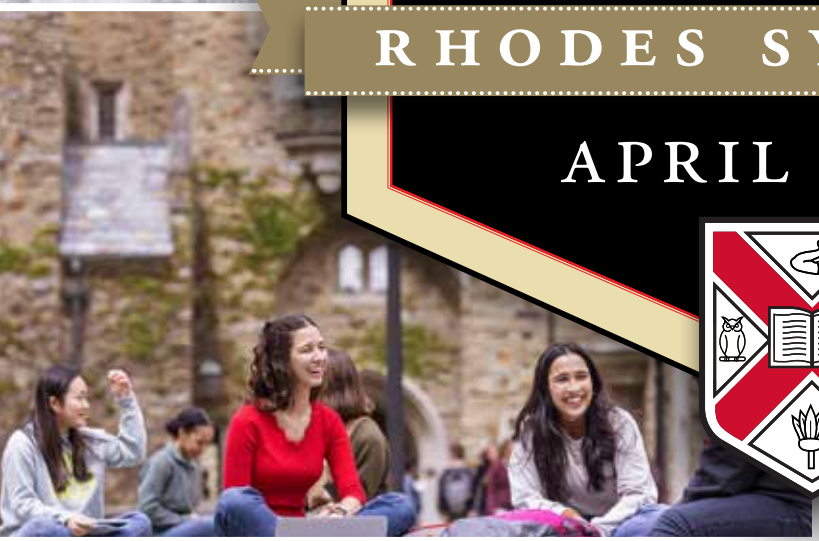




CELEBRATING THE LIBERAL ARTS

RHODES SYMPOSIUM

APRIL 28, 2023





CELEBRATING THE LIBERAL ARTS
RHODES SYMPOSIUM
APRIL 28, 2023

SCHEDULE BY DIVISION

TIME	ROOM	SESSION TITLE	DEPT/PROGRAMS
FINE ARTS			
11:00 – 12:45	Hassell 100	Art History & Music	Art & Music
Oral Session			
1:00 – 1:50	Tuthill Recital Hall	Songs by Women Composers	Music
2:00 – 2:50	Barret Library 034	Media Studies Showcase	Media Studies
3:00 – 4:30	Tuthill Recital Hall	The Cauthen Competition	Music
HUMANITIES			
11:00 – 12:00	Southwestern 207	Africana Studies	Africana Studies
11:00 – 12:00	Buckman 200	Rhodes Historical Review	History
11:00 – 12:15	Southwestern LLC	Spanish I	Modern Languages
12:30 – 1:30	Southwestern 207	Humanities	Russ/Anc. Med./Engl
12:30 – 1:30	Buckman 200	History	History
12:30 – 1:45	Southwestern LLC	Spanish II	Modern Languages
1:30 – 2:00	Buckman 200	History Honors	History
2:00 – 3:15	Southwestern LLC	Spanish III	Modern Languages
3:30 – 4:30	Southwestern LLC	German	Modern Languages
NATURAL SCIENCE			
11:00 – 12:15	Frazier Jelke-B	Physics	Physics
11:00 – 12:15	Robertson 110	Computer Science I	Computer Science
12:30 – 1:30	Frazier Jelke-B	Biology / Chemistry	Biology / Chemistry
12:30 – 1:30	Robertson 110	Computer Science II / Math	CS / Math
SOCIAL SCIENCE			
11:00 – 11:45	Clough 204	Social Sciences	Bus/Ed. Stud/Psych
12:30 – 1:30	Clough 204	ANSO / IS	ANSO / Intl Studies
2:15 – 3:15	Buckman 200	Econ I	Economics
3:30 – 4:30	Buckman 200	Econ II	Economics
POSTERS			
1:00 – 2:30	BCLC Multi Sports	Poster Session I	
2:30 – 4:00	BCLC Multi Sports	Poster Session II	

LLC = Language Learning Center

Rhodes College

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APRIL 28, 2023

SCHEDULE BY BUILDING

BUILDING	TIME	ROOM	SESSION TITLE
Barret Library	2:00 – 2:50	034 Barret Basement	Media Studies Showcase
Buckman Hall	11:00 – 12:00	200	Rhodes Historical Review
Buckman Hall	12:30 – 1:30	200	History
Buckman Hall	1:30 – 2:00	200	History Honors
Buckman Hall	2:15 – 3:15	200	Economics I
Buckman Hall	3:30 – 4:30	200	Economics II
Clough Hall	11:00 – 11:45	204	Social Sciences
Clough Hall	12:30 – 1:30	204	ANSO & International Studies
Frazier Jelke	11:00 – 12:15	Lecture Hall B	Physics
Frazier Jelke	12:30 – 1:30	Lecture Hall B	Biology / Chemistry
Hassell Hall	11:00 – 12:45	100	Art History & Music
Hassell Hall	1:00 – 1:50	Tuthill Recital Hall	Songs by Women Composers
Hassell Hall	3:00 – 4:30	Tuthill Recital Hall	The Cauthen Competition
Robertson Hall	11:00 – 12:15	110	Computer Science I
Robertson Hall	12:30 – 1:30	110	Computer Science II / Math
Southwestern Hall	11:00 – 12:15	Southwestern LLC	Spanish I
Southwestern Hall	12:30 – 1:45	Southwestern LLC	Spanish II
Southwestern Hall	2:00 – 3:15	Southwestern LLC	Spanish III
Southwestern Hall	3:30 – 4:30	Southwestern LLC	German
Southwestern Hall	11:00 – 12:00	207	Africana Studies
Southwestern Hall	12:30 – 1:30	207	Humanities
Bryan Campus Life Center	1:00 – 2:30	Multi Sports Forum	Poster Session I
Bryan Campus Life Center	2:30 – 4:00	Multi Sports Forum	Poster Session II

LLC = Language Learning Center

Rhodes College

April 28th Events

- Awards Convocation: 9:30 a.m., McCollum Ballroom, Bryan Campus Life Center
- Oral Presentation Sessions: 11:00 a.m. – 4:30 p.m., various locations
- Poster Session I: 1:00 p.m. – 2:30 p.m. Multi-Sports Forum of the Bryan Campus Life Center (snacks and refreshments provided)
- Poster Session II: 2:30 p.m. –4:00 p.m. Multi-Sports Forum of the Bryan Campus Life Center (snacks and refreshments provided)

Acknowledgements and Special Thanks

- Communications – Rhodes Symposium program cover design, flyers, and program schedule
- Dr. Natalie Person, Office of Academic Affairs – leadership and support
- Kate Collier-Cissoko, Math/CS/Physics Admin – catering, reservations, planning and coordination
- Anna Littleton, Rhodes Student Associate for Fellowships – program creation, coordination, approvals, Qualtrics wrangling, and communication

Rhodes Symposium Planning Committee

- Dr. Brian Larkins, Department of Computer Science, Director of Fellowships and Undergraduate Research
- Professor Karl Erickson, MFA, Assistant Professor, Department of Art & Art History
- Dr. Qian Shen, Assistant Professor, Department of Biology
- Dr. Bruno Badia, Assistant Professor, Department of Economics
- Dr. Brooke Schedneck, Assistant Professor, Department of Religious Studies

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(F) Rhodes Fellowship

FINE ARTS ORAL SESSIONS

Art History / Music
11:00 am – 12:45 pm
Hassell 100
Moderator: Max Dixon

11:00 – 11:20 Giving Human Form to the Buddha: Investigating the Confluence between the Development of Mahāyāna Buddhism and Greco-Roman Reception in Gandhāra
Woo Wade
Faculty Sponsors: Miriam Clinton, Department of Art & Art History
The human image of the Buddha profoundly impacts how people today visually digest, understand, and practice Buddhism. However, when the religion emerged over 2500 years ago, the first Buddhist artists deliberately chose not to represent the Buddha's human-likeness. This initial aniconism prompts historians to search for the reasons why the transition to human representation took place around the first century of the common era in northwestern India and Pakistan. Scholars propose that the development of new schools of Buddhism, specifically Mahāyāna Buddhism, encouraged human figuration. Other scholars argue that these doctrinal developments were not enough to prompt this transition alone, but rather, Greco-Roman influence in the Gandhāra region provided an inspirational model for the creation of a newly anthropomorphized Buddha. This paper does not dispute either theory but instead posits that both approaches are needed to make sense of the appearance of the human Buddha. Through thorough studying of Mahāyāna belief and its development, historical contextualization of the Greco-Roman influence in Gandhāra, and visual analysis of some of the first images of the Buddha, this paper will explain why neither viewpoint is incorrect and how combining both theories creates a more robust understanding for this historical development in Buddhist art.

(F) 11:20 – 11:40 The Tombs of Mouliana Sellades
Izzy Brewer
Faculty Sponsors: Miriam Clinton, Department of Art & Art History
As a Turley Scholar, I have assisted Dr. Miriam Clinton in researching the two Mouliana Sellades warrior graves in East Crete. The tholos tombs date to the Late Minoan IIIB and IIIC periods and contained both buried and cremated individuals along with pottery, jewelry, bronze and iron swords, and a gold death mask. They were first excavated by archaeologist Stefanos Xanthoudidis, but his preliminary publication included only one drawing of Tomb A. Dr. Clinton and I have created three dimensional models of each tomb to better document and analyze their architecture, which follows the typical blending of Minoan and Mycenaean influences found in the transition from the Bronze Age to the Iron Age. These models were built from photogrammetry scans Dr. Clinton performed in the field, which produced data points I could then adjust and use to create layers to produce the final models. We hypothesize that the contrast between the rather unremarkable architecture and the variety of grave goods indicate that the tombs are a part of a larger cemetery that served a wealthy community yet to be excavated, and the models I created are the first step in properly documenting ancient architecture and making it accessible digitally.

11:40 – 12:00 Augustus to Lorenzo de Medici: Roman Cameos in the Renaissance
Elizabeth Griffin
Faculty Sponsors: Miriam Clinton, Department of Art & Art History
The crucial role that gem cameos played in the political schemes of both antiquity and the Renaissance is often overlooked. Cameos are best remembered as expensive collectors' items or viewed as a small component of the overarching propaganda programs; however, evidence would suggest that these assumptions are incorrect. Imperial propaganda in antiquity existed in both the public and the private spheres to bolster the emperors' image and solidify his legacy. These ancient gems became sought-after items for collectors in the Renaissance and later periods and are often found to be the most expensive and extravagant items one could purchase. For modern scholars, it is beneficial to study these cameos to understand how they shaped and informed the generations that followed the Roman era. For example, Lorenzo de Medici, an avid antiquarian, had many of the cameos in his collection stamped to assert his ownership over the ancient objects, forever altering the way they are received and influencing the people in his own private realm of authority. Among other methods, cameos were a large part of the way that Lorenzo sought to connect himself with ancient authority, especially the legacy of Augustus.

12:00 – 12:20 The People, Organizations, and Initiatives Furthering Memphis' Presence in the Music Industry in 2022 and 2023
Jared Smith, Interview Participants: Elizabeth Cawein, Gunter Gaupp, and Raneem Imam
Faculty Sponsors: Vanessa Rogers, Department of Music
Memphis has, oftentimes, been referenced as a music city when examining its history. Iconic artists who have found great success in the music industry have called Memphis home, like Elvis Presley, Aretha Franklin, and B. B. King. However, many of these iconic names have passed away. For my project, I chose to research Memphis' contributions to the music industry in the present day. During this research, I gathered information on both local and mainstream musicians calling Memphis home and the success they have found in our city and beyond by observing interviews and conducting my own. Additionally, I researched the programs, organizations, and initiatives using music as a means of unification within Memphis and offering resources for local musicians pursing their careers.

(F) 12:20 – 12:40 Community Connections Through the Arts at the Refugee Empowerment Program
Raven Baker, Tierra Hobbs, Brianna Rempe, and Jared Smith
Faculty Sponsors: Vanessa Rogers, Department of Music
Through the Henry Turley and Lainoff Fellowship programs, four fellowship students from Rhodes College have been able to bolster fine arts education and art therapy in a local immigrant community. At the Refugee Empowerment Program, a non-profit dedicated to serving the children of immigrant and refugee families through after-school programs, we created a weekly, in-person music and art club for elementary-aged students. This community-engaged fellowship addresses the disparities that many school-aged children face in the greater Memphis area, like the lack of fine arts opportunities during the school day. Our goals have been to teach children to be musically literate and to help them discover how to express themselves both through art and music, as the arts deeply touch communities and shape lives. With the music and art club, we promote the REP's (and Rhodes College's) goals of assisting our community, building ties between different groups, and creating a culture of "Health Equity, Human Flourishing, and

Well-Being through the Public Humanities". This presentation will address the many ups and downs we faced during our community service fellowship project this year and ways we believe will improve our mission and efforts in the future.

Songs by Women Composers
1:00 – 1:50 pm
Tuthill Recital Hall in Hassell Hall

Media Studies Showcase
2:00 – 2:50 pm
Barret 034
Hosted By: Priscilla Foreman
Faculty Sponsors: Joy Brooke Fairfield and Rashna Richards, Department of Media Studies
Please Join us for a curated screening of short films, video essays, and digital art made in various MST classes throughout the academic school year. Using the visual medium, student creatives communicate powerful, diverse stories and perspectives that crave to be shared.
Talk Back to Follow.

The Cauthen Competition
3:00 – 4:30 pm
Tuthill Recital Hall in Hassell Hall

HUMANITIES ORAL SESSIONS

Rhodes Historical Review
11:00 am – 12:00 pm
Buckman 200
Moderator: Patsy Wardlaw

11:00 – 11:15 The Other Hussite Revolution: The Evolution of Secular Law in Bohemia
Matthew Bishop
Faculty Sponsor: Sarah Ifft Decker, Department of History
This paper investigates the development of the Bohemian legal system throughout the 15th century, focusing on the direct impact of the Hussites, a hole within the sparse legal historiography of medieval Bohemia. Often over the course of the history of the kingdom of Bohemia, the nobility and the crown clashed over the nature of the law, with the Bohemian nobles and the high court reigning supreme across the nation. However, the arrival of Jan Hus changed everything, creating a religious and social movement that would rock Bohemia and change it forever. Even if his lasting legacy lies in his proposed religious reforms and critiques of ecclesiastical authority, Hus' teachings also challenged secular authority in Bohemia, arguing against the established social order, supporting the common man, and sowing the seeds for rebellion.. After Hus' death, the Hussites and the resulting period of anarchy, influenced by his ideals, would transform Bohemian society and legal culture, culminating in the very first Bohemian law code: the 1500 Code of Vladislav.

11:15 – 11:30 Salty Spinoza: Baruch Spinoza's attack on Rabbinical authority in the Theological Political Treatise
Madeline Mehok
Faculty Sponsor: Sarah Ifft Decker, Department of History
The Theological Political Treatise by Baruch Spinoza is one the most influential texts of the Enlightenment. This essay focuses on a less researched area of the Treatise: Spinoza's Jewish past and its influence on the text. Focusing on Spinoza's views on rabbinical authority, the essay argues that the Theological Political Treatise is largely a personal rejection by Spinoza of his Jewish roots. Historical context about the role of rabbinic authority in Judaism, Spinoza's personal life, as well as history of his former Talmud Torah Sephardic Amsterdam community are given to show that Spinoza's rejection comes directly due to his past influences. The first part of the essay is giving historical context of traditional Jewish law regarding rabbinic authority, of the Talmud Torah's former conversos rejecting rabbinic law, of Spinoza's education and cherem and of the Treatise itself. The second part deals with Spinoza's different attacks in the Treatise, including those on the idea of Jewish Choseness, on scriptural interpretation, on rabbinical knowledge of Hebrew, against the views of Maimonides and by his use of the word Pharisee.

11:30 – 11:45 Catholic Clergy in Memphis: Reconstructing Yellow Fever Relief Efforts
Anna Johnson
Faculty Sponsor: Sarah Ifft Decker, Department of History
In 1878, Memphis, Tennessee was the epicenter of a severe yellow fever epidemic which prompted the exodus of over half of its population. Among those left behind in the city was a stronghold of Irish Catholics whose clergy sheltered and cared for fever victims. Unsurpassed in

service and sacrifice, the efforts of the Catholic clergy made them an indispensable source of relief. Despite their dedication, praise for these Catholic leaders was largely withheld from scholarship in the years following the epidemic. This lack of acknowledgment was likely due to the strong anti-Irish Catholic sentiment pulsing throughout the United States, including Memphis, at the time. Consequently, the memory of yellow fever in Memphis must be reconstructed with Catholic clergy centered in the discussion of care. The goal of this paper is to reassess Catholic involvement in the epidemic by providing a history of the Father Matthew Camp, a Catholic relief center located just outside of Memphis during this period. Using the story of the innerworkings of the Father Matthew Camp and the clergy who served there, I will explain how their work is reflective of the spirit of Catholic charity felt throughout the Memphis area during the 1878 yellow fever epidemic.

11:45 – 12:00 The Civil War's Dirty Legacy: Ivory Soap's Use of Racial Advertising
Samuel Cross
Faculty Sponsor: Charles McKinney Jr, Department of History
Ivory Soap, rising to dominate the market during reconstruction following the American Civil War, was built on the strained racial tensions of the time. Playing on the segregationist policies and the indigenophobia of 19th and 20th century America, Procter and Gamble was able to carve out a niche in the hygiene market that they would dominate into the modern age. Procter and Gamble's most successful advertisements would play on the notion of the pure white bar of soap "civilizing" the primitive natives and saving them from their backward traditions. African Americans would also consistently appear in advertisements in subservience to the owners of Ivory Soap creating a juxtaposition between the pure white individual and the African American. These advertising techniques would evolve with the changes in racial tensions in America with anti-indigenous advertising being more prevalent during westward expansion and anti-black advertising more common just prior to the civil rights movement. By studying these trends Ivory Soap marketing provides a picture of the shifting racial tensions in America during the 19th and 20th centuries and demonstrates their ability to persist beyond the civil rights movement with remarkably similar language still appearing going into the 21st century.

History
12:30 – 1:30 pm
Buckman 200
Moderator: Anna Johnson

(F) 12:30 – 12:45 Summer 2022's Work at Stax Museum of American Soul Music
Frank Allan
Faculty Sponsor: Robert Saxe, Department of History
For my summer fellowship at Stax Museum, I primarily worked with database transferring and cataloging the Bob Abrahamian collection of American soul music. I helped with the database transfer process by locating old images and file paths and matching them with their correct versions on the list that is to be sent over to the new database system. A lot of these images were in incorrect places, or they were matched with the wrong name, so I went through and did the best I could to correct these errors so that the transfer could be smoother. The second half of my fellowship was focused on the Bob Abrahamian collection of American soul music, which is a massive collection consisting of thousands of vinyl records, 45's, and studio recordings. My job

was to help Leila develop a cataloging guide to make the ensuing process of organizing these records as uniform and efficient as it could be. This process included alphabetizing and taking pictures of the records so that they could be matched with a file path that will be used to find that record in the new database. I also helped make sure that the information on Excel, like artist's name, year of release, and album names, were correct and in the right order. The work I did at Stax was incredibly useful and enjoyable, and I learned a lot about the little things that increase efficiency and go into making Stax a special place.

(F) 12:45 – 1:00 History Summer Fellowship at Memphis Museum of Science and History
Bonnie Kennedy
Faculty Sponsor: Robert Saxe, Department of History
Last summer, I completed an internship at the Memphis Museum of Science and History in the Exhibits department. It was a very rewarding experience. Initially, I helped my supervisor collect information on the Pink Palace Crafts fair for an exhibit celebrating its 50th anniversary. I looked through old photo albums for interesting pictures and newspapers for interesting dates. I also collected visitor evaluations from people visiting MoSH's newest exhibit called Memphis Proud, an exhibit on Memphis's LQBTQ history. It was so great hearing how much the exhibit meant to people who felt represented in the display. Additionally, I researched the history of South Memphis. Another intern focused on South Memphis's more recent history as I focused on the earlier stories. I loved collaborating with the other student as we both discovered so much about the city. I learned so much about the foundation of Memphis that I never knew. For instance, Memphis and South Memphis were initially two different towns each with their own charters. However, they eventually joined together to consolidate their power to build the Memphis-Charleston Railroad project in 1850. I learned about the now forgotten Fort Pickering which once attracted many people to Memphis before it was destroyed. My research also focused on the horror stories of the 1866 Memphis Massacre and the Yellow Fever epidemic of 1878. Overall, I had a great experience as an intern at MoSH. I could not have asked for a better supervisor than Dorothy. This fellowship was an amazing opportunity.

(F) 1:00 – 1:15 Lainoff History Summer Fellowship at MoSH
Salma Abdulrahman, Bonnie Kennedy, Chiara Torrini, and Frank Allan
Faculty Sponsor: Robert Saxe, Department of History
This summer I was able to participate in research at the Museum of Science and History under the exhibitions department. I spent my time at the museum doing preliminary research for an upcoming project that would be focusing on the history and culture of South Memphis. Through primary and secondary research, I was able to create an extensive timeline of events and a detailed list of notable people from South Memphis. Our timeline looked at the history of this region as early as the sixteenth century and up to the twenty-first century. This opportunity allowed me to dig deep into the political and cultural history of a community not far away from Rhodes College.

(F) 1:15 – 1:30 History Summer Fellowship in Collections at the Memphis Museum of Science and History
Chiara Torrini, Frank Allan, Bonnie Kennedy, and Salma Abdulrahman
Faculty Sponsor: Robert Saxe, Department of History
Small items can have complex and interesting histories. Through my internship at the Memphis Museum of Science and History this summer, I was able to study objects most people would never look twice at—like an antique cornbread pan—to understand more about Tennessee at the turn of the 20th century. I researched items from MoSH's 'Country Store' exhibit, and learned about the stories of common American foods like cornbread and apple pie as well as manufacturing towns and companies that produced the cookware used in the late 1800s. This internship was a valuable experience for working with museum collections and learning to summarize academic research about artifacts into easily digestible descriptions for the public. These items coincided with many significant changes in American society, like the rise of industrial manufacturing, urbanization, and the women's rights movement, and I became very interested in how changes in the kitchen implements impacted the lives of the women who used them to provide for others. This experience was a useful way to think about such abstract concepts from the experience of holding an old iron in my hands.

History Honors
1:30 – 2:00 pm
Buckman 200
Moderator: Dr. Tait Keller

(F) 1:30 – 2:00 "'The grevaunce that wymmen han in beryng of theire chieldren:' Emotion and Women's Childbirth Rituals in Late Medieval England"
Patsy Wardlaw
Faculty Sponsor: Sarah Ifft Decker, Department of History
In late medieval England (ca. 1300-1500 CE), women utilized rituals during pregnancy and labor to assuage their anxieties and fears associated with childbirth. These rituals include birth girdles, medical practices, oral charms, and lapidary obstetrical talismans. The goal of the thesis is to understand this broader birth ritual tradition, aiming to demonstrate that multiple rituals were used in tandem with one another by parturient women and explore the emotional importance of rituals as anxiety-easing tools. The thesis also contextualizes these birth rituals within a rich global tradition, with a particularly strong connection to Arabic medicine developed concurrently in the Islamic world. The rituals, when positioned in a global framework, challenge the idea of medieval England as insular. The thesis utilizes a breadth of primary texts and material objects: medical texts such as the Trotula and the Sickness of Women; charms; birth girdles; and images of the stones. Prayer rolls—Takamiya MS 56, Wellcome Collection MS 632, and Wynkyn de Worde's printed birth girdle—are found digitized or in print. Images of amulets and charms are sourced from secondary source material. This research was made possible thanks to the Ruyl Fellowship in Global History, as well as the Rhodes College Department of History.

Spanish I
11:00 am – 12:15 pm
Southwestern Language Learning Center
Moderator: Madeline Pye

11:00 – 11:15 Exploring Ecological Justice and Decoloniality in Frontera Verde
Luke Chozick
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
Frontera verde (2019) is a Colombian Netflix series that depicts the investigation of mysterious femicides in the Amazon rainforest near the Colombia-Brazil border. The show initially follows Helena Poveda, an investigator from Bogotá, but expands its scope as the investigation and the story unfold. The expansion of the narrative introduces a variety of perspectives including the local police, loggers, narcotraffickers, various indigenous communities of the Amazon, and Joseph, a German living in the Amazon. While the show is categorized as a crime/thriller, it also delves into themes of individual and group identity and systemic violence through its exploration of these diverse characters, with particular attention paid to the concept of relationality with nature and responses to threats to the natural environment (the forest). This study analyzes the diverse ways the characters position themselves in relation to the forest and how this positioning impacts their response to threats of environmental violence and destruction. This analysis dialogues with Walter Mignolo and other thinkers to address the presence and the danger of western, colonial thinking within environmentalism and seeks to identify alternative, decolonial ways for humans to think about and relate to the natural world and each other.

11:15 – 11:30 Pyschosociological Interpretations of Mexican Identity in the Works of Octavio Paz and Gloria Anzaldúa
William Sarahan
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
In a collection of essays titled El laberinto de la soledad (1950), Octavio Paz describes in detail his definition of the collective national Mexican psychological identity. Through analysis of historical events, contemporary culture, and his own personal observations, Paz argues that the Mexican individual shares with his compatriots common psychological troubles that define the nation as a whole. His work spans the history of Mexico, from pre-colonial times to Mexican independence to the 20th century, attempting to link these distinct time periods by one continuous cultural and psychological thread. Chicana author Gloria Anzaldúa, on the other hand, uses her own personal experience as a Chicana, queer woman to propose in her book Borderlands/La Frontera: The New Mestiza (1987) the idea that as a result of intersectionality, the myth of a collective Mexican culture solely works to isolate those who do not fit the mold. Through analysis of these texts in connection to psychological behavioral theory and sociological role theory, in particular learned helplessness and role strain, this investigation attempts to provide a psychological and sociological framework for a comparative reading that revisits Paz's and Anzaldúa's concepts of identity and intersectionality.

11:30 – 11:45 Leveling The Playing-Field: Quevedo's Pícaro Don Pablos and His Critique of Baroque Spain From Below

Spencer Smith

Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures

Within Spanish literary studies, the picaresque genre has become a well-researched area among academics interested especially in the relationship between the pícaro, or the titular figure, and their community. The present body of academic work on the genre places a specific emphasis on the pícaro character´s actions as reflective of imposed societal expectations and cosmovisions. This investigation examines an exception to this stereotypical perspective of the picaresque through the analysis of the pícaro Don Pablos in Francisco de Quevedo´s La historia de la vida del Buscón (1626). Quevedo´s incorrigible pícaro defies the medieval honor system that necessitates purity of blood, and he rejects the societal expectation of seeking to defend his honor by asking for misericordia or mercy from his reader. This investigation´s findings contribute to current research on the Spanish baroque and its significance as a literary period that inspired a uniquely satirical form of social critique despite the outrageous socioeconomic inequality present within 17th-century Spain.

11:45 – 12:00 Female Perspective in Two Films by Jayro Bustamante

Kylie Feniger

Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures

The intersectionalities of identity greatly influence one's perceptions of daily experiences and interactions with others throughout life. Minority women throughout the world tend to face more significant effects of intersectional discrimination. Because of this inequality, the experiences and stories of minority indigenous women in Guatemala and other South American countries are often overlooked. Limited literary work surrounds the complex experiences of Indigenous women within systems of power. Guatemalan filmmaker Jayro Bustamante represents two distinct experiences of indigenous women in recent films, Ixcanul (2015) and La Llorona (2019). Though the plot lines contrast, Bustamante's films integrate similar overarching themes of multilevel discrimination. This project aims to extricate the underlying themes and illuminates the multilevel discrimination through a comparative analysis of the two films. The analysis of the movies will add to the discussion surrounding the subjugation of indigenous women in Guatemala and highlight a pressing need for intentional representation of minority women around the world.

12:15 – 12:30 The complexity of disease in Sistema nervioso

Wood Kimbrough

Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures

Given that sickness is derived mainly from biological factors, it is normally viewed, analyzed, and treated through this lens. However, disease involves much more than mere biology, chemistry, and anatomy. Rather, studies have shown that psychological and social factors play a significant role in the sickness itself as well as in the experience of the affected. In Sistema nervioso by Lina Meruane, six members of a family struggle through the difficulties of life while encountering different diseases and stressors. Narrated in the third person through the perspective of Ella, the middle daughter of the family and a physics doctoral student, the novel represents the strain on family relationships during periods of disease. Several studies have

suggested a causative link between social support and health. Seeking to establish a mechanism for this link, Peggy Thoits proposes a theoretical framework whereby social support acts as a buffer to stressors. In keeping with the model of the complexity of disease, Thoits's work supports my critical analysis of Ella's and her family's infirmities in Sistema nervioso.

Spanish II
12:30 – 1:45 pm
Southwestern Language Learning Center
Moderator: Dr. Eric Henager

12:30 – 12:45 The Isleños of Louisiana: How Language Preservation Could Save a Culture
Madeline Pye
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
In the Louisiana parish of St. Bernard, a community with roots in the Canary Islands called the Isleños have made their home on land granted to them from the King of Spain. For centuries they would thrive as farmers and survive the treacherous natural disasters that plague Louisiana. Now, their numbers have dwindled to a few hundred, and most cannot even speak their native variant of Spanish, instead speaking only English. One piece of their culture that has survived are décimas, or songs that served as the oral tradition of the Isleños. These décimas are keys to the culture and language of the Isleños that have begun to fade away. Through a close reading of selected décimas, I propose links between traditional forms of oral expression and present-day efforts to preserve and protect the disappearing community from becoming lost to history.

12:45 – 1:00 El fútbol and sociological phenomena in "Rudo y cursi"
Alex Lloyd
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
Representations of the interface between sports and society are abundant in recent Mexican cinema and literature. This study views "Rudo y Cursi" (2008), still one of the twenty highest grossing films in the history of Mexican cinema, through a sociological lens. Directed by Carlos Cuarón, "Rudo y Cursi" chronicles the trials and tribulations of two step-brothers as they navigate the benefits and drawbacks of their newfound fame as soccer players in Mexico City. The widely varied social contexts through which the protagonists travel on their path from anonymity to stardom offer a unique terrain for critical readings of artistic representations of sport and society.

1:00 – 1:15 The Many Faces of Bilingualism: Spanish in Contact with Other Languages in Vivir entre lenguas and Mi querido Rafa
Max Shuck
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
In this paper, the memoir Vivir entre lenguas by Sylvia Molloy and the novel Mi querido Rafa by Rolando Hinojosa are brought into conversation with educational research on the topic of bilingualism. Key concepts of note are formal second language education, cognitive development in relation to linguistic competency, and language's role in cultural and political settings. The goal of this analysis is to evaluate bilingualism as represented in the texts through three lenses: the cultural value of bilingualism in the United States as compared to the rest of the world (with particular focus on Spanish-speaking countries), the intellectual value of

bilingualism as it pertains to cognitive and linguistic development, and the personal experiences that result from bilingualism and how it causes one to view certain situations in a new light.

1:15 – 1:30 Más que sólo Mr. Worldwide: las implicaciones sociales de cambios de código en la música bilingüe popular de los Estados Unidos y su efecto en la identidad estadounidense
Alexandra Fox
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
The globalization of language artifacts across physical and linguistic borders is not a new phenomenon in the United States. However, more recently, trends in the U.S. pop music industry open spaces for lyrics with frequent code switches between English and Spanish. While the reception of bilingual songs among Spanish-speaking and English-speaking audiences has been resoundingly positive, the social implications of these trends are more ambiguous. In examining 23 popular bilingual songs selected from the Billboard Hot 100 list from 2000 to 2022, I conducted a quantitative analysis of numerical instances of code-switching and a qualitative analysis of when each language was used and in what context. In compiling the data points, I concluded that use of Spanish language in the song corpus centered heavily around themes of sexualization or objectification of women. In the study, I connect these instances of sexualized code-switching from English to Spanish with features of Spanish's stigmatized status in some zones of discourse in the US. From there I examine the song corpus as an indicator of Spanish language's often contradictory roles as mass-market music phenomenon on the one hand and a marker of marginalization on the other.

1:30 – 1:45 Child Characters and Intergenerational Trauma in Latin American Horror Stories
Marianna Malecek
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
The horror short stories of Mariana Enríquez, Samanta Schweblin and María Fernanda Ampuero utilize child characters to represent themes of trauma, panic, and guilt. They reflect how trauma can be passed down from older generations to younger generations. I selected “Fin de curso,” “La casa de Adela,” and “El chico sucio” by Mariana Enríquez; “Pájaros en la boca” and “Bajo tierra” by Samanta Schweblin; and “Monstruos,” “Nam,” and “Hermanita” by María Fernanda Ampuero to analyze the significance of child characters in Latin American horror stories. This project explores long-lasting effects of collective cultural traumas like those caused by the most recent Argentine dictatorship and more personal traumas such as gender violence, assault and domestic abuse, and how these traumas are reflected in contemporary horror stories. The authors use elements of the horror genre, like shock and taboo themes, that stem from the gothic novel. Because they are emerging contemporary authors, I analyze their placement in the Latin American gothic canon. The children and teenagers in these stories represent an ambiguity in time between past, present and future as they carry with them the trauma of parents or elders that they did not experience directly themselves.

Spanish III
2:00 – 3:15 pm
Southwestern Language Learning Center
Moderator: Alexandra Fox

2:00 – 2:15 Una llamada por un cambio hacía el humanismo: Mapinguari
Maya Khalife-Hamadan
Faculty Sponsor: Elizabeth Pettinaroli, Department of Modern Languages and Literatures
This paper explores the short story "Mapinguari" by Colombian author, Juan Carlos Galenos, through the Reception Theory. "Mapinguari" is narrated with an ecocritical approach, as Galeano follows the story of a hunter pursuing the rare Mapinguari animal. The reception theory, which prioritizes analysis of the experience and interpretation of the reader rather than the text itself, reveals that the inhumane and destructive behaviors of the hunter are a result of the enduring colonial legacies that persist in the Americas. Colonization robbed individuals— including the hunter — of the traditional respect and attachment to nature, instead replacing it with a Western capitalist attitude. The paper deems Mapinguari to serve as a call to readers for universal humanistic change. The story brings readers to recognize the colonial-driven influences that prevails in humankind. Such realization brings one to challenge their previously-assumed attitudes towards the natural environment — ultimately leading to social transformation.

2:15 – 2:30 Una voz, dos lenguas: el bilingüismo, la variación y la comunicación bimodal en tres series mexicanas
Natalia Cipponeri
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
Through linguistic analysis of three Mexican Netflix Original series, this project aims to uncover how linguistic variations act as a central factor in the depiction of characters and in the development of identity issues in the series. The voices of the bilingual characters, the voices expressed in different variants of Spanish, and the “bimodalism” or rhetorical change observed in communications sent by social media are the categories of cultural artifacts that are manifested in the series. This study explores how these linguistic variations serve to develop certain central characters and to link them with speaking communities. It also examines the interpersonal effects of linguistic variations in the context of Mexican series. These television representations of speaking communities are widely consumed throughout Latin America and are mutually informed by the social relationships that real-life communities have with language.

2:30 – 2:45 Girl Bosses and Male Manipulators: A Survey of Homosociality and Gender Hegemony in Pedro Almodóvar's Filmography
Katherine Ryan
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
The 1980s in Spain were marked by artistic experimentation and social revolution after the dissolution of the Franco regime. Women and queer people in particular took advantage of the cultural openings to redefine and elevate their position within the present hierarchy. Sociologist Jean Lipman-Blumen posited that the homosocial relations of women and men who were disempowered by the values of the Franco regime were key to undermining the patriarchal order in the post-Franco era. Homosociality, defined as “the seeking, enjoyment, and/or preference for

the company of the same sex" is surveyed in the context of Spain's democratic transition in the work of filmmaker Pedro Almodóvar. His earlier films Pepi, Luci, Bom, y otras chicas del montón (1980) and Ley de deseo (1987) respectively display feminine and masculine homosociality in the immediate post-dictatorial era. While the characters in these movies do not escape patriarchal oppression, Almodóvar's later film Volver (2006) displays how homosociality, among women in particular, can be effective in overriding individual cases of patriarchal oppression and abuse. This study will employ analysis of dialogue and character development in order to survey the ways in which homosociality appears in Almodóvar's films and has changed throughout his filmography.

2:45 – 3:00 Exploring the Depths of Language and Emotion: A Psycholinguistic Critique of Gabriela Mistral's Poetry
Adelynn Mitchell
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
The poems of Nobel Prize-winning Chilean poet Gabriela Mistral have received ample critical attention. This study revisits Mistral's work using a psycholinguistic perspective, with a focus on the emotional and cognitive aspects of her writing. The critique explores Mistral's use of language, examining how she employs linguistic techniques to evoke emotional responses from her readers. Additionally, the analysis considers the cognitive processes involved in comprehending Mistral's work, including how readers interpret and construct meaning. This analysis is structured using Simulation Theory, a framework which aligns three components of poetry: content, prosody, and the self. Ultimately, this psycholinguistic critique of Gabriela Mistral's work aims to provide a deeper understanding of the psychological and emotional aspects of her writing, as well as the relationship between language and personal experiences.

3:00 – 3:15 Beautiful Monster: Female Monstrosity and Power in Hispanic Short Stories
Emma Pennington
Faculty Sponsor: Eric Henager, Department of Modern Languages and Literatures
Monsters are a common trope in literature, but the connection of monstrosity to womanhood or femininity has not been explored as extensively as masculine manifestations of monstrosity. Figures like Medusa, the femme fatale, or the witch are well known "female" monsters. "Monstrosity" here does not necessitate a monstrous characteristic, such as fangs, wings, or claws, but rather the more connotative definition of monstrosity- someone or something that commits acts that are considered inhuman and heinous. Through analyzing three works that revolve around "monstrous" women, I study a female monster's representation and the monster's attitudes toward her own monstrosity. By studying "Carne" and "Nada de carne sobre nosotras" by Mariana Enriquez and "La mujer fría" by Carmen de Burgos, I link the initial creation of female monsters to male fear of female power. In contrast, I argue that these female-authored female monsters create empathy, humanization, and even encouragement of the characters' monstrosity. The growing self-identification with female monsters in literature reveals a more complex side to female characters and women in general, as their monstrosity is inherently linked to their womanhood.

German
3:30 – 4:30 pm
Southwestern Language Learning Center
Moderator: Palmer Mihalevich

3:30 – 3:40 Deutsche Haikus: An Examination of Respectful Writing and Translation
Hollie Brown
Faculty Sponsor: Kathryn Holihan, Department of Modern Languages and Literatures
My project examines the German adoption of Haiku and the political nature of taking on another culture's beloved poetic form. It will look at the writing and translation as powerful political acts that can be used to give a voice and pay respect to or ignore and silence. I consider what can be gleaned from the German usage of Haiku that can help writers and translators to conduct ethical and respectful work.

3:40 – 3:50 *Die alte ‚Neue Frau'* – Who came before the 'New Woman'?
Fatima Leal
Faculty Sponsor: Kathryn Holihan, Department of Modern Languages and Literatures
Living in a time where self-styling seems limitless and ever-present, one might forget the novelty of such freedom. Julie Wolfthorn was a Jewish artist that lived right at the turn of the 20th Century and whose self-styling decision went beyond her rejection of the styles imposed upon women in Germany. My capstone explores Wolfthorn's role as creator, not only of her own identity, but also as an active agent who brought other women's identity forward giving them power to speak with their own voice.

3:50 – 4:00 Mutti, Mädchen, or Miss Merkel: Who is Angela Merkel in the German imagination?
Connor Stevens
Faculty Sponsor: Kathryn Holihan, Department of Modern Languages and Literatures
David Safier's recent *Miss Merkel* mystery series presents a comical and saccharine view of the former German chancellor, Angela Merkel, for a broad German audience. His portrayal of Merkel comments on the chancellor's legacy and a critical reading of the series suggests ways in which gender inflects reflection on her career and enduring role in German history.

4:00 – 4:10 Bar Kochba: Sport and the "muscular Jew" in Weimar Germany
Timothy Turcotte
Faculty Sponsor: Kathryn Holihan, Department of Modern Languages and Literatures
The Weimar Period was a golden age for German Jews and their identity development. In my senior thesis, I show how the Jewish sports club, Bar Kochba, encapsulated the interests of German Jewry alongside contemporaneous debates over assimilation and Zionism.

4:10 – 4:20 Prost! A Revival of Beer and National Stability after World War II
Raegan Wilburn
Faculty Sponsor: Kathryn Holihan, Department of Modern Languages and Literatures
Beer has a long and rich history in Germany, but it truly cemented itself as part of German national identity because of World War II. Previous cultural ties to beer, long-lasting Nazi

ideologies surrounding natural foods, and the persistence of breweries after World War II ensured the revival of beer in the war-torn country as it symbolized a return to stability and national unity.

Africana Studies
11:00 am – 12:00 pm
Southwestern 207
Moderator: Oluwafikemi Aiyepeku

11:00 – 11:20 White as Snow: Making Race during Ecological Collapse
Jahari Shelton
Faculty Sponsor: Samson Ndanyi, Department of History
Bong Joon-ho's Snowpiercer (2013) is a post-apocalyptic science fiction action film that takes place aboard a train that carries the last of the living after a failed attempt to engineer a solution to global warming. The film follows the main character Curtis Everett, leader of the tail-section passengers, as they stage a revolt against the elites who reside in the resourced cars closest to the front of the train. Entangling familiar social and political themes, Joon-ho appeals to an audience captivated by a portrayal of a realistic and present threat- ecological collapse. The train is the living quarters for all the survivors, even mimicking the deadly arrangements of modernity we've become familiar with. My essay, White as Snow: Making Race during Ecological Collapse, similarly follows the poor and socially disgraced passengers as they stage a revolution to upend the longstanding social relations of the train seemingly. The essay problematizes the overdetermination of class solidarity and draws attention to the logic of (anti) Blackness, capitalist exploitation, and social difference in the film, both in plot and discourse.

11:20 – 11:40 What is the Black Freedom Struggle?
Nakayla Yancey
Faculty Sponsor: Samson Ndanyi, Department of History
This essay is a summarization and reflection of the material that I learned through Dr. Charles McKinney's AFS 310 "Black Freedom Struggle" class. It consists of some of my personal reflections throughout my life and what I have learned about as well as reflection on some of the course content as well. This essay allows you to understand my perspective of what the Black Freedom Struggle is along with the power, beauty, and joy that emerges from it as well.

11:40 – 12:00 pm The Ungendering Body
Armon Newsom
Faculty Sponsor: Samson Ndanyi, Department of History
In "Southern Horrors" by journalist and historian Ida B. Wells, she performs an excavation of lynching cases around the U.S. revealing miscegenation and the sexual to be a significant motivator in racial violence. Additionally, in Darlene Clark Hine's text "Female Slave Resistance", she illustrates relationships between race and gender through the experiences and revolutionary practices of female slaves. In her interpretations, the female slave uniquely experiences a racial and sexual oppression which also went on to spur Black women's northward migration postbellum. In my analyses and interpretations of these texts in conversation with one another, I posit that Darlene Clark Hine's assertions of the absence of sexual oppression in regards to the male slave misses the processes of ungendering that occur in the plantation in

order to utilize total control and violence. Additionally, these processes of ungendering Black flesh work to repair and affirm the coherence of white gendered subjectivities. This argument serves to demonstrate how the benefit of slavery may not singularly or even primarily be its economic viability but its psychic and cultural significance.

Humanities
12:30 – 1:30 pm
Southwestern 207
Moderator: Maxie Sansom

12:30 – 12:40 Translation in America and Russia
Finneas Sensiba
Faculty Sponsor: Alexandra Kostina, Department of Modern Languages and Literatures
I will present on my English-language translation of Modern Patericon by Maya Kucherskaya. This project is the focus of my directed inquiry with Professor Kostina, started in the Fall of 2022 in senior seminar. The work is 4 books/chapters/"cycles" in total; my work in the Fall focused on book one, while my DI focus has been book three. My work has been guided and informed by both Prof. Kostina as well as a selection of readings by Russian & American authors Kornei Chukovsky, Lauren Leighton, and Lawrence Venuti. These readings cover some general theories & history about translation in the United States and Russia/USSR, comparison & contrast of various translators and their approaches, as well as the global politics of translation as a field of study. I will focus on literary translation and provide a general look into the thought process, theory, and practice behind bringing a literary work from a source language into your own.

12:40 – 12:50 The Roman Toga: A Symbol of Luxury, Power, and Civility
Lloyd Templeton
Faculty Sponsor: David Sick, Department of Ancient Mediterranean Studies
The use of art and literature for propaganda pieces was a common practice in the ancient world, and the Augustan period of ancient Rome provided a prime opportunity for this phenomenon. In the early days of Augustus' reign, he commissioned sculptures of himself that portrayed him as a strong and capable military leader. As he cemented himself as the sole ruler of Rome, Augustus began to commission more modest works that highlighted traditional Roman values. These works include not only visual works of sculpture, such as the Ara Pacis, but also literary works by prominent Roman authors, such as Livy, Ovid, Horace, and Virgil. I will be examining the overlap between the elements of Roman propaganda prevalent in art, laid out in Paul Zanker's The Power of Images in the Age of Augustus, and literature, with a particular interest in the role of the toga. This project will add to our knowledge of Roman propaganda by investigating how Augustan authors and artists chose to depict Rome. A better understanding of Roman propaganda—how it was made and how the Roman people viewed it—adds significant context to our understanding of ancient politics in the context of the Roman culture.

12:50 – 1:00 The Neurodivergent Poetics of Charlotte Brontë
Emma Dove
Faculty Sponsor: Gordon Bigelow, Department of English
Verbal oddities present in the works of Charlotte Brontë are theorizations of an alternative mode of existence which, unlike most scholars' interpretations, are not to be read as an aesthetic failure but, to draw on critic Melanie Yergeau's argument, a formulation of autistic rhetoric and rhetorical queering. Yergeau suggests the apparent chaos of autism—its people's movements, echoes, and repetitions—is not evidence of a failure in the brain's processing structure, but of a separate and unique form of reasoning, creating, and communicating. I argue that Brontë's novels illuminate a world of alternative modes of living, as established by her use of rhetorical eccentricities, narrative ellipses, and emotional descriptions. Faced with an uncontrollable world, Brontë manipulated her texts and characters to simulate control for herself and her readers while exploring alternative possibilities of existence to combat the deepening Victorian constriction of women, their rights, and their very bodies. Brontë's creations are the product of autistic rhetoric, themselves characteristic of neurodiversity and alternative, antinormative modes of living.

NATURAL SCIENCES ORAL SESSIONS

Physics
11:00 am – 12:15 pm
FJ – B
Moderator: Shona Harbert

11:00 – 11:15 Effect of Fixation Duration on the Standard Deviation of Ultrasonic Measurements of Brain
Amalia M. Bay, Grant R. Jenson, Cecille Labuda, Grace I. Nehring, Kate E. Hazelwood, Brent K. Hoffmeister, and Ann Viano
Faculty Sponsor: Brent Hoffmeister, Department of Physics
Ultrasound technology is being used to characterize and map the ultrasonic properties of fresh and set brain tissue with the long-term goal of using ultrasounds for diagnostic purposes. Recently, we conducted a study in which ultrasonic scans were taken on bovine brain specimens over a time period of 6 months, so far having scans with fresh tissue, ten days preserved tissue, and one month preserved tissue. From here, Ultrasonic maps were created with parameters including Speed of Sound and Frequency Slope of Attenuation. From this, we can determine whether or not the characteristics of the tissue changes over time based on the mean values and the standard deviation values. At this point, we have determined that the standard deviations decrease over time, suggesting that the tissue is becoming more homogeneous.

11:15 – 11:30 Ultrasonic technique for measuring the temperature-dependent speed of sound in fluids.
Grace I. Nehring, Ann M. Viano, and Brent K. Hoffmeister
Faculty Sponsor: Brent Hoffmeister, Department of Physics
The purpose of this project was to develop a technique to measure the speed of sound in fluids as a function of temperature using ultrasonic signals. The technique reflected a high-frequency ultrasonic pulse off an aluminum plate with a precise step size of 0.500 inches in the test fluid. The transducer, which sends and receives the signals, was mechanically moved to be directly above the two different levels of the step plate. This placement allowed the echoes to be recorded from each side of the plate to measure their time difference, Δt. The speed of sound v was computed from the equation $v = 2\Delta d / \Delta t$, where $\Delta d = 0.500$. The test fluid was contained in a 1 L tank surrounded by a temperature-controlled water bath in a 10 L tank. The measurement technique was tested using tap water as the test fluid. Measurements were made in one degree increments from 15 to 25 degrees Celsius. From these measurements, the speed of sound in water was found to increase monotonically with temperature, and a fourth-degree polynomial function was fitted to the data to describe the speed of sound as a function of temperature.

11:30 – 11:45 Ultrasonic Characterization of the Human Scalp at 37 °C
Blake Lawler, Cecille Labuda, Shona Harbert, Ann Viano, Brent Hoffmeister
Faculty Sponsor: Brent Hoffmeister, Department of Physics
There is interest in developing transcranial ultrasonic techniques for therapeutic and diagnostic applications involving the brain. Ultrasonic waves must propagate through the scalp as well as the skull. While the ultrasonic properties of the skull have been investigated extensively, the ultrasonic properties of the scalp are unknown. The goal of this study was to investigate the

ultrasonic properties of scalp tissue at 37 °C, specifically the speed of sound (SOS) and the frequency slope of attenuation (FSA). 32 specimens from four human cadaveric donors were prepared from the frontal, parietal, temporal, and occipital regions of the scalp. Ultrasonic measurements were performed using a broadband transducer with a center frequency of 7.5 MHz. Measured values for SOS ranged from 1488 to 1559 m/s with a mean ± standard deviation of 1525 m/s ± 16.92 m/s. Measured values for FSA ranged from 1.59 – 4.32 dB/cm/MHz with a mean ± standard deviation of 2.594 dB/cm/MHz ± 0.7241 dB/cm/MHz. This study represents the first study to characterize the ultrasonic properties of human scalp tissue at 37 °C.

11:45 – 12:00 Hubble OVI Image of the Warm-Hot Circumgalactic Medium around a Record-breaking Galaxy
Triet Ha, David Rupke, and Shane Caraker
Faculty Sponsor: Brent Hoffmeister, Department of Physics
The massive, compact galaxy Makani is perhaps one of the largest oxygen nebulae and galactic winds ever seen. First detected in 2019 with the Keck Cosmic Web Imager (KCWI), this giant and luminous oxygen nebula is an ideal target to image the circumgalactic medium (CGM) in its warm-hot phase (100,000 - 1,000,000 K). The CGM is a medium of gas that surrounds the galaxy, bounded to the galaxy due to gravitational force. In 2021 and 2022, we took deep images of Makani in the highly ionized oxygen OVI 1032,1038 Angstrom emission-line doublet with the Hubble Space Telescope. We present initial images from this program and compare them to data at different wavelengths from previous research. Careful dark subtraction and Voronoi binning are implemented to bring out the faint extended emission.

12:15 – 12:30 Q3D: Quasar Studies and Spectral Line Fitting with the JWST
Ryan McCrory and David Rupke
Faculty Sponsor: Brent Hoffmeister, Department of Physics
The Q3D team aims to utilize spectra from the James Webb Space Telescope (JWST) to analyze how quasars affect their host galaxies. This team includes members from Rhodes College and other universities around the world. Quasars are supermassive black holes (SMBH) accreting massive amounts of matter. Quasars generate strong electromagnetic radiation and send high velocity outflows spewing from the galactic nucleus. We analyzed JWST data cubes in order to determine the spectral properties of the material in each spaxel of an image. Our team wrote the software package q3dfit to subtract the quasar spectrum from the total galactic spectrum at each spaxel to determine the properties of the host galaxy. We observed three galaxies with JWST at varying redshifts. In each source, we will probe the quasar's impact on galactic morphology and star formation by studying the properties of its outflow and host. I wrote a routine to create linelists from observing parameters and fit already existing quasar data with a model for the radiation from the quasar. I will present on some preliminary results and their interpretations and implications

Biology / Chemistry
12:30 – 1:30 pm
FJ – B
Moderator: Tyler Martin

12:30 – 12:45 Interaction of the Christian Religion with Ecology: Stewardship and Dominion as an Ecological Mindset
Rachel Perry
Faculty Sponsor: Michael Collins, Department of Biology
There has been a long history of the field of religion and ecology with one of the main religions of interest being Christianity. Lynn White Jr.'s article The Historical Roots of our Ecological Crisis in 1967 was one of the main catalysts of the creation of the field analyzing Westernized Christianity's role in the ecological crisis. He outlined the ways that Christian thought influenced an anthropocentric mindset that informed the relationship between Christians and nature. There are two words that are greatly embedded in the Christian framework regarding nature: "dominion" and "stewardship." In the beginning chapters of Genesis in the Christian Bible, God tells man to "subdue" the land and to "have dominion" over it. Christians have historically called themselves "stewards of the earth" and have spent many years defining what exactly this means. This literature review will analyze the ways in which these words have framed Christian ecological thought.

12:45 – 1:00 Perturbed Living Cells Bioorthogonal Profiling of Protein Methylation Detected Methylation Activities in Multiple Downstream Targets and Revealed Auto-methylation of Lysine in EZH2.
Ngoc (Margaret) Hoang and Minkui Luo
Faculty Sponsor: William Eckenhoff, Department of Chemistry
Epigenetic regulation plays essential roles in maintaining cellular fates. Its dysregulation has been associated with various diseases including cancer, cardiovascular disease, diabetes, etc. Among key epigenetic post-translational modifications, methylation has been shown to affect downstream proteins by modulating their stability, localization, and interaction with binding partners. Thus, studying methylation activity in proteins can provide valuable insights into protein function, disease mechanisms, drug development, and biomarker discovery. In this work, we aim at developing a novel protein profiling method called Bioorthogonal Profiling of Protein Lysine Methylation (BPPM) to study methylation and their effects on epigenetics. To detect methylation in downstream targets, we utilized protein methyltransferases' (PMTs) cofactor S-adenosyl-L-Methionine (SAM) to design and synthesize clickable analogues. Chemical labeling of methylation with SAM analogues inside living cells was then implemented by incubating SAM analogues with HEK293T cells, performing click reactions, purifying biotin-conjugated protein substrate, and conducting gel analysis. Our results showed that BPPM method can label multiple targets of SAM-dependent methyltransferases including FOXO1, H3, SMAD2, β-Catenin, and FOXA1. Our data also suggested that methylation of Lysine in EZH2 is an auto-methylation process driven by its complex PRC2. Our future plan is to identify PMTs being responsible for methylations on other detected downstream targets.

1:00 – 1:15 Synthesis of 6-bromodopamine and 6-carboxydopamine to investigate L-DOPA dioxygenase function

Leah G. Borders, Joseph C. Hane, Trinity L. Liaw, and Larryn W. Peterson
Faculty Sponsor: Larryn Peterson, Department of Chemistry

L-DOPA dioxygenase is an important enzyme found in bacteria that is a member of the vicinal oxygen chelate superfamily which can cleave aromatic rings in catechols through metal chelation. This can be crucial in the formation of natural antibiotics from materials such as plant woody tissue and have implications for bioremediation of the environment. This mechanism of action of the enzyme is not well known because of the lack of diverse substrates. This work incorporates the addition of different substituents to the 6-position of dopamine's catechol core which have been found to change the properties including pKa values and hydrophobicity of the molecule that are crucial to the overall reactivity of the compound. Here, we report synthetic progress of 6-bromodopamine and 6-carboxydopamine from 2-(3,4-dimethoxyphenyl)ethan-1-amine. These syntheses have been generally successful in moderate yield, but some difficulties have arisen. This toolkit of dopamine derivatives allows for a further understanding of L-DOPA dioxygenase and provides access to investigate use as enzyme substrates, inhibitors, or even in non-biological applications.

(F) 1:15 – 2:00 Group 3 medulloblastoma transcriptional networks are sensitive to EP300/CBP bromodomain inhibition

Yousef Khashana, Shendy, Bikowitz, Sigua, Mercier, Zhang, Nance, Robinson, Wang, Freeman, Vogel, Orr, Abraham, Roussel, Schonbrunn, Qi, Durbin.
Faculty Sponsor: Larryn Peterson, Department of Chemistry

EP300 and CBP are paralogous multidomain histone acetyltransferases (HATs) that regulate gene expression. EP300/CBP activity is enhanced in cancer cells, which display increased reliance on the mRNA transcription of tumor-selective oncogenes like the transcription factor c-MYC. This increased reliance in cancer states makes these proteins attractive targets for preclinical therapeutic development. EP300/CBP have multiple domains which can be targeted with small molecules, including bromodomains (BRD), and catalytic (HAT) domains. However, the relative contribution of these two domains to tumor cell growth is unresolved. Using high-throughput cell line-based screening, we demonstrate that targeting the HAT or BRD of EP300/CBP using the chemical probes A485 and CCS1477 has differential effects in few tumor lineages High-risk pediatric brain tumor medulloblastoma (MB) was exceptionally sensitive to BRD inhibition, compared with HAT inhibition. Using biochemical and structural assays, we identified that CCS1477 was highly specific for the EP300/CBP bromodomain, with limited off-target effects on other bromodomain-containing proteins. Further, CCS1477 caused downregulation of a dense network of proteins associated with mRNA transcription, including c-MYC. These studies identify a selective role for the EP300/CBP bromodomain in maintaining genetic dependency networks in G3MB cells and provide new chemical approaches to disrupting malignant transcription in Group 3 medulloblastoma.

Computer Science I
11:00 am – 12:15 pm
Robertson 110
Moderator: Dr. Marion Lang

11:00 – 11:15 SyllyCalendar: Calendaring Software Optimized for College Students
Luis Gallegos, Minh Giang, Grant Jenson, and Sara Reynolds
Faculty Sponsor: Marion Lang, Department of Computer Science
SyllyCalendar is software that provides users with a seamless scheduling experience. With its user-friendly interface and features similar to Microsoft's calendar, users can easily schedule their tasks and appointments manually. But that's not all: SyllyCalendar allows users to scan a PDF document, such as a college syllabus, and automatically populate the calendar with all important dates and deadlines. Specifically made for college students, we included other features which help organize a consistent schedule including office hours and class times. Some benefits include getting rid of the hassle of losing paper schedules and the tedious task of manually inputting events. SyllyCalendar streamlines the scheduling process, freeing up valuable time for users to focus on what really matters. SyllyCalendar simplifies users' lives by eliminating the need to repeatedly type in information that's already on paper or buried within a large amount of links. With SyllyCalendar, users can easily access their schedules in one centralized location, saving time and frustration. We also reduce the risk of a human input error where a student can write their dates on a calendar wrong, or just simply write the wrong information. While building SyllyCalendar we used Python, HTML, Figma, and Javascript/CSS.

11:15 – 11:30 StudyBuddy: Scheduling and Presence Detection for Common/Shared Areas
Jess Elliot, Keidreanna Garrett, Alvin Jorkey, and Ben Wilson
Faculty Sponsor: Marion Lang, Department of Computer Science
Study Buddy is a mobile application designed to simplify the process of finding library study space and buddies for college students. Recognizing the challenges of finding such spaces and forming study groups, Study Buddy aims to streamline the experience by providing an efficient table occupancy marking system and encouraging collaboration among students. With the app, students can easily mark their table as occupied by scanning an NFC tag and indicate their willingness to collaborate by sharing the class they are studying for. This allows classmates and friends to quickly connect and form study groups, reducing isolation and increasing the likelihood of academic success. The app's user-friendly interface and robust technology stack make it an ideal solution for college students who are looking to streamline their study experience and connect with peers who share similar academic interests. Study Buddy is built using a full stack framework, which includes React Native for the frontend, Node.js and Express for the backend, PostgreSQL for the database management system, and Amazon Web Services for hosting.

11:30 – 11:45 Code Controlle: Saving the World with Software Development
Uyriah Graham, Hadley Lim, Aditya Pudaruth, Juan Ramirez, and Carlos Salas
Faculty Sponsor: Marion Lang, Department of Computer Science
We live in a society where the need and want for technology is at an all-time high. With this, however, comes a fear that this technology may eventually turn on us and begin to dominate.

CodeControlle is a 2D science-fiction role playing game that humors this idea, transporting the player into an apocalyptic universe where robots have taken over. It is then up to the player, a software developer, to defeat the robots and return the world to its natural order. CodeControlle is written in the C# coding language and developed using the Unity game platform. It combines colorful graphic elements with powerful game mechanics to create a fun world for the user to learn a little bit about coding while fulfilling their video game needs.

11:45 – 12:00 sMOCK: A Keyboard-Driven Digital Art Platform
Geethika Chelamala, Tim Daso, Shereen Haji, and Donald Wilson
Faculty Sponsor: Marion Lang, Department of Computer Science
sMOCK is a digital art and design software that enables users to create designs using only keyboard commands, without the need for a mouse, touchscreen, or stylus. With sMOCK5, users can create shapes, lines, text, and complex designs with precision and ease. Recognizing that the current market lacks a keyboard-driven resource for graphic design, sMOCK offers a free alternative to expensive design software and tablets, especially for users whose keyboard skills outshine their drawing ability. sMOCK is built using the programming language Java and the graphics library JavaFX 19 integrated with Gradle, a build automation tool. A world of intuitive graphic design and digital art is at your fingertips with sMOCK.

12:00 – 12:15 Modernizing Bias Reporting
Gibby Fakes, Thea Li, Anna Littleton, and Emery Morales
Faculty Sponsor: Marion Lang, Department of Computer Science
Our project is a Bias Education Reporting System (BERS) designed to fix some of the issues with Rhodes' and other colleges' current systems. It is designed to encourage transparency about how reports are handled and show the community that its concerns are being taken seriously. On the main website, students, faculty, and staff can submit a report and view updates on their case. This site also presents data about how the institution has processed past reports. The administrative side of the system allows the BERS team to handle reports and communicate with those involved, making it easy and convenient to keep the reporter updated. Our system is built using Node.js, React, and PostgreSQL

Computer Science II / Mathematics
12:30 – 1:30 pm
Robertson 110
Moderator: Dr. Marion Lang

12:30 – 12:45 Crowdy: Anonymous, Real-time Location Density
Walid Abu Al-Afia, Nabil Adem, Emily Clifton, Danh Le, and Abby Faulkiner
Faculty Sponsor: Marion Lang, Department of Computer Science
Crowdy is an app that aims to show its users the crowd density of a public space, like a grocery store or gym. Crowdy was developed with busy users in mind. It can help people determine if they have enough time and space to complete their activities at their destination. Crowdy provides the users with a visualization of the density of the crowd at their target destination in the form of a heat map. It uses users' location and queries other data sources, but allows users to remain anonymous by public/private keypair that is stored locally on the user's device. Crowdy's

data aggregation methods are designed with the users' privacy and anonymity in mind. Crowdy was created with Ruby on Rails, React Native, and Firebase.

12:45 – 1:00 A New Event Management and Discovery Platform for Rhodes
Braden Elmlinger, Anna Jones, Chris Hoang, and Christian Tanks
Faculty Sponsor: Marion Lang, Department of Computer Science
The Rhodes Events application is a calendar application that will allow Rhodes students to learn about different upcoming campus occasions. Rhodes organizations would simply upload a flier for an event they are hosting to the application; then, students would be able to view said flier on the application's "Upcoming Events" feed or "All Events" calendar. Events that students would like to attend can be saved to a student's personal calendar on the application. Recognizing that keeping track of all the Rhodes events happening is difficult when events are announced across different platforms, this events application aims to create one centralized location for all upcoming events announcements. Additionally, this application seeks to remove much of the clutter on doors and in buildings across campus created by the hanging of physical fliers. This events application is created using Firebase and the Apache Cordova framework.

(F) 1:00 – 1:15 Uniqueness of Co-tangent Lifted Gamma Zeroes for Symplectic and Special Unitary Matrix Groups
Harper Kolehmainen
Faculty Sponsor: Christopher Seaton, Department of Mathematics
Co-tangent lifted gamma zeros come from the coefficient at t=1 of something called a Laurant series. The matrix groups S1 and SU2 have different representations, which are integer partitions of great significance in computational invariant theory. The goal of this project was to understand how the cotangent lifted gamma zeroes of SU2 and S1 were related. To do this, I studied the effect of changes in representations on the gamma zeroes. I will report progress on this problem for low dimensions, and propose an answer to research questions surrounding the uniqueness of these gamma zeroes, as compared between matrix groups and between different symplectic quotient dimensions.

(F) 1:15 – 1:30 Combinatorial description of the first Hilbert Series Laurent Coefficient for the 2-torus
Phyu Sin M. Myat
Faculty Sponsor: Christopher Seaton, Department of Mathematics
The matrix group G=T^2 is called the 2-torus: a pair of circles, each rotating independently. We can compute the invariant polynomials of a representation of the 2-torus, i.e., the polynomials that do not change when these matrices are applied. These invariant polynomials can be counted by what is called a Hilbert series, and the first Laurent coefficient of this series is called gamma(A). The gamma (A), where A is a 2xn matrix, is complicated at first sight but after some basic algebra, it cancels out to be a polynomial that varies with n. When n=3, there is one term in the polynomial and when n=4, there seems to be about a dozen terms. My goal is to produce a combinatorial description of the exact terms of gamma(A) when n=4. Moreover, I will report on my progress to produce a combinatorial description of the exact terms of gamma(A) for each n.

SOCIAL SCIENCES ORAL SESSIONS

Social Sciences
11:00 am – 11:45 pm
Clough 204
Moderator: Asya Bray

11:00 – 11:15 Understanding the Effect of Anonymity in Evaluations at Rhodes College
Ashan Hennings, David Satterly, and Andrew Lyons
Faculty Sponsor: Dee Birnbaum, Department of Business
Per our review of the existing body of research, there are no studies that directly identify and examine our specific topic and its factors. This proposal offers a continuation of research (conducted during a BUS 361 project under the supervision of Professor Dee Birnbaum) from Spring 2022 in which we examined whether there was a general belief among students that teacher evaluations were anonymous and if student's beliefs regarding anonymity affected the honesty of responses. Our research uncovered that students believed that the end-of-semester evaluations were not anonymous. Subsequently, students provided less than honest responses. We hope the proposed project will provide a better understanding of students' beliefs about the anonymity of evaluations and can highlight current communication barriers between students and professors at Rhodes College. By understanding the effects of course surveys, we can achieve a better understanding of the relationship between faculty and students.

(F) 11:15 – 11:30 Parents and Teachers as Policy Actors: Implications for a District Retention and Promotion Policy
Isabella Fraser and Maggie Emmendorfer
Faculty Sponsor: Laura Taylor, Department of Education Studies
Nationwide, states and districts are implementing policies that retain or promote early elementary students based on literacy test scores, even as research documents the disproportionate impact on Black students and students living in poverty. This qualitative study frames parents and teachers as policy actors and explores their understandings of a particular promotion/retention policy revision in a large public school district. Our findings make visible their valuable insight that has been disregarded in the policy revision and implementation. Without these considerations, we situate our findings as a missed opportunity to include voices that present a critical examination of the root causes of low literacy scores or understandings of the influence of race on the lived experiences of students and families.

11:30 – 11:45 Demonstrating Ensemble Perception of Social Status in the Presence of Occlusion
Hailey Connell and Olivia DiLillo
Faculty Sponsor: Matthew Weeks, Department of Psychology
Ensemble perception is the visual system's ability to create summary statistics of a group of objects in a quick glance. The primary goal of this study is to examine ensemble perception of social status in a more realistic context. We want to see if ensemble perception of social status can still occur when some exemplars are occluded by other exemplars creating a crowding effect. Our study will be done online, and individuals will rate ensembles made up of 6 white exemplars of varying status and occlusion levels. We predict the occlusion of exemplars will influence the summary statistics of group information.

Anthropology, Sociology, and International Studies
12:30 – 1:30 pm
Clough 204
Moderator: Maya Shah

12:30 – 12:45 The DREAMers Movement and Framing Theory: An Application of Framing and Processes
Grace Melick
Faculty Advisor: Hadi Khoshneviss, Department of Anthropology & Sociology
This research paper will focus on the DREAMers Movement from its introduction in 2001, to the Development, Relief, and Education for Alien Minors Act's (DREAM Act) failure to pass through Congress in December of 2010. Within this study, I will be observing Benford and Snow's Framing Theory (2000) to express the DREAMers utilization of a three-fold frame that spoke to the sympathies of the everyday American voter and politician alike. The DREAMers utilized a variety of different types of frames and implored an image that worked within the strategic processing of Framing Theory to promote their ultimate goal, the passage of the DREAM Act. My argument is that the DREAMers used diagnostic framing by placing the blame of their undocumented status on their parents, as well as motivational framing by utilizing the idea that these individuals were raised in America with American ideals shaping their identity, and the importance of stressing that they were young people that would be bettering the American society.

12:45 – 1:00 The Liberationist Alphabet Book
Alisha Joseph
Faculty Advisor: Evelyn Perry, Department of Anthropology & Sociology
Children and young adults are often encouraged to be pillars of change for their communities and the world at large. However, many texts veering towards this demographic's age group do not provide these changemakers with an easy-to-digest and engaging introduction to the methods and practices they may engage with while they aim to change the world. Originally meant to answer what is required for Black people to attain liberation in the United States, A Liberationist Alphabet Book has wonderfully transformed into a vibrant literary capsule filled with key terms, important figures, historical accounts of liberatory acts, examples of systemic oppression, and encouragement. This book acts as a stepping stone for young adults who are interested in learning about and engaging in the quest for liberation but are unsure of where to start.

1:00 – 1:15 US Counterterror Policymaking in a Post-9/11 World: Changing Circumstances Surrounding US Foreign Policymaking in the Middle East and North Africa from Bush to Obama
Julia Seeds
Faculty Advisor: Amy Risley, Department of International Studies
The 9/11 al-Qaeda attacks on the World Trade Center and the Pentagon, the epochal symbols of American economic and military supremacy, shook the United States' identity as the world's 'untouchable superpower' to its core. The purpose of this project is to foreground the importance of this critical point in history in the making of US counterterror policy in the Middle East and to propose causal factors that have influenced the trajectory of the war on terror. The empirical

puzzle concerns the question of what factors have influenced divergent counterterror strategies from Bush to Obama. I argue that changes in the global distribution of power and the orientation of the perceived locus of threat are two major factors that help explain the evolution of the war on terror across administrations. At the time of the attacks, the US was at the height of its unipolar moment, which influenced the Bush administration's decision to pursue direct military intervention and attempt to remake the world in its own image. However, as initial triumph turned to disaster and with US unipolarity in decline, the Obama administration was forced to pursue a more targeted strategy with fewer boots on the ground.

1:15 – 1:30 Outing the Paradox: Explaining Variation in Policy Implementation for Gender Minority Rights in Latin American Democracies
Vee Vyas
Faculty Advisor: Amy Risley, Department of International Studies
This qualitative study analyzes policy implementation for gender minority (GM)– transgender and intersex– rights in Argentina and Brazil. Although both states are democracies and signatories to the Yogyakarta Principles, high variation in policy implementation for GM rights is observed. An analysis of policy implementation, measured through policy outputs and consistency of policy objectives post-adoption, highlights how states modify policies relative to the evolving demands of GMs. This research challenges scholarship that views LGBT issues as uniform despite the divergent identity experiences of sexual and gender minorities. The paper conducts structured comparisons between the two cases, from 2011-2021, and makes two core claims. First, the presence of coalitions between policymakers and GM activists increases the likelihood of policy implementation for GM rights. Second, the use of gender ideology as a framing strategy, which emphasizes protection of the family, children, and the nation, has hindered progress toward GM rights. Party fragmentation, measured using Ware's (1996) party system typology, also explains how discursive framing enters legislative spaces, leading to the reversal or blocking of policies during the implementation phase. This paper contributes to extant literature by integrating framing and institutionalist theories in research on groups that are marginalized in political and academic contexts.

Economics I
2:15 – 3:15 pm
Buckman 200
Moderator: Dr. Bruno Badia

2:15 – 2:30 The Motherhood Penalty: Does it Still Exist and What is it?
Georgia Winkler
Faculty Advisor: Jaqueline Oliveira, Department of Economics
As of 2020, women on average earned 82 cents for every man's dollar, and I want to look at one of the drivers of this gap. Many studies have used data from a cohort born in the 1960s to discover that mothers lose a percentage of their wage for every child they have, whereas men do not experience the same effects. Does this motherhood penalty still exist in later generations, and if so, is it as large? To answer this question, I will conduct an event study using data from the National Longitudinal Survey of Youth 1997 to analyze wages for men and women both before and after the birth of their first child and to compare the magnitude of these wage changes.

2:30 – 2:45 The Impact of Unemployment on Morbidity in the United States
Samuel Singer
Faculty Advisor: Jaqueline Oliveira, Department of Economics
Periods of elevated unemployment in the United States bring many undesirable side effects to the general population, including an increase in general morbidity. However, past studies dispute the size and statistical significance of the impact of unemployment. Using an IPUMS Health Surveys dataset from 2000-2018, I employ a fixed effects model to estimate the impact that fluctuations in unemployment may have on the general health of the population. The analysis reveals that unemployed individuals, on average, have 0.8% worse health outcomes compared to their employed counterparts. Furthermore, I analyzed the pathways that connect employment status to personal health. This analysis revealed that increased mental health issues within the unemployed population cause at least a portion of the adverse health outcomes stemming from unemployment.

2:45 – 3:00 The Effects of Legalized Sports Betting on Poverty Rates
Arman Guron
Faculty Advisor: Jaqueline Oliveira, Department of Economics
Up until 2018, sports betting was banned throughout the United States except for Nevada. Since then, 33 states have legalized sports betting, allowing millions of adults to partake in a potentially addictive activity. The goal of my research is to see if in this short time period since 2018 if there have been any adverse affects on households, more specifically on poverty rates. Using a difference-in-differences model, I attempt to estimate the impact of legalization of sports betting on poverty rates for U.S. households.

3:00 – 3:15 "Immigrant Mentality": Examining the Difference in Working Hours Between Foreign and Native Workers
Ravan Hawrami
Faculty Advisor: Jaqueline Oliveira, Department of Economics
American culture holds the view of there being some "immigrant mentality", where the foreign born population have a stronger work ethic compared to the native born. Previous literature studying the "immigrant mentality" analyze differences in hours worked between the two groups, finding largely insignificant to contrary results. Rather than specifying on a specific immigrant cohort or time period, I use Current Population Survey data from the past forty years in order to analyze the differences, if any, between hours worked of the foreign and native born population. Furthermore, I analyze the hours-worked differences among various immigrant cohorts.

<u>Economics II</u>
3:30 – 4:30 pm
Buckman 200
Moderator: Dr. Bruno Badia

3:30 – 3:45 Analyzing the Impact of Policies Issuing Driver's Licenses to Undocumented Immigrants on Public Safety and Deportation Rates
Isabel Lopez
Faculty Advisor: Jaqueline Oliveira, Department of Economics
Some US states have adopted policies that grant undocumented immigrants access to driver's licenses. Using panel data from 2005-2020 on all 50 states including the District of Columbia, I will employ a staggered difference-indifferences approach with state and year fixed effects to study the impact that these policies have on public safety and deportation rates.

3:45 – 4:00 Estimating the Effect of Gender-Affirming Care (GAC) Exclusion from State Medicaid Programs on the Health and Economic Outcomes of Transgender Individuals
Vee Vyas
Faculty Advisor: Jaqueline Oliveira, Department of Economics
The past few years have witnessed an eruption of transgender-specific healthcare policies across the United States. Many policies have targeted transgender populations' access to gender-affirming care (GAC), including the implementation of bans on coverage for GAC under state-level public health insurance programs, particularly Medicaid. Despite the recognition of GAC as a medically necessary form of healthcare by the American Medical Association and WPATH, transgender individuals continue to experience elevated rates of socioeconomic disparities, structural barriers to care, and enacted stigma. Therefore, what effect do these policies have on the health and economic outcomes and, correspondingly, the overall well-being of transgender populations? Using data from the Household Pulse Survey, Movement Advancement Project, and the Williams Institute between July 2021–February 2023, I propose a staggered difference-in-difference model to estimate the impact of the exclusion of GAC from state Medicaid programs on the health and economic outcomes of transgender individuals. The findings of this study can be used to inform policy interventions aimed at reducing disparities and inequities in healthcare.

4:00 – 4:15 Who Runs Our Culture? Gender Pay Gap in Entertainment Industry
Di Wu
Faculty Advisor: Jaqueline Oliveira, Department of Economics
Inequality between men and women is present in many areas of our society. The entertainment industry, like many others, is male-dominated. The entertainment industry is a mirror of our society: the music, movies, and TV series that we consume reflect and reproduce our culture, in the way people dress, talk, interact, and so on, from the moment a person is born. Given the persistent underrepresentation of women in music industry, I am curious to find the income disparity. This project will use cross-sectional data drawn from US census database from 2014 – 2021. I will build an economic model for individual income accounting for the role of gender based on different years. I will utilize the model to answer the following question: (1) What is the overall effect of gender on determining a person's income in entertainment industry? (2) How is gender pay gap in the entertainment industry compared to other traditionally female-dominated industry: health & education. (3) Did MeToo movement have a more significant impact on gender pay gap in the entertainment industry?

4:15 – 4:30 Marathon Weather Analysis and Performance Prediction
Bennett Blanco
Faculty Advisor: Jaqueline Oliveira, Department of Economics
In this project, I utilize BigQuery, Selenium, Pandas, the Visual Crossing weather API, and Panel Data Analysis to examine the effects of weather on a runner's marathon performance over the period 2019 to 2022.

POSTER SESSION #1

Multi-Sports Forum, Bryan Campus Life Center
1:00 – 2:30
Poster numbers are listed with the title

#1 Characterizing Position Effect Variegation in the Fission Yeast Centromere
Hanna Bengten and Romi Klein
Faculty Advisor: Bayly Wheeler, Department of Biology
The centromere is composed of densely packed DNA, also called heterochromatin. This heterochromatin is important for cell division. It recruits proteins that hold sister chromatids together and functions to ensure that each daughter cell inherits the appropriate number of chromosomes. Despite its importance, the localization of heterochromatin within the centromere can vary among genetically identical cells. This phenomenon is called position effect variegation. By inserting the reporter gene, ade6, into different locations at the centromere of S. pombe and monitoring its expression, we can characterize the extent of position effect across the centromere. We mated S. pombe to produce the desired strain with ade6 inserted in heterochromatin and confirmed the genotype by PCR. Next, we will measure the extent of variegation when ade6 is inserted at different centromeric loci. We expect ade6 expression to variegate at some, but not all, sites. We can then build on these findings to identify factors that promote position effect variegation.

#2 Developing an Angelman syndrome model in Drosophila melanogaster using tissue-specific CRISPR to knockout Dube3a
Katie Cruse, Benjamin Geier, Walter Krueger, and Lawrence T. Reiter
Faculty Advisor: Bayly Wheeler, Department of Biology
Angelman syndrome (AS) is a neurological disorder occurring in ~1/15,000 births and is characterized by cognitive disability, ataxia, seizures, speech impairment, and a happy disposition. AS is caused by loss-of-function or deletion mutations in the maternal allele of UBE3A, a gene that encodes an E3 ubiquitin ligase. Drosophila UBE3A, or Dube3a, is 77% identical to the human protein, making Drosophila melanogaster a powerful genetic model for AS studies. Although a mutation model called Dube3a-15 was previously developed, the two alleles from this original study genetically drifted and are no longer homozygous viable. Our goal was to produce an improved AS model in Drosophila via a complete excision of the Dube3a gene using a tissue-specific CRISPR-Cas9 system. Moreover, using this system, we made Dube3a loss of function excisions in somatic tissues (neurons and glial cells) to observe which tissue-specific deletions lead to ataxia, a key phenotype of AS. We have not yet achieved a successful Dube3a knockout in the germline. We have observed significantly slower climbing ability of flies with a ubiquitous deletion (actin-Cas9) and a glial cell (repo-Cas9) specific deletion of Dube3a compared to control flies. We continue collecting data for climbing rates of flies with neuronal-specific deletions (elav-Cas9).

(F) #3 The impact of Agricultural Land Use on various lakes in the Mid-south
Kathleen Cutting, Sam Supan, Patrick Kelly, and Sydney Moyo
Faculty Advisor: Sydney Moyo, Department of Biology
Our project focused on a central question regarding lacustrine systems in the mid-south. We examined how agricultural land management practices affect nutrient concentrations and other

lake characteristics in eight lakes in the mid-south. The mid-south region is characterized by high intensive or industrial agricultural production, especially along the Mississippi river. The main crops produced in the area include soybeans, corn, and cotton. Common practices in intensive agriculture include tillage and high fertilizer inputs that lead to erosion and runoff. To this end, we measured nonvolatile suspended solids (NVSS), various nutrients (TP, SRP, TN, and DIN), and chlorophyll concentrations. Lakes in watersheds with row-cropping have been found to have high N:P ratios. Therefore, with the presence of fertilizer use, we predicted that lakes in higher percentage agricultural watersheds would have higher TN: TP ratios. Overall, we anticipated lakes in higher agricultural watersheds would have the greatest impact on their characteristics. In addition, industrial agriculture exacerbates and is affected by climate change, so understanding its effects on our environment and aquatic systems becomes imperative in finding and implementing solutions to create more resilient freshwater ecosystems.

#4 Transformation of Arabidopsis Tissue into Ruby Red Expressing Calli
Grant Dunn and Jonathan Fitz Gerald
Faculty Advisor: Jonathan Fitz Gerald, Department of Biology
Seed size is an important agricultural trait that correlates with plant vigor and resource allocation. However, seed size is regulated by complex gene expression systems that are offset by specific maternal and paternal influences. Unfortunately, making transgenic plants that report gene expression of candidate targets can take from months to years. We have investigated Arabidopsis plant tissue culture methods to speed expression analysis and the creation of usable transgenic lines. Arabidopsis was grown on Murashige and Skoog (MS) media supplemented with different plant growth regulators. Sterile Arabidopsis leaves were cut and placed on callus media and formation was evaluated. The obtained callus was directly infected with Agrobacterium tumefaciens, which carried the pCBC-DT1R plasmid containing a Ruby fluorescent marker gene. After 2 days of co-cultivation, the calli were subjected to enzymatic digestion to isolate protoplasts, which were then observed under a fluorescence microscope to assess the transformation efficiency. The results the isolated protoplasts were successfully transformed using the Agrobacterium-mediated method. We are currently adapting these methods to quantify expression of various candidates in mutant backgrounds through microscopy and FACS analysis.

#5 Dispensary Cannabidiol (CBD): Nothing to Worry About!
Taylor Elliott, James W. Wheless, and Andrew Gienapp
Faculty Advisor: Jonathan Fitz Gerald, Department of Biology
Despite U.S. Food and Drug Administration approval of cannabidiol (CBD) liquid (Epidiolex®), patients with epilepsy still supplement prescription treatments with dispensary CBD. This study aimed to evaluate therapeutic effectiveness of dispensary CBD. We retrospectively collected dosage information, CBD serum levels, efficacy, and adverse effects from patient charts (children, adolescents, adults) (n=18). All 18 patients showed no clinical benefit from dispensary CBD as detectable serum levels never reached a therapeutic range (6 patients had barely detectable levels that were below laboratory reporting thresholds). Minute levels of tetrahydrocannabinol (THC) were found in 3 patients, and moderate levels were found in 1 patient. Dispensary CBD failed to reach effective therapeutic levels in these patients. The presence of THC demonstrates the current lack of regulation of dispensary CBD. Anecdotal

reports of clinical effectiveness should be considered an effect of prescription antiseizure medications and not dispensary CBD.

#6 Histoplasma capsulatum relies on tryptophan biosynthesis to proliferate within the macrophage phagosome
Alondra Gonzalez-Mireles, Stephanie C. Ray, Chad A. Rappleye, and Qian Shen
Faculty Advisor: Qian Shen, Department of Biology
Histoplasma capsulatum is a pathogen that proliferates within macrophages to cause respiratory diseases. In this study, we aim to determine the nutrients within the macrophages that support the proliferation of Histoplasma, specifically focusing on the aromatic amino acids. Using RNA interference, we created amino acid auxotrophs for phenylalanine, tyrosine, and tryptophan. All auxotrophs demonstrated a decrease in growth when the aromatic amino acids were not supplemented in the media but showed restored growth when the amino acids were exogenously available. Utilizing the aromatic amino acid auxotrophs to probe Histoplasma intramacrophage growth showed that phenylalanine and tyrosine auxotrophs grew as well as the wild type where tryptophan auxotrophs showed impaired intramacrophage growth and attenuated virulence in vivo, suggesting that tryptophan biosynthesis can be an excellent target for antifungal drug development.

(F) #7 Perceptions of Pediatric Patients with CTD or TS, Parents, and Educators Regarding Difficulty Navigating the School Environment and Greater Community
Madison Granberry, Robin Jack, Tracee Ridley-Pryor, Sariha Moyen, Christen Holder, and Gwen Beard
Faculty Advisor: Jonathan Fitz Gerald, Department of Biology
Chronic tic disorders (CTD) and Tourette syndrome (TS) are neuropsychiatric conditions involving both motor and vocal tics lasting at least greater than one year. CTD and TS can have a drastic impact on children's educational experiences, resulting in poor concentration, academic deficits, peer isolation, bullying, and disciplinary action for disruption to classes. These latent effects of CTD and TS can cause children to experience depression and decreased motivation in school settings. This study aims to elucidate the perceptions of pediatric patients with CTD or TS, their parents, and educators regarding difficulty navigating the school environment and greater community. This study will contribute to prior literature by investigating the unique experiences of children of minority groups in rural and underserved areas. This is an ongoing study at Le Bonheur Children's Hospital that utilizes self-report surveys to assess the four domains of social, emotional, physical, and behavior in both home and school settings. The results of this study will provide insight into the nuanced barriers to care for patients with CTD and TS in the educational system, which will build a foundation for innovative strategies and interventions to improve the experiences of children with CTD and TS in schools.

(F) #8 Spatial-behavioral patterns in African elephants (Loxodonta africana)
Mia Harris, Hanna Stuart, Stella Venn, Sophia Kessler, Yihan Li, and Sarah Boyle
Faculty Advisor: Sarah Boyle, Department of Biology
In captivity, husbandry routines and the personalities of individual animals influence behavioral patterns. These behavioral patterns may include stereotypic behavior, such as swaying. Stereotypic behaviors are defined as repetitive actions that an individual participates in without an objective. There are five African elephants (Loxodonta africana) at the Memphis Zoo; the

most recent additions to the herd, Bambi, Daisy, and Kosti, sway most frequently. We investigated the relationship of exhibit location and swaying patterns on these three individuals. We hypothesized swaying behaviors are spatially dependent. In total, we collected 307 hours of behavioral and spatial data from August 2021 to July 2022 using behavioral scan sampling methods. At 2-minute intervals, we recorded both the behavioral and spatial data concurrently. We used ArcGIS Pro and RStudio to analyze the spatial patterns. The results from our study may indicate that there are spatial preferences in behavior.

(F) #9 Sonic Hedgehog cytonemes are induced by BOC activation of SRC family kinases
Christopher C. Hom, Christina A. Daly, and Stacey K. Ogden
Faculty Advisor: Tanushree Pandit, Department of Biology
The Sonic Hedgehog (SHH) morphogen is essential for proper development during embryogenesis. SHH is released from a small subset of producing cells to establish a signaling gradient across developing tissues. Receiving cells respond to SHH in a graded manner, allowing them to adopt distinct cell fates. One method to establish this gradient is through cytonemes, which are specialized filopodia that facilitate long-distance cell-to-cell communication. The molecular mechanisms leading to the development of these actin-based structures are not fully understood. Our previous work shows that SHH expression induces cytoneme formation. Here, we show that the SHH co-receptor BOC induces cytoneme occurrence independent of SHH expression. This induction is lost in SHH co-receptor knockout cells and rescued upon reintroduction of BOC. Here, we demonstrate that SRC kinase induces cytonemes independent of SHH. Our functional studies investigating the link between BOC and SRC revealed BOC is a substrate of SRC. We identified the tyrosine residues on BOC that are phosphorylated by SRC. Current efforts are to identify which, if any, phosphosites are necessary for induction of cytonemes. We are also investigating the functional implications of SRC-mediated phosphorylation of BOC, and how this may relate to the formation of cytonemes for SHH transport.

(F) #10 Germline DICER1 loss drives cancer promotion via innate immune system
Wood Kimbrough, Randolph Larsen IV, Jason Hanna, Kristin Reed, Myron Evans, Casey Langdon, Hongjian Jin, Catherine Drummond, Matthew Garcia, David Finkelstein, Patrick Schreiner, Jerold Rehg, and Mark Hatley
Faculty Advisor: Jonathan Fitz Gerald, Department of Biology
DICER1 syndrome is a rare cancer predisposition syndrome that is characterized by the loss of one copy of the *DICER1* gene in the germline. *DICER1* encodes an endoribonuclease that functions in microRNA processing. It is currently unclear how the *DICER1* loss of function mutation predisposes individuals to cancer. Patients can present with a variety of malignancies, one of which being rhabdomyosarcoma. Leveraging our fusion negative rhabdomyosarcoma (FN-RMS) mouse model, our lab found that heterozygous *Dicer1* loss in the germline promotes tumorigenesis. Interestingly, heterozygous *Dicer*1 loss in tumor cells alone does not recapitulate this more aggressive phenotype, suggesting that non-cell autonomous contributions are promoting tumorigenesis. scRNA-seq analysis of *Dicer1*+/+ and *Dicer1*+/- tumor stroma showed a unique population of neutrophils enriched in the *Dicer1*+/- samples. Genes associated with NETosis, a neutrophil pro-tumorigenic inflammatory process, were upregulated in *Dicer1*+/- samples, suggesting that NETosis could be promoting tumorigenesis in Dicer1+/- mice. A ligand-receptor interaction analysis, iTALK, predicted increased signaling of CRAMP to

EGFR and IGF-1R in *Dicer1+/-* samples. CRAMP is a neutrophil-derived ligand with human homolog LL-37. Our lab validated that addition of LL-37 to a human FN-RMS cell line increased proliferation in an EGFR- and IGF-1R-dependent manner.

#11 Investigating the cell autonomous and non-autonomous responses to disturbed proteostasis with muscle specific heat shock factor knock down

Maria Kubo and Liam Hunt
Faculty Advisor: Liam Hunt, Department of Biology

Maintaining protein homeostasis involves regulating the synthesis, folding, and degradation of proteins. Heat shock transcription factors (HSF), activate transcription of heat shock proteins (HSP) required for protein folding in response to heat stress. How does the response to heat stress in one tissue differ when another has a compromised heat stress response? We hypothesize that in addition to cell autonomous defects in the heat stress response with muscle specific HSF knockdown, non-autonomous responses are activated in other tissues. We will be using the GAL4/UAS system in Drosophila Melanogaster to target HSF using muscle specific GAL4 combined with UAS mediated RNAi interference. Preliminary results indicate that loss of HSF function in muscle reduces survival of flies under heat stress conditions and inhibits HSP transcription in thoracic muscles. However transcription of HSPs in whole flies (heads, thorax and abdomens) is increased, suggesting altered heat shock responses in the heads and abdomens. Future directions consist of using our model system to examine how the silencing of HSF in adult muscle cells affects Drosophila survival, muscle function and non-autonomous affects in other tissues using qPCR and HSP transcriptional reporters to examine heat shock dependent transcription.

#12 The effect of new sabizabulin derivatives on clonogenicity in breast cancer using Hs578T TNBC models

Leona Middleton, Raisa I. Krutilina, and Damilola Oluwalana
Faculty Advisor: Jonathan Fitz Gerald, Department of Biology

Triple negative breast cancer (TNBC) is an aggressive breast cancer subtype, characterized by a lack of targetable hormone receptors, poor overall prognosis, and increased risk of chemoresistance. TNBC patients rely on a combination of cytotoxic chemotherapies, often including microtubule inhibitors from the taxane class, like paclitaxel, that block the disassembly of microtubules. Sabizabulin is a novel drug that inhibits microtubule reassembly, while overcoming taxane resistance. Previously, I reported on the generation of sublines of Hs578T TNBC cells that are resistant to paclitaxel (TxR) and sabizabulin (SabR), and the effect of chemoresistance on proliferation and cell motility. Herein, these Hs578T models were used in clonogenic assays (colony formation assays) to determine the effects of paclitaxel, sabizabulin, colchicine, and leading sabizabulin derivatives (40a, 60c, and CH-277) on TNBC colony forming ability, which is associated with self-renewal and cancer stemness. Sabizabulin significantly inhibited clonogenicity in the parent and TxR subline. Further, both chemoresistant sublines showed significant sensitivity to the sabizabulin derivatives at low nanomolar concentrations, despite the SabR subline being resistant to the parent compound. Overall, sabizabulin and its derivatives are highly potent inhibitors of clonogenicity in both parental and chemoresitant TNBC models, indicating a promising role in suppressing self-renewal in TNBC.

(F) #13 Comprehensive and functional interrogation of HOXA9's downstream regulation mechanism in MLL-r leukemia

Shelby Mryncza, Shaela Wright, Xujie Zhao, Wojciech Rosikiewicz, Siqi Yi, Yong Cheng, Beisi Xu, and Chunliang Li

Faculty Advisor: Jonathan Fitz Gerald. Department of Biology

MLL-rearranged leukemia is an aggressive subtype of childhood acute lymphoblastic leukemia with a poor survival rate. MLL-rearranged leukemia is characterized by a high expression of HOXA9, a pioneer transcription factor essential for leukemia development. HOXA9 is an attractive target but lacks targetable pocket domains. Alternative therapeutic targets are possible with an increased understanding of HOXA9's functional downstream genes and their regulation. It remains largely unknown how HOXA9, as a homeobox transcriptional factor, binds to noncoding regulatory sequences and controls downstream genes in MLL-r leukemia. We have conducted a dropout CRISPR screen in the MLL-r SEM cell line expressing against Cas9 against ~1,800 HOXA9 binding peaks and interrogated the functional noncoding peaks required for survival. We have identified direct evidence between HOXA9/FLT3 regulation axis through transcriptional activation in three-dimensional chromatin architecture. CRISPR editing and epigenomic editing against the HOXA9-binding site in the distal enhancer of FLT3 significantly reduced FLT3 expression and significantly impaired cell survival in MLL-r cell lines without affecting CTCF-mediated promoter/enhancer looping. This work will advance understanding of how HOXA9-associated transcription programs reconstruct the regulatory network specifying MLL-r dependency. The study will promote the future development of HOXA9-mediated noncoding regulation and alternative therapeutic targets in HOXA9-driven leukemia in patients.

(F) #14 Cognitive Behavioral Intervention Therapy is More Effective for Tics with Premonitory Urges

Ngoc-Quynh Nguyen, Gwen Beard, Shalini Narayana, and Ashmitha Raja

Faculty Advisor: David Kabelik, Department of Biology

Persons with chronic tic disorders sometimes may experience a premonitory urge (PU), a sensation or thought, sometimes very uncomfortable, that precedes a tic. Cognitive Behavioral Intervention Therapy (CBIT) is a treatment that aims to reduce the severity of tics by having the patient perform a competing response within the onset of a tic. Our primary goal was to examine if there was a relationship between the presence of PUs and the effectiveness of CBIT on tic severity, measured by a Subjective Units of Distress Scale (SUDS), for 71 tics from children with chronic tic disorders (n=11; 3 female; 12.09 ± 3.70 years) having tics both with and without PU. We hypothesized that tics with PU (PU+) would see more improvement from CBIT than those without PU (PU-). Primary analyses revealed that CBIT for at least two sessions was effective in decreasing the severity of tics in the PU+ group ($t(39) = -3.54$, $p=0.001$), while it was not effective on the PU- group ($t(23) = -1.44$, $p=0.162$). There was no significant difference in SUDS score between the two groups ($p=0.361$). Our results indicate that CBIT is more successful in treating tics with PU than tics without PU.

(F) #15 Safety Profile of Abdominal Magnetic Resonance Imaging (MRI) Performed for Renal Disease Surveillance in Tuberous Sclerosis Complex Patients with Vagus Nerve Stimulators

Ethan Sage, Tracee Ridley-Pryor, Andrew Gienapp, and James Wheless

Faculty Advisor: David Kabelik, Department of Biology

Tuberous sclerosis complex (TSC) is characterized by the development of non-cancerous (benign) tumors in various organ systems. Routine surveillance imaging of the brain and kidneys is an integral component of TSC treatment to monitor for the growth of subependymal giant cell astrocytomas (SEGAs) and angiomyolipomas. Additionally, epilepsy represents a significant morbidity in TSC patients. When epilepsy medications prove ineffective, many TSC patients use non-pharmacologic treatment alternatives such as an implantable vagus nerve stimulator (VNS). The FDA's VNS MRI safety guidelines permit brain imaging but do not approve using a transmit radiofrequency (RF) body coil (restriction zone C7-L3), which is needed to perform an abdominal study. Given this limitation, we developed an MRI protocol that could be utilized in TSC patients with VNS implantation to permit safe imaging of their kidneys. We retrospectively reviewed our electronic medical record (EMR) to identify all of the VNS TSC imaging events from 1997 – 2022 performed with this protocol. We identified 16 patients who underwent 52 abdominal MRIs. In our series, no adverse effects, pain, or discomfort during or after the scans were reported. Our results suggest that concern for adverse events with VNS imaging should not preclude surveillance of renal disease using abdominal MRI.

#16 Characterizing the genetic interaction between Arabidopsis CHR23 and CHR7
Angie Trinh, Maria Nguyen, and Jonathan Fitz Gerald
Faculty Advisor: Jonathan Fitz Gerald, Department of Biology
Seed size is an important trait for agriculture, related to both plant vigor and biofuel production. In Arabidopsis thaliana, the gene CHROMATIN REMODELING23 (CHR23) was identified in a screen for seed loci that were differentially methylated during outcrosses that result in larger seed size. CHR23 shares homology with SWI/SNF2-type chromatin remodeling ATPases and has been implicated in cell growth and gene expression, though much of its function remains unknown. CHR7, another chromatin remodeling factor, overexpression leads to increased biomass and mutation results in defects of seed size and its weight, suggesting that CHR7 plays a critical role in regulating Arabidopsis thaliana seed size and weight. Similarly, crossing maternal chr23-1 revealed larger seeds. In this study, we have further investigated the involvement of CHR23 along with its interaction with CHR7 in the regulation of seed size. Double mutant have been generated to explore genetic interactions between these seed size regulators and to examine their independent roles on gene expression.

#17 Semiquantitative optic nerve axon grading scheme for evaluating the protective effects of pregabalin on optic nerve loss in glaucoma.
Ashwinaa Vaithianathan, Sophie Pilkinton, Jacob Manuel, TJ Hollingsworth, and Monica Jablonski
Faculty Advisor: Mary Miller, Department of Biology
Primary open-angle glaucoma (POAG) is a leading cause of blindness worldwide, characterized by retinal ganglion cell (RGC) damage. Elevated intraocular pressure is the primary risk factor for optic nerve axonal degeneration. The Jablonski Lab has identified a gene, CACNA2D1, to regulate intraocular pressure in BXD29 mice using system genetics. The current projects aim to test the efficacy of their novel pregabalin (PGB)-based formulation to prevent optic nerve loss in the BXD29 glaucoma model. However, the appropriate age range at which PGB should be administered is not determined. In this study, we describe a new semiquantitative 9-point grading scheme for evaluating the optic nerves of mice treated chronically with PGB to prevent RGC loss, as described previously. A natural history study was conducted on the BXD29 mice. ages

ranging from 38 to 150 months at 7-month intervals. The total grade of the cross-section was determined by a weighted average of individual grades assigned to sectioned areas with approximately equivalent damage. We found that the age range that produced the most pronounced glaucoma phenotype was 129 months to 150 months, with a significant increase in the average grade of neuronal damage.

#18 Analyzing gene expression associated with variable heterochromatin spreading at single-cell resolution
Kumudie Wiyathunge and Dr. Bayly Wheeler
Faculty Advisor: Bayly Wheeler, Department of Biology
Heterochromatin, a densely packed form of DNA and proteins, is involved in various cellular functions, including gene expression and more specifically, gene silencing. There exist regions of DNA that are known to recruit heterochromatin and, in turn, lead to the expected silencing of nearby genes. However, variable levels of gene expression can be seen from these nearby genes due to the variable spreading of heterochromatin from the recruitment site. Historically, our lab has used an ade6 reporter gene to measure variable gene silencing. However, this assay is limited by its resolution – ade6 silencing can only be observed on the level of the colony, which contains millions of cells. To increase the resolution of our assay, we will replace ade6 with mKO2, a fluorescent reporter gene, upstream of a known heterochromatin recruiting region. This assay will allow us to measure gene expression in individual cells and characterize the factors that are associated with the variable spread of heterochromatin.

(F) #19 Using amino acid point mutants to understand metal ion specificity of the YiiP transporter in Salmonella
Shuang Wu
Faculty Advisor: Elaine Frawley, Department of Biology
YiiP is cation diffusion facilitator (CDF) protein in a subfamily of metal transporters that either transport zinc or manganese. YiiP has long been suggested to function as a zinc transporter but our studies in Salmonella have shown that it transports manganese instead. Amino acid alignment of YiiP with zinc transporter CzcD and manganese transporter MntE show similarities to both proteins at the three sites that are proposed to determine metal specificity (named A, B and C). We hypothesized that if we introduce point mutations at these sites, it may be possible to alter the metal ion transport specificity of YiiP and better understand how specificity is determined. We generated a series of YiiP mutants with targeted point mutations in the metal binding residues and tested the effects on sensitivity to manganese and zinc in Salmonella. We found that single mutations in the A-site and double mutations in the B and C sites are capable of altering the metal transport activities of YiiP in unexpected ways. This suggests that we need to look beyond the A, B and C sites to understand metal ion selectivity in this family of transporters.

#20 Protein-Protein Interactions of PkcA and RacA in Aspergillus nidulans
Kathyrn Franks, Carson Page, and Terry Hill
Faculty Advisor: Terry Hill, Department of Biology
This research focuses on protein-protein interactions involved in hyphal growth and development in the filamentous model organism, Aspergillus nidulans. Our specific study investigates the physical interactions between the enzyme Protein Kinase C (PkcA) and the monomeric G-protein

RacA during cell growth and division using Bimolecular Fluorescence Complementation (BiFC). This technique involves using genetic engineering to tag proteins of interest with complementary fluorescence-producing markers at one end of the respective protein. In recent work, we successfully tagged PkcA at its C-terminus, resulting in fully viable strains, but ineffectively, producing extremely faint glows that do not allow for proper identification. To mitigate this issue, a regulatable alcohol dehydrogenase promoter (AlcA) was created and inserted into the strain to overdrive expressions of these proteins of interest. The combination of tagging PkcA at the C-terminus and addition of the AlcA cassette provided a visible YFP signal between PkcA and RacA at the hyphal tips. Our poster will describe the methods involved in engineering strains of C-terminally tagged PkcA, insertion of the AlcA cassette, and creation of our other target protein tagged at its complimentary N-terminus along with the results from the interaction between PkcA and RacA.

(F) #21 Understanding Condensate Formation by Fusion Oncoprotein-derived Intrinsically Disordered Regions

Swati Kinger, Brittany J. Pioso, Snigdha Maiti, Swarnendu Tripathi, Aaron H. Phillips, Wahiduzzaman, Toler Freyaldenhoven, Cheon-Gil Park, Scott D. Gorman, Gitanjali Asampille, Jina Wang, David W. Baggett, Hazheen Shirnekhi, Bappaditya Chandra, and Richard W. Kriwacki

Faculty Advisor: Terry Hill, Department of Biology

Fusion oncoproteins (FOs), which arise from chromosomal rearrangements, are drivers of many aggressive pediatric cancers. FOs often contain intrinsically disordered regions (IDRs) derived from one parent protein that are fused to a DNA-binding domain of another parent. Several FOs with these structural features have been shown to undergo liquid-liquid phase separation (LLPS) to form nuclear condensates that promote aberrant gene expression and transform cells. To investigate the generality of this mechanism, we screened 166 GFP-tagged FOs in HeLa cells using confocal fluorescence microscopy and observed that 96/166 formed condensates suggestive of LLPS. We hypothesized that IDRs within these FOs promote their condensate formation. To test this, we used an in-house sequence analysis pipeline to identify over 200 LLPS-prone IDRs and established an experimental platform for testing His6, MBP and GFP-tagged IDRs for condensate formation in E. coli lysates. Preliminary results indicate that 103/201 tested IDRs form round condensates indicative of LLPS. We then expressed and purified these IDR constructs to obtain pure IDRs, which are being assayed for droplet formation using turbidity assays and fluorescence microscopy. These experiments will reveal links between physicochemical features and condensation behavior in vitro and provide insight into the biophysical basis of FO-driven oncogenesis.

(F) #22 Elucidating the Role of Nucleophosmin in Protein Quality Control Mechanisms Inside the Nucleolus

Carolyn Maslanka, Priyanka Dogra, Swarnendu Tripathi, and Richard Kriwacki

Faculty Advisor: Terry Hill, Department of Biology

Irreversible protein misfolding and aggregation are associated with neurodegenerative diseases such as Huntington's and Parkinson's disease. Complex quality control mechanisms maintain protein homeostasis in cells. One stress response pathway involves the nucleolus, which accumulates misfolded nuclear proteins after proteotoxic stress. The protein, nucleophosmin (NPM1), located in the granular component (GC) region of the nucleolus, interacts with

misfolded proteins, reducing their mobility subsequently mitigating irreversible aggregation. NPM1 undergoes liquid-liquid phase separation (LLPS) with nucleolar proteins and RNA via homotypic and heterotypic interactions involving its intrinsically disordered region (IDR), a process we propose mediates the nucleolar stress response pathway. We hypothesize that NPM1 interacts with misfolded proteins through its IDR and forms phase-separated dynamic assemblies that prevent irreversible aggregation. Under stress, certain proteins unfold and migrate to the GC phase of the nucleolus and interact with NPM1. To investigate how the nucleolar partitioning of the proteins changes in response to their misfolding, we performed fluorescence imaging under normal conditions, heat stress, and a recovery period. The proposed studies will elucidate the structural mechanisms that promote the association of misfolded proteins with NPM1. Understanding the mechanisms underlying nuclear protein stress responses may provide new directions for the development of therapeutics against neurodegenerative diseases.

#23 Physical interactions of Protein Kinase C and SepA during polarized growth in Aspergillus Nidulans using Bimolecular Fluorescence Complementation

Anna Tassou, Meghana Devineni, and Terry Hill
Faculty Advisor: Terry Hill, Department of Biology

Aspergillus nidulans is the filamentous fungus used as the model organism in our research focusing on aspects of hyphal growth and development. The current study emphasizes the roles played by the Protein Kinase C orthologue PkcA as it interacts with formin SepA during polarized cell growth. Previous work has shown that PkcA and SepA might physically interact at hyphal tips and septation sites. Our current work uses Bimolecular Fluorescence Complementation (BiFC), a technique to observe protein-protein interactions between PkcA and SepA in vivo based on association of fluorescent fragments. PkcA and SepA, bearing similar localization patterns, were expressed using yellow fluorescent protein (YFP) chimeras. PkcA was tagged using genetic engineering on the C-terminal half (YFPC) and SepA on the N-terminal half (YFPN). Transformation of the two proteins - putting PkcA under the control of the regulatable alcohol dehydrogenase promoter (alcA) - showed a YFP signal. This suggests that the proteins physically interact since the two halves of YFP were brought close enough to fluoresce. The fluorescence was prominent in the hyphal tip, specifically the Spitzenkörper, a structure found at the hyphal apex. The further potential interactions between PkcA and other proteins involved in cell growth and division will be investigated.

#24 Organic Residue Analysis of Basal Rocks of Prehistoric Rock Paintings from Australia using Gas Chromatography Mass Spectrometry

TJ Clayton, Dhammika Muesse, and Jon Russ
Faculty Advisor: Dhammika Muesse, Department of Chemistry

This study aims to analyze the basal rocks of prehistoric rock paintings from Australia and investigate the source of organic residues on the rock surfaces. Identifying and quantifying these organic residues are essential to reveal the materials used to make these prehistoric rock paintings and how natural rock coatings help to preserve them. Furthermore, discovering the source of organic residues on the basal rock can provide useful information regarding the radiocarbon dates of the rock paints, thus, providing concrete insights into the prehistoric artifacts. We analyzed basal rocks using GC-Mass spectrometer outfitted with a pyrolizer to identify fatty acid methyl esters. Due to low volatility, free fatty acids and triglycerides are not amenable to gas chromatographic analysis. However, through pyrolysis with TMAH, fatty acids

are converted into more volatile methyl esters. We detected angelicin, hexadecanoic acid, hexanoic acid, octanoic acid, pentanoic acid, and methyl stearate in the basal rock samples.

(F) #25 Vitamin and q10 supplementation for children and adolescents with chronic migraine
Peyton Crest, Marley Lemons, Lauren Olivia McComb, Brianna Freeman, Jenny Schmidt, Tracee Ridley-Pryor, and Ankita Ghosh
Faculty Advisor: William Eckenhoff, Department of Chemistry
Riboflavin and coenzyme q10 play a vital role in mitochondrial energy production and neuroprotective effects of vitamin D helps in migraine prevention. This is a retrospective cohort analysis from an established electronic database from our tertiary care headache program. As part of the initial visits, patients with chronic migraine were assessed for vitamin deficiencies and levels were quantified with standard reference ranges. Patients with vitamin deficiencies were prescribed vitamin supplementation. Out of 234 patients, 148 were diagnosed with chronic migraine. Mean age of patients at the time of diagnosis was 11.5±3.6. Out of 148, 103 received the vitamin labs and 78 were prescribed nutraceuticals based on the lab results. The mean total vitamin D level was 19.9±9.4 ng/ml, vitamin b2 level was 14.07±18.62 nmol/L and coenzyme q10 level was 0.9±2.09 microg/ml. 39/78 returned for timely follow up. The average headache duration in this patient group improved from 15.03±21.19 to 5.3±9.3 hours, PedMIDAS disability score improved from 40.3±43.3 to 13.02±15.5. Headache frequency improved from 15.5±9.3 days to 8.7±7.7 days. Deficiency of vitamin D, vitamin B2 and Coq10 may be common in pediatric and adolescent migraine. Determination of deficiency and consequent supplementation along with preventative management may result in clinical improvement.

#26 Acetophenone Oxidation via Nitration Synthesis
Peyton Crest, Isabel Spikema, and William Eckenhoff
Faculty Advisor: William Eckenhoff, Department of Chemistry
Oxidation of benzene alkyl side chains traditionally involves metal-based compounds or catalysts, such as potassium permanganate or dichromate. We sought to devise an improved synthesis for this transformation that involves less purification and higher yields. We began with a model system, synthesizing benzoic acid from acetophenone, utilizing a sodium nitrite and sulfuric acid solution. ^{1}H NMR results revealed that acetophenone was completely consumed after 12 hours, giving a 60% yield of benzoic acid with the remaining 40% being nitrobenzene. This suggests that decarboxylation of the benzoic acid followed by subsequent electrophilic aromatic substitution by NO_2. Further studies examining molar ratios and reaction times will be performed to perform benzoic acid percent yield.

#27 Hydrogen Production Using Nickel Complexes with Substituted Thiosalen Ligands
Alex Hemphill, Nate Hames, and William Eckenhoff
Faculty Advisor: William Eckenhoff, Department of Chemistry
As our global population grows, our need for clean energy also grows. One new energy source can be found through the use of artificial photosynthesis to produce hydrogen gas. In our lab, we have investigated the effectiveness of nickel complexes with thiosalen ligands acting as a catalyst for the artificial photosynthetic process. While unsubstituted thiosalen complexes show proton reduction to occur electrocatalytically at ~-2.0 to -2.5V vs Fc+/Fc., addition of electron withdrawing substituents can lower the overpotential. Ni(II) thiosalen and thiosalphen complexes with 3-CF3 and 5-CF3 groups were synthesized, characterized, and tested for efficacy of

hydrogen production. While the substituents did lower the Ni(II/I) redox couple in accordance with their electron withdrawing ability, this effect did not greatly affect the overpotential of proton reduction as we supposed. DFT calculations were carried out to better understand the mechanism of proton reduction. Currently, 4 -CH3 and 3,6-F substituents are being worked on, and we hope to figure out the results soon.

(F) #28 An Investigation Into Lipid Droplet-Mitochondria Contact Sites
Caleb Lindow
Faculty Advisor: Dana Horgen, Department of Chemistry
Lipid droplets are the organelles responsible for storage of fatty acids, and mitochondria utilize them for energy. Using immunoprecipitation (IP) and mass spectroscopy, a scientist working in the Chang lab, Dr. Li, has previously discovered a protein-protein interaction between mitochondrial protein OPA1 and a lipid droplet protein. The research conducted is meant to uncover the domain responsible for this interaction. My current hypothesis is that the GTPase Effector Domain (GED) in OPA1 is responsible for this interaction. In order to investigate this, eight different constructs of OPA1 were created using quick-change PCR. Each of these constructs contains seven of the eight domains of OPA1. With the modified OPA1 proteins, immunoprecipitation can be used to determine which of the eight constructs interact with the lipid droplet protein.

#29 Synthesis of Antimicrobial Peptide Analogs from Fish Pogonoperca punctata Venom
Darsani Patel and Chinmayi Alli
Faculty Advisor: Roberto de la Salud Bea, Department of Chemistry
Animal and plant venoms contain a variety of active molecules with useful and potential medicinal applications. Though not as commonly studied as for scorpions, spiders or insects, some fish venom has also components with antimicrobial activity. Pp2a is a 14 amino acids peptide with an alpha helix structure that is part of the Grammistins group of peptides from the "soap fish" Pogonoperca punctata and it has been reported to have broad antimicrobial activity against Gram positive and Gram negative bacteria but also, expected for a venom, hemolytic activity. We have designed and synthesized a library of analogs of the natural peptide Pp2a and the plan is to test these analogs for antibacterial, anti-fungal, insecticide properties and for toxicity. The design of analogs is based on the structure given by the Schiffer–Edmundson α-helical wheel projection of Pp2a, which shows the secondary structure and the positions of the amino acids that can be essential for the peptide activity of this natural peptide. This design includes modifications on specific positions of the amino acid sequences and, for a second library of peptides, the addition of a fatty acid chain on each peptide to increase hydrophobicity and expected increase in antimicrobial activity.

(F) #30 Investigating RNA-seq from Human Cortical Spheroids Derived from Patients with Pediatric Epilepsy
Helen Pennington, Christy LaFlamme, Soham Sengupta, Edith Almanza-Fuerte, Alison Muir, Helen Chen, and Heather Mefford
Faculty Advisor: Darlene Loprete, Department of Chemistry
Just under 50% of patients with Developmental and Epileptic Encephalopathy (DEE) who get genetic testing receive a genetic diagnosis for their rare disease. Patients without genetic diagnoses, or unsolved patients, do not benefit from genetic counseling or research geared

towards gene-specific novel therapies. I hypothesize that investigating changes in gene expression will uncover novel causes of unsolved DEE. To test this hypothesis, I investigated gene expression by analyzing RNA-seq data from brain organoids, which are 3D cellular models that provide brain-specific expression data when brain tissue samples are unavailable, for 12 patients. I investigated the RNA-seq data for potential disease-causing variants through differential expression, dropout, and splicing analyses. Potential abnormal splicing events were identified using the rMATs pipeline and results were filtered for location in known epilepsy genes, RNA-seq coverage, and significance. The resulting splicing event calls were visualized using sashimi plots and narrowed further to 75 plots through manual inspection. Future work will focus on inspecting the genomes of these samples in the regions of these narrowed calls in search of potential disease-causing genetic variants. This work has the potential to lead to the discovery of novel genetic causes and therapeutic targets for unsolved DEE.

#31 Synthesis of 6-Substituted Dopamine Analogues
Valerie Williams and Mary Kathleen Luetkemeier
Faculty Advisor: Larryn Peterson, Department of Chemistry
Catecholic rings are vital structures in the human body—most notably for their roles as neurotransmitters such as norepinephrine and dopamine. Dioxygenase enzymes breakdown these rings into various antibiotic and bioactive materials. In order to investigate the mechanism of dioxygenase enzymes and the roles of their products, dopamine analogues with various substituents at the 6 position were synthesized. These compounds may be useful in investigating L-DOPA dioxygenase, the selectivity of cytosolic sulfotransferases (SULTs), or as chronotropic agents. Analyzing gene expression associated with variable heterochromatin spreading at single-cell resolution.

(F) #32 Evaluating Dopamine Derivatives and Catecholic Nitriles as Inhibitors of Catechol-O-Methyltransferase
Gisela Xhafkollari, A. Katherine Hatstat, Grace M. Kennedy, Trevor R. Squires, C. Skyler Cochrane, Mauricio Cafiero, and Larryn W. Peterson
Faculty Advisor: Larryn Peterson, Department of Chemistry
Catechol-O-methyltransferase (COMT) can deactivate L-DOPA and dopamine by transferring a methyl group from the co-factor S-adenosyl-L-methionine (SAM) to a hydroxyl group. L-DOPA is a dopamine precursor and is administered as a treatment for patients with Parkinson's Disease to supplement dopamine levels. Methylation and subsequent deactivation of L-DOPA by COMT, along with deactivation by other enzymes, causes little of the administered dose to convert to dopamine in the brain. Therefore, competitive inhibition of COMT as a strategy to prolong L-DOPA effectiveness is attractive. Several dopamine derivatives and catecholic nitriles, with various groups at the 6th position, were synthesized following computational analysis and their inhibition was evaluated via fluorescence screening assay. Molecular docking studies and pKa values were conducted to further understand the behavior of these compounds with COMT. Catecholic nitriles with a nitro group at the 6th position showed the most potential as inhibitors of COMT. These results confirmed the computational predictions and illustrate that it is more than just the lowered pKa value or neutral tail that lead to strong inhibition.

(F) #33 Exploring the Effect of Ss18 Overexpression on the Development and Function of CD8+ T-Cells

Jithin Manikonda, Minghong He, and Yongqiang Feng
Faculty Advisor: David Kabelik, Department of Biology

The Ss18 gene encodes a protein present in the cBAF and ncBAF complexes, which are part of the SWI/SNF family of chromatin remodelers. The function of these complexes revolves around functions such as removing and sliding nucleosomes, allowing certain regions of chromatin to be more accessible for transcription. Although Ss18 is present in both complexes, it is not a catalytic subunit with unknown function in the complexes, thus, there is a lack of studies exploring this gene. CD8+ T-Cells were isolated from OT-1 mice and expanded with persistent Ovalbumin antigen stimulation, which mimics the antigen exposure condition in tumor microenvironment. After resting by removing Ovalbumin, the T-cells were restimulated by T-Cell Receptor (TCR) signal, and proteins associated with H3K27ac marked regions were purified. We found that many cBAF proteins were enriched in the CD8+ T-cells after TCR signal stimulation, and Ss18 ranked on the top. However, the knockout of Ss18 using CRISPR, unlike the other cBAF components, showed a depletion in CD8+ T-cells in both the B16 and MC-38 tumor of OT-1 mice, indicating a reduced immune response. Therefore, we hypothesized that in tumor environments, overexpressing the Ss18 gene may be very beneficial for the survival of CD8+ T-Cells.

#34 Long-lasting Neuroprotection by LAU-0901 and Neuroprotectin D1 Following Ischemic Stroke in Rats

Rankin S. Payne, Ludmila Belayev, Larissa Khoutorova, Pranab K. Mukherjee, Madigan M. Reid, Jeanne Dugas, and Nicolas G. Bazan
Faculty Advisor: David Kabelik, Department of Biology

It has been demonstrated that administering neuroprotectin D1 (NPD1), a derivative of docosahexaenoic acid (DHA), and LAU-0901, a platelet-activating factor receptor antagonist, significantly increases neurological recovery following middle cerebral artery occlusion (MCAo) in the rat model. This research investigates whether LAU-0901, NPD1, and a combinatory treatment will promote greater long-term neurobehavioral recovery after experimental ischemic stroke induced by MCAo in rats compared to the vehicle. Sprague-Dawley rats received 2h MCAo followed by LAU-0901 or cyclodextrin (vehicle or NPD1 groups) administered intraperitoneally after 1h. A second treatment of NPD1 or saline (vehicle or LAU groups) was administered intravenously 15 minutes after the first treatment. Rats received neurobehavioral tests within 1h upon onset of MCAo and on days 1, 2, and 3, and up to 4 or 8 weeks. NPD1, LAU-0901, and the combinatory treatment improved neurobehavioral scores by 30-36% for the 4-week group and 31-33% for the 8-week group on day 1 compared to the vehicle. Recovery increased to 37-45% after 4 weeks, and those observed for 8 weeks demonstrated a 40-46% improvement in neurological score compared to vehicle. There was no significant difference in behavioral scores between treatment groups in recovery over 4 or 8 weeks.

#35 Greater Expectations that Eating Reduces Negative Mood Predict Greater Reductions in Negative Mood Following Stress-Eating, but Only for Women With High Stress-Induced Anxiety

Rebecca Klatzkin, Bella Lallo, Erica Mosby, Hadiyah Qureshi, and Dot Perkins

Faculty Advisor: Rebecca Klatzkin, Department of Psychology
Affect regulation models suggest that stress-eating results in reductions in negative mood that promote further stress-eating via negative reinforcement. Individuals experiencing greater negative reinforcement from previous stress-eating learn to expect greater negative reinforcement from future stress-eating. These heightened expectancies are associated with disordered eating, but it is unknown whether they predict emotional relief from stress by eating, or whether the relationship depends on post-stress anxiety and food intake. We predicted post-stress snack food intake would moderate the extent to which post-stress anxiety moderates the relationship between eating expectancies and emotional relief from stress by eating. 45 women completed qualitative assessments, then underwent a stress task before rating three snacks: M&Ms, golden Oreos, and chips. The moderated moderation model was significant, $F(10,34)=8.7$, $p=.001$; $R2=.72$. Greater pre-stress eating expectancies significantly predicted greater emotional relief from stress by eating only under conditions of high post-stress anxiety ($b=.015$, $SE=.005$, $p=.006$; 95%CI: .004-.025), and regardless of the amount of snack food consumed post-stress ($b=.000$, $SE=.000$, $p=.56$; 95%CI: -.0001-.000). Thus, eating expectancies may only be predictive under conditions of high stress-induced anxiety and this moderation does not depend on food intake. These results may inform prevention and treatment efforts for obesity, disordered eating, or anxiety disorders.

#36 Embryonic Hyperglycemia Delays the Development of Retinal Synapses in a Zebrafish Model
Ambalavanan Saravanakumar, Abhishek P Shrestha, Bridget Konadu, Saivikram Madireddy, Yann Gibert, and Thirumalini Vaithianathan
Faculty Advisor: David Kabelik, Department of Biology
Embryonic hyperglycemia negatively impacts retinal development, leading to abnormal visual behavior, altered timing of retinal progenitor differentiation, decreased numbers of retinal ganglion cells and Müller glia, and vascular leakage. Because synaptic disorganization is a prominent feature of many neurological diseases, the goal of the current work was to study the potential impact of hyperglycemia on retinal ribbon synapses during embryonic development. Our approach utilized reverse transcription quantitative PCR (RT-qPCR) and immunofluorescence labeling to compare the transcription of synaptic proteins and their localization in hyperglycemic zebrafish embryos, respectively. Our data revealed that the maturity of synaptic ribbons was compromised in hyperglycemic zebrafish larvae, where altered ribeye expression coincided with the delay in establishing retinal ribbon synapses and an increase in the immature synaptic ribbons. Our results suggested that embryonic hyperglycemia disrupts retinal synapses by altering the development of the synaptic ribbon, which can lead to visual defects. Future studies using zebrafish models of hyperglycemia will allow us to study the underlying mechanisms of retinal synapse development.

(F) #37 53BP1 Interacts with Downstream Proteins Regulating Transcription Profiles of Differentiating Neural Stem Cells
Parth Sinojia, Seunghyun Jung, and Eric Rivera-Peraza
Faculty Advisor: Tanushree Pandit, Department of Biology
Tumor Suppressor p-53 Binding Protein 1 (53BP1) is a crucial factor in the DNA double stranded breaks (DSBs) repair pathway. In the DSB repair system, cells can undergo DNA repair in 2 ways: via non-homologous end joining (NHEJ) where broken ends of DNA are directly

fused together or homologous recombination (HR) where homologous DNA template is used to repair the broken strand. Downstream of ATM, not only does 53BP1 regulate the decision between a cell undergoing NHEJ or HR in response to DNA damage, but studies have also implicated 53BP1 in the regulation of genomic imprints of embryonic stem cells (ESCs). Through interactions with UTX, a histone demethylase of H3K27me3, 53BP1 influences the differentiation lineage of ESCs into neurons and their proliferation rates. Sorting through mass spectroscopy data and past literature, potential downstream interactors of 53BP1 were identified and the ideal 53BP1 CoIP settings were found. To measure proliferation rates of cells, a BrdU/EdU dual pulse-chase stain protocol was optimized for neural progenitor cells and other knock-out models. Overall, little is known about 53BP1 in a neurodevelopmental context and by investigating downstream interactors, it will lead to a fuller understanding of 53BP1's role in both cancers and neurodevelopmental disorders.

#38 Investigating physical interactions of Rho-type GTPases with Protein Kinase C and the Formin SepA in Aspergillus nidulans using a yeast two-hybrid assay.

Ani Mikoyan, Mary Kate Freyaldenhoven, Loretta Jackson-Hayes, and Terry Hill
Faculty Advisor: Terry Hill, Department of Biology

Aspergillus nidulans is a species of filamentous fungi often used as a model organism in investigations of fungal cell wall metabolism. Filamentous fungi grow in a polarized fashion, forming finger-like projections termed hyphae that are reinforced by cross-wall structures known as septa. SepA, a formin protein responsible for nucleation of actin filaments, is known to localize to sites of septa formation. Previous work has reported that Protein Kinase C (PkcA) in A. nidulans complexes with SepA at these septation sites. Additionally, formin proteins are known to require activation by Rho-type GTPases. Our current work is attempting to elucidate which Rho-type GTPase is present in this complex using a Gal4-based yeast-2-hybrid system to demonstrate protein-protein interactions with a positive result indicated by growth on an agar plate lacking histidine. We have yet to detect a positive interaction, which we believe is due to prenylation of the Rho-type GTPases inhibiting localization to the nucleus in the two-hybrid system. To confirm this, we are continuing our investigation using non-prenylatable Rho mutants.

POSTER SESSION #2

Multi-Sports Forum, Bryan Campus Life Center
2:30 – 4:00
Poster numbers are listed with title

#1 The Dark Reality of Child Sexual Exploitation: An Exploration of Modern Slavery
Sophia Adam
Faculty Advisor: Amy Risley, Department of International Studies
In my research, I pose the following question: Why is child sexual exploitation (CSE) more prevalent in some countries than in others, despite the advancement of international law aimed directly at protecting children? CSE occurs in both extremely wealthy, developed countries, as well as in less developed countries. The child sex industry is one of the largest in the world, and children have been exploited across all socioeconomic statuses, genders, religions, and races. This study looks beyond these explanations and draws from different disciplines, including political science, political economy, and sociology. I propose the following independent variables: 1) the strength of a clandestine sex tourism industry, and 2) the strength of a country's municipal CSE legislation and enforcement. Both of my independent variables highlight the institutional responsibility that is at the forefront of CSE issues, and my research concludes with policy recommendations that offer a remedy to these human rights violations.

#2 The Connaway Collection: A Look into the Pleistocene
Liv Barnett and Rose Basom
Faculty Advisor: Sydney Moyo, Department of Biology
As a Natural History Collection Intern, I had the opportunity to help contextualize part of the Connaway collection of Pleistocene specimens, primarily mammals, for Museum visitors and science communication outreach. My tasks consisted of photographing fossils, executing research on the species housed within the collection, and presenting this research at the museum's symposium. The information I have compiled will also be used to update the database system and web module, which will be made accessible through the MoSH website. Additionally, I created educational content to help disseminate information about the Connaway collection and its specimens to be utilized for community engagement.

#3 The Role of Environmental Context in the Ensemble Perception of Social Status
Julia Blackmon and Matthew Weeks
Faculty Advisor: Matthew Weeks, Department of Psychology
Ensemble perception is the visual system's ability to gather summary statistical information from groups of similar stimuli in a brief amount of time. The ensemble perception of social status relies on cues from human targets such as clothing, faces, and as we predict: environmental context. This study seeks to examine the effect of different backgrounds associated with varying socioeconomic statuses with ensembles of people. We foresee one of two effects; either higher status backgrounds will create an amplification effect and increase the average judgment of the status of the ensemble the participant is presented with, or a higher status background will create a contrast effect where the ensemble seems lower status by comparison.

#4 List- and Experimental-Contexts Influence the Emotional Stroop Effect
Asya Bray and Gautham Nair
Faculty Advisor: Geoffrey Maddox, Department of Psychology
This study examined whether the context in which emotional words are encountered significantly affects attentional engagement with those stimuli. Participants completed a Stroop task in which words are presented in different colors and must identify the color, rather than read the word. Slower response times to identify the color reflects attentional engagement with reading the word. In Experiment 1, participants were randomly assigned to one of two dual-valence conditions. Arousal and valence were retrieved from a word databank that compares lexical, valence, and arousal differences. Participants were given lists of negative and neutral words or lists of positive and neutral words. The response time to the color is measured. It was predicted that response latencies for emotional word trials would be longer due to increased attention levels than for neutral words and that this Stroop effect would be larger in the negative condition than the positive. In Experiment 2, single valence lists were used to investigate the influence of context effects on positive and negative stimuli through an emotional Stroop task. Discussion will consider the extent to which results supported the hypotheses and how context may differentially influence the perception of emotional valence versus attention allocated to emotional stimuli.

(F) #5 Practicing Archaeology: Understanding Different Student Experiences in Fieldwork
Mary Katherine Brown and Chiara Torrini
Faculty Advisor: Jeanne Lopiparo, Department of Anthropology & Sociology
Public perception of archaeology is shaped by movies like Indiana Jones and The Mummy, but the reality of archaeology is very different. Students are usually introduced to archaeology through field schools, which can have different formats and focuses, and impact student experiences and whether they want to continue in archaeology. After completing two field seasons through Rhodes as well as an international field season in Hungary through the University of Georgia, and sponsored by the Rhodes Summer Plus Fellowship, the researchers are able to compare the different methods used in American archaeology versus Hungarian archaeology. This includes different tools as well as excavation approaches, each adapted to the specific environment and context where the excavation takes place. This poster explores the student experience both in the field and becoming immersed in the surrounding cultures of each site. While the site in Tennessee was historic, meaning there are existing written records, the site in Hungary was from the late Neolithic, so archaeology is the only way to reconstruct the lives and cultures of those who lived there. Ultimately, this project demonstrates the variability in how archaeology is taught and how students are impacted by the communities where it takes place.

#6 Understanding Response to Trouble in Older Adult Narratives: A Mixed Method Approach
Sydney Brown and Fiona E. Toomey
Faculty Advisor: Katherine White, Department of Psychology
Narratives help older adults make meaning of past experiences. This research aims to understand how older adults reflect on and cope with troubles experienced across the lifespan. A mixed method approach was used to examine the thematic and linguistic components of older adults' lifespan emotional memories. Forty-one older adults ranging from 66 – 97 years of age (M = 83) responded to prompts asking them to share a significant positive and negative memory from six

time periods across the lifespan, yielding a total of 386 narratives. A modified grounded theory approach was used for thematic analysis of the narratives, yielding a coding scheme with five superordinate categories (e.g., troubles, response to trouble, positive experiences) and 60 subordinate codes. The current study analyzed 14 subordinate codes for healthy and unhealthy responses to trouble. Analyses will test whether healthy and unhealthy responses differ as a function of time period of the narrative. Additionally, the linguistic differences among healthy and unhealthy responses will be compared using Linguistic Inquiry Word Count (LIWC) text analysis. Results will be discussed in light of response to trouble as a form of meaning making for past experiences.

#7 Oxalate Coatings on Prehistoric Rock Art

Catharine Bruner, Ayumi Bonev, Liam McDade, Geneva McElvaine, and Jon Russ
Faculty Advisor: Department of Jon Russ, Department of Chemistry

Most prehistoric rock paintings found worldwide are covered with a natural coating composed primarily of calcium oxalate (CaC2O4). There are two hypotheses on how the oxalate forms: the first is that it is a byproduct of lichen or other microbes that grow on natural rock surfaces, and the second is that it is the result of reactions of oxalic acid in atmospheric aerosols with calcium on the rock surfaces. If the coatings are produced by lichens, we expect to detect trace organic compounds specific to lichens or other microbes in the oxalate coatings, specifically fatty acids and sterols. If the source is aerosols, we predict the presence of various dicarboxylic acids. The trace chemical composition of the coatings can be determined using pyrolysis combined with gas chromatography and mass spectrometry. We are developing new analytic methods for better isolating lipids and fatty acid derivatives to study oxalate coatings along with prehistoric rock art that occurs in the Lower Pecos Canyonlands in southwestern Texas. Methods so far include exploring parameters of derivatizing agents, namely Tetramethylammonium Hydroxide (TMAH), and the pyrolysis technique by varying temperature.

#8 Will Cognitive Control Reduce Taboo Interference in a Speeded Picture-Word Interference Task?

Erin Batchelor, Asya Bray, Kendall Dobie, Ryland McClain-Rubin, and Andrew Precise
Faculty Advisor: Katherine White, Department of Psychology

Recent research has indicated that speakers use cognitive control to manage interference from emotional distractions. The flexibility of cognitive control is studied with conflict tasks, such as the picture-word interference (PWI) task, where people name pictures superimposed with distractor words. Conflict occurs when the distractor and picture are different (i.e., incongruent), and is compared to performance when the distractor and picture are the same (i.e., congruent). Interference from conflict trials is reduced when incongruent trials repeat, an effect known as the congruency sequence effect (CSE). This experiment explored whether conflict induced via taboo distractor words can be controlled via the CSE. Participants named pictures (e.g., a frog) that were presented concurrently with one of three types of distractors: congruent and neutral (e.g., frog), incongruent and neutral (e.g., couch), or incongruent and taboo (e.g., “prick”). One block of trials presented pictures very rapidly and recorded participants’ naming errors and naming times. Compared to trials where pictures are presented at a slower rate, we anticipated that the speeded presentation of trials would reduce the time needed to engage cognitive control, diminishing the CSE and increasing errors for trials with taboo distractors.

(F) #9 Substituent effects on solvatochromism of group six metals
Emma Dove and William Eckenhoff
Faculty Advisor: William Eckenhoff, Department of Chemistry
Solvatochromism is the property of a compound that causes it to change color in the presence of solvents with varying polarity. This phenomenon is most strikingly evidenced by a compound's variable appearances in solvents of different polarities. Previous success in synthesizing the solvatochromic complex, [Mo(bpy)Cl4]- (bpy= 2,2'-bipyridine), which shifts over 100 nm in various solvents, lead to interest in the related compounds [Mo(bpy)Br4]-, [Mo(bpy)(SCN)4]-, [W(bpy)Cl4]-, and [W(bpy)Br4]-. Despite their structural similarities, syntheses of these compounds were highly varied. The bromide complexes were synthesized starting from the metal hexacarbonyl complex and elemental bromine while the tungsten chloride complex was synthesized using a mixture of tungsten hexacarbonyl and tungsten hexachloride. Preliminary results suggest that [Mo(bpy)Br4]- exhibits solvatochromism similar to it chloride precursor, but the analogous tungsten complexes appeared less so and suffered from rapid decomposition. Electrochemically, they showed reversible couples comparable to the [Mo(bpy)Cl4]- but shifted due the difference in ligands. However, the thiocyanate complex has not been observed to be solvatochromic.

(F) #10 Computing the Reductive Capacity of a Hydrogen Evolving Catalyst
Daniel Graham
Faculty Advisor: William Eckenhoff, Department of Chemistry
In producing catalysts for proton reduction, it is important to determine the capability of reduction in the catalyst. With the use of computational chemistry techniques, one such catalyst was tested for its reduction properties to see if it shares any properties of previously tested molecules. This study makes use of Density Functional Theory (DFT) to calculate the Gibbs energy associated with different reduced and protonated species that may or may not form during the catalysis. The molecule being tested are modeled based off of crystal structures and have electrochemical data which was used to predict the theoretical findings.

#11 Characterization of Prehistoric Rock Paints
Justin DiProfio, Sarah Ginsberg, and Jon Russ
Faculty Advisor: Jon Russ, Department of Chemistry
The characterization of prehistoric rock paints from the Big Bend Ranch is important for understanding how ancient indigenous cultures produced paints that have lasted millennia. Ancient paints are hypothesized to have organic binding agents; however, determining the source of the organic substances has been elusive. We analyzed paint samples and the natural accretion that had formed over the paint collected from the Big Bend Ranch archaeological site 41PS114. By using a combination of pyrolysis and GC-MS, we identify compounds in the paint and accretion. We analyzed paint samples using a standard pyrolysis method, as well as a method that derivatized paint and accretion samples using tetramethylammonium hydroxide (TMAH). Pyrolyzed samples were automatically injected into the GC-MS. For the derivatization method, 4.0 μL of TMAH was added to the sample just prior to putting it into the pyrolizer. The results showed that the paint contained a significant amount of organic matter, mostly in the form of aromatic compounds. The accretion, on the other hand, did not contain as many aromatics, but showed the presence of dicarboxylic acids. This is similar to the composition of accretions in the Lower Pecos Canyonlands ~400 km (250 mi) to the east of the study site.

#12 Book Censorship: Deployed to Maintain Parental Rights and Queerphobic Agenda
Taryn Graves and Alice Atkins
Faculty Advisor: Laura Kelly, Department of Educational Studies
This short-term, small-scale, comparative case study investigated the reasoning behind recent book ban policies. A qualitative document analysis was conducted, which included analyzing two state policy documents each from Florida, Tennessee, and Pennsylvania regarding book censorship. The study identified the reasons behind introducing literary censorship policies, how they are legitimized, and their implications within the educational realm. Florida and Pennsylvania's book censorship policies were created and catered to parental concerns regarding educational curricula. Similar to this discovery, both states portrayed censorship as a parental right that supersedes students' and teachers' educational wants and needs. This study also found that book censorship was employed as a justification for blocking the discussion of gender and sexuality. All three states had at least one policy document that was queer-phobic and reinforced heteronormativity. Tennessee, Florida, and Pennsylvania's policies implied that topics surrounding gender identity and sexual orientation were inherently sexual and inappropriate and should be censored to "protect students" from this topic. Overall, the case study revealed the troubling reasons, actions, and implications of book bans and provides recommendations on how to proceed; the case study argues against using censorship as a means to erase identities and ideas that go against the status quo.

(F) #13 Synthesis and characterization of 3,4-dihydroxyhydrocinnamic acid and L-3,4-dihydroxyphenlalanine derivatives
Trevor Squires, Emma G. Gruss, Gabriella A. Krisanic, Gisela Xhafkollari, Jessica L. Steiner, Kudzai L. Nyamkondiwa, Sebastian Leyes Porello, Keri L. Colabroy, and Larryn W. Peterson
Faculty Advisor: Larryn Peterson, Department of Chemistry
Catecholic rings are structural components of plant woody tissue and the core of some neurotransmitters, such as dopamine. The breakdown process of these rings involves an essential protein catalyst, dioxygenase enzymes. In nature, the breakdown of the catecholic rings is used to make antibiotic and other bioactive materials. Substituted catechols are a toxic byproduct in oil mill production and contribute to smoke production due to involvement in cell wall generation; dioxygenases may be helpful in bioremediation. However, the bounds of application of this breakdown have not been completely explored due to a lack of catechol substrates. Substitution groups on the catecholic ring influence the structure of final products resulting from the cleaving by dioxygenase, indicating the potential to synthesize a variety of chemical scaffolds from catecholic industrial waste. We report on the synthesis and characterization, redox potentials and pKas of 3,4-dihydroxyhydrocinnamic acid and L-3,4-dihydroxyphenlalanine derivatives substituted at the 6-position and their characterization as substrates of L-DOPA dioxygenase from Streptomyces lincolnensis. The cleavage of diverse catecholic substrates is an important element of bioremediation and promises to yield insight into biosynthetic mechanisms and provide synthons for various applications.

#14 Stigmatizing Experiences and Snack Food Consumption
Allison Hagler
Faculty Advisor: Rebecca Klatzkin, Department of Psychology

This study aimed to investigate the relationship between snack food consumption and the devaluation experience (stigma) variable, which includes weight and body shape, ethnicity, race, gender, religion, and sexual orientation. In this study, we separated our participants into three groups: stigma, non-stigma, and control. This allowed us to isolate the data collected in regards to the stigmatizing experience manipulation. In this research, we were interested in investigating body weight stigmatization in order to connect this to the phenomena of emotional eating. I will present the data that was collected, which included measuring potential mediators such as emotional and external eating, dietary restraint, and impulsivity. Other variables that were measured included BMI, hunger and desire to eat, and liking for the foods. The study sought to provide insight into the factors that influence snack food consumption, which is a significant public health concern. The findings could inform future interventions aimed at reducing unhealthy snacking behaviors. Further data analysis is pending as the study is ongoing. We will use mediation, linear regression, Cronbach's alpha to interpret the data from our participants.

#15 Spatial variation of the integrated backscatter coefficient of brain across multiple transducer frequencies

Shona C. Harbert, Will R. Newman, Kiera Downey, Phyu Sin M. MyatLauren Boughter, Kate Hazelwood, Cecille Labuda and Brent K. Hoffmeister
Faculty Advisor: Brent Hoffmeister, Department of Physics

Transcranial ultrasound may be used to detect changes in brain tissue caused by disease or injury. The goal of this study was to investigate how transducer frequency affects the measured spatial variation in the ultrasonic backscattering properties of brain tissue. 1-cm thick slices of brain tissue were prepared from 12 preserved sheep brains. Slices were oriented along the transverse, sagittal and coronal planes. Ultrasonic measurements were performed in a water tank at room temperature using a 3.5, 5, 7.5, and 10 MHz transducer. The transducer propagated ultrasonic pulses into the tissue and received the returned (backscattered) signals. The transducer was mechanically scanned to acquire measurements from multiple locations on the specimens. The backscatter signals were analyzed to compute the integrated backscatter coefficient (IBC). The spatial variation in the backscattering properties of the tissue were quantified by computing the standard deviation of the mean of the measured IBC values.
Spatial-behavioral patterns in African elephants (Loxodonta africana)

#16 Effect of Processing Level on Memory for Valenced Words

Adeline Harton, Armon Newsom, Colby Slaughter, and Diyora Temirova
Faculty Advisor: Geoffrey Maddox, Department of Psychology

Emotionally enhanced memory (EEM) reflects the finding that positive and negative stimuli are typically remembered better than neutral stimuli. Theories suggest that EEM may be influenced by distinctiveness such that emotional stimuli receive more attention than neutral stimuli. In turn, the distinctiveness of emotional items may shift across experimental contexts (e.g., emotional items may become less distinctive following exposure to other emotional stimuli). To further examine how EEM is influenced by attention and distinctiveness, participants in the current study incidentally or intentionally encoded two lists comprised of neutral and emotional words. Participants in the incidental encoding condition initially rated words for their orthographic or semantic content, whereas participants in the intentional encoding condition learned words for an upcoming memory test. It was predicted that the largest EEM would be observed in intentional learning due to attention being differentially directed toward emotional over neutral items. In the

incidental encoding conditions, it was predicted that EEM would be larger for negative stimuli than for positive stimuli and that shifting from orthographic to semantic processing would produce a larger increase in EEM for positive stimuli. Discussion will consider the contributions of automatic and controlled attention to EEM.

#17 Testing two ultrasonic bone assessment techniques using a bone simulating material
Kate Hazelwood and Brent Hoffmeister
Faculty Advisor: Brent Hoffmeister, Department of Physics
Ultrasonic techniques are being developed to detect changes in bone caused by osteoporosis. Many bones in the body have a porous interior of cancellous bone surrounded by a non-porous layer of cortical bone. Recently, a polymer foam with a thin (~3 mm) non-porous epoxy outer layer was developed to simulate the ultrasonic properties of bone. The material was used to test two ultrasonic techniques that analyze signals reflected (backscattered) from the porous interior of bone. One technique measured a parameter called AIB which represents the frequency-averaged power in a portion of the signal. The other technique measured a parameter called nMBD which represents the power difference between two portions of the same signal. Measurements were made with and without the epoxy layer present as the incident surface. AIB decreased by 13 dB, while nMBD remained relatively unaffected. The results indicate that AIB is sensitive to both cortical and cancellous bone, whereas nMBD may be sensitive only to cancellous bone.

#18 Community-based Healthy Aging Initiative: An Examination of Factors that may Contribute to Older Adult Prioritization of Cognitive and Physical Health
Frances Himsl-Fenz, Maya Ihling, and Claire Price
Faculty Advisor: Geoffrey Maddox, Department of Psychology
Older adults typically prefer to age in place, meaning they prefer to remain in their residence for as long as possible rather than moving to an assisted living facility. However, many programs that aim to support this preference fail to consider the multitude of factors that facilitate healthy aging in place. The current study utilized a survey methodology that was distributed online via Amazon's mTurk platform. 221 older adults assessed a range of factors that contribute to successful aging in place (e.g., physical health, psychological health, safety of their residence/neighborhood, social support, finances) and rank ordered these factors based on their personal importance. Results suggest that personal characteristics may yield differential prioritization of cognitive and physical health within the aging population. Specifically, the prioritization of cognitive health tends to fluctuate with certain characteristics (e.g., sex, retirement and/or employment status, or income), while prioritization of physical health tends to occur more broadly regardless of these characteristics. Discussion will consider how and why these characteristics may influence differential prioritization of physical and cognitive health.

#19 How the Japanese Government's Legal Treatment of "Comfort Women" Perpetuated Cold War Sentiments from 1991-2021
Callie Hollis
Faculty Advisor: Seok-Won Lee, Department of History
The general topic of study is how Japanese courts treated "comfort women" who filed suits against the Japanese government from 1991-2021. "Comfort women" were women, girls, and sometimes boys enslaved by the Imperial Japanese Army for sex during World War II. Though

historians are still in debate on the exact number, it is estimated that between 20,000-500,000 women were used. However, the issue did not come to light until 1991 during an interview with Kim Hak-sun, a Korean woman, about her experiences as a "comfort woman" in 1941. Following this interview, three South Korean women filed suits against Japan for their time in forced prostitution (Wikipedia). During one of the legal proceedings, the Japanese government claimed that over 10,000 Korean women were forced to have sex with Japanese soldiers in World War II (Wikipedia). The movement to address the use of "comfort women" in Japan is most popular in South Korea because it "has the majority of victims, and Japan, the country that perpetuated the crime" (Min 2). In this research paper, I will explore the outcomes of three "comfort women" lawsuits filed against the Japanese government and how they perpetuated Cold War sentiments.

#20 Examining the Impact of Peer Groups on Children's Narrative Development: Indexing the Creation of a Story-Sharing Community
Abigail Hultquist, Ava Dempsey, and Adelynn Mitchell
Faculty Advisor: Kiren Khan, Department of Psychology
Prior literature investigating predictors of narrative development in children often focuses on child-level factors, such as initial vocabulary skills. While sociocultural accounts of narrative development acknowledge the importance of social scaffolding, little is known about how group dynamics and processes operate to create powerful learning environments. The present study examined how group-level factors, specifically group laughter and peer interactions, differed between circles with a higher versus lower proportion of children making gains in their narrative abilities. Over a four-week summer kindergarten readiness program, 20 children (M = 62.35 months) from predominantly low-income families participated in 12 story-sharing circles, where they were prompted to share stories about negative experiences. Sophistication of character representation in narratives was initially coded, and results indicated children showing gains tended to cluster in two of the four circles. Following this finding, video data was coded for instances of group laughter and peer-peer interactions by three independent coders. The story-sharing circles with a higher proportion of children making gains also had more instances of group laughter and engagement. This suggests that narrative skills may be especially scaffolded in settings with higher peer engagement, indicating a potential group-level effect of peer contexts on narrative development.

#21 Oh Sh**: Will the Congruency Sequence Effect Reduce Taboo Distractions?
Abigail Hultquist, Regan Gray, Addy Mitchell, and Evan Byrd
Faculty Advisor: Katherine White, Department of Psychology
This experiment investigated the effect that emotional distractions have on producing language. Previous research has shown that spoken word production is slower in the presence of strong emotional (e.g., taboo) distractors. This experiment examined whether this taboo interference is reduced by engaging cognitive control. Cognitive control is needed in tasks that create conflict, such as in a picture word interference (PWI) task, where a distractor word accompanies a picture that participants are tasked to name. On incongruent trials, the distractor is unrelated to the picture being named, whereas on congruent trials, the distractor is the picture name. Incongruent trials result in slower responses than congruent trials; however, performance on incongruent trials improves when they follow an incongruent vs. a congruent trial, known as the congruency sequence effect. This effect is thought to reflect adjustments to cognitive control. This

experiment tested whether the congruency sequence effect reduces interference from taboo distractors in a PWI task. Incongruent trials were presented with a taboo or neutral distractor. Speech production was measured by picture naming times. We predict that cognitive control of taboo interference will manifest in a CSE, with decreased naming times on taboo trials following incongruent compared to congruent trials.

#22 Box Office Predictions
Nimo Ismail
Faculty Advisor: Christopher Seaton, Department of Mathematics
By the end of 2022, the annual revenue of the global film production and distribution industry is close to 80 billion U.S. dollars. The 2022 domestic box office total finished less than 2019 but up from 2021. There are a number of reasons to explain the drop since 2019, namely the COVID-19 pandemic which resulted in closing some domestic theater, leading a film's profit to be earned mainly overseas. To make up for the loss since 2019, the film industry is looking for highly profitable film to make the box office chart. The box office refers to how much money a film makes based on ticket sales in theatres and a film can be considered successful based on its box office earnings. A film's box office performance could be affected by number of factors such as audience' ratings/reviews, critics' ratings/reviews, directors' and actors' popularity, genre, the time of showing, etc. We will analysis how these factors affect box office success and predict the top 10 movies of 2022 on the domestic box office chart using a Bayesian model and linear regression model.

#23 "It's, um, a tragedy": Picture Valence and Arousal Influence Speech and Gesture Production During Emotional Storytelling
Annika Johnson, Benjamin Barfield, Brianna Williams, and Sareen Mirza
Faculty Advisor: Katherine White, Department of Psychology
Research has demonstrated that language production is disrupted when the speaker is distracted by strong emotional stimuli. We investigated how emotion affects language and gesture production by measuring changes in fluency and content of speech, and number and duration of gestures. Participants told stories about pictures varying in valence (negative, positive) and arousal (high, low) or neutral. They were asked to describe what each character was thinking and feeling, what happened prior, during, and after the event. Transcripts were analyzed with Linguistic Inquiry and Word Count (LIWC) to count the number of disfluencies, pronouns, and emotion words. Gestures were analyzed with EUDICO Linguistic Annotator (ELAN). Speech results showed that language use varied as a function of picture arousal. For disfluencies, there were more nonfluencies (e.g., um, uh) and more unfilled pauses when telling stories about negative pictures, especially high in arousal. For pronouns, stories about high arousal pictures included fewer personal pronouns and more impersonal pronouns than low-arousal pictures. For emotion words, fewer negative and positive words were used in high arousal pictures than low arousal pictures. Gesture coding is ongoing and exploratory analyses will be presented. Taken together, these results suggest that emotional arousal impacts language and gesture production.

#24 Formally Verified Red-Black Trees

Ryan Kennelly and Matt Superdock
Faculty Advisor: Matt Superdock, Department of Computer Science

Formal verification is an approach to proving properties about code using logical reasoning. It has been growing in some cases (e.g., CakeML, CompCert) as an alternative to the traditional unit testing approach in which one plugs inputs into the code and checks if the outputs match their expected values. While unit testing generally can only prove that code doesn't work, the logical reasoning of formal verification covers all possible inputs without requiring them to be individually checked and can prove that code does work. We are exploring the process of formal verification for the data type of a red-black tree in the functional programming language/proof assistant Agda. A red-black tree is a type of self-balancing binary search tree, which maintains several properties, including the standard binary search tree properties. We intend to implement a red-black tree in Agda, along with proofs that these properties are preserved.

(F) #25 Synthesis of Gram-Negative Antibacterial Compounds with Increased Hydrophilicity to Avoid TolC-Mediated Efflux

Gabriella A. Krisanic, Jacob D. Greenberg, Emma J. Chow, Eleanor A. Fontana, Campbell A. Brown, Maria F. Alvaro, Trinity L. Liaw, Mia J. Farraday, Elaine R. Frawley, and Larryn W. Peterson
Faculty Advisor: Larryn Peterson, Department of Chemistry

Treatment of infections caused by highly resistant Gram-negative bacteria is a growing concern, especially since some strains are entirely resistant to all clinically available antibiotics; however, the development of novel compounds with broad spectrum activity has drastically slowed. Previously synthesized propargylglycine-based compounds with a biphenyl tail designed to target LpxC showed antibacterial activity against Escherichia coli, but only in mutants with TolC-mediated efflux knocked out. In an attempt to avoid efflux, several analogues have been designed with increased hydrophilicity. This change may also result in improved binding in the polar region of the LpxC active site, the enzyme that is potentially inhibited by these compounds. Specifically, a series of nine compounds with a variety of polar side chains and hydrophobic tails have been synthesized in good yield. Molecular docking was used to determine a docking score and key interactions within the LpxC active site. Synthesis of these potential antibacterial agents will be described, and results of bacterial growth studies will be discussed.

#26 Generation of Aza-Crown Ethers Using 2,6-bis-hydrazinopyridine

Tyler Martin, Leven Greene, and Tyler Smith
Faculty Advisor: Kimberly Brien, Department of Chemistry

2,6-Bis-hydrazinopyridine (BHP) has been prepared and is presently being used in preparation of chelating ligands that are otherwise more difficult to generate through other means. The generation and isolation of 2,6-hydrazinopyridine occurred through the reaction of 2,6-difluoropyridine with anhydrous hydrazine to generate the crude product followed by treatment with NaOH to isolate the BHP. Previous research has implicated BHP as a useful reactant in the preparation of 2,6-bispyrazoylpyridines, but further research has indicated that it may also provide a useful way to generate Nitrogen based azo-ethers (crown ethers) through reaction with 1,2-dibromoethane.

#27 Women, Race, and Emotional Labor Pilot Study
Nicolina L. Taylor, Dexter Rowland, Ryland McClain-Rubin, and Kelly Weeks
Faculty Advisor: Kelly Weeks, Department of Business
Emotional labor is regulating and modifying emotions for a wage (Hochschild, 1983). This behavior bears a burden. Potential differences in the experience of emotional labor has caused us to examine ways emotional labor differs between Black and White women. We are seeking to find if—when compared to White Women—Black Women adhere to different rules regarding emotions, and we seek to discover what those rules are. Furthermore, we want to know how managers expect employees to behave given varied race and gender. Previous research suggests that men and women have different rules for feeling, displaying, and suppressing emotions. Thus, we believe that a difference is also feasible when looking at the relationship between gender and race, specifically Black Women. We will use a vignette and questionnaire research structure by which participants who responded to a survey will read a randomized vignette that describes a microaggression in the workplace. The participants are then asked a multitude of questions relating to how they think the subject of the vignette would feel, act, or respond. They will also be asked how they feel about the interaction. Data collection for this study is still underway and lead by Dr. Kelly Weeks' research team.

#28 Emotional Judgments Depend on Perceived Gender
Sheida Mirzaei Domabi, Ellie Leahey, and Jason Haberman
Faculty Advisor: Jason Haberman, Department of Psychology
Recent work has revealed that the perceived expression of a face may depend on the perceived gender of that face — female faces are typically reported as sadder than male faces, and male faces are reported as angrier than female faces. An inherent confound with these studies, however, is that the faces being evaluated (male vs. female) are not equivalent and may contain important differences unrelated to gender. In the current experiments, we employ a psychophysical approach to examine whether the perceived gender of equivalent faces impacts the perceived intensity of a given emotion. Importantly, the facial content was identical in both sets. Observers were asked to identify whether the test face was sadder or angrier than the previous individual/set of faces. In contrast to prior research and our own hypothesis, observers had a small but significant bias to view the 'male' faces as sadder than the 'female' faces. There was no effect of set type (individual or ensemble). This research in no way challenges the notion that emotional stereotypes exist, only that at a perceptual level when facial content is equated, biases may manifest in unexpected and independent ways.

(F) #29 RHOK-SAT: Top-Level Nanosatellite Software Design and Implementation
Anas Matar, Marouf Mohammad Paul, Zheng Yu Wong, and José Pastrana
Advisor: José Pastrana, Department of Physics
RHOK-SAT relies heavily on software to function effectively. The satellite's subsystems, experiment, and communications must work autonomously and adaptively in low Earth orbit (LEO) for the mission to be carried out successfully. The software design is guided by limitations on power and data usage as well as hardware constraints, which determine the software requirements. The main components of the design include command handling, payload measurement, data storage, and downlink scheduling. We use FreeRTOS and a cooperative scheduling scheme, which ensures reliable and predictable task execution. Our scientific mission consists of characterizing the performance and degradation of perovskites solar cells in orbit. To

measure these cells, we program and make use of specialized integrated circuits. We are currently developing an on-board second-stage bootloader to send software updates from the ground. We are affiliated with SatNOGS, an open-access global network of ground stations, to increase our data downlink opportunities.

#30 How BookTok Promotes Queer Education
Camille Montoya
Faculty Advisor: Joy Brooke Fairfield, Department of Media Studies
During the 2020 COVID pandemic, TikTok quickly became one of people's favorite ways to pass the time. The TikTok algorithm allows people to be on different "sides" of TikTok in which they can find communities that share similar interests. Throughout the Summer of 2020, BookTok was born. BookTok is a side of TikTok where readers, authors, editors, or even people who just like books can create videos and interact with other BookTokers. Not only does this side of TikTok have a huge effect on book sales all over the world, but it also has become an educational platform for people who want to read about perspectives other than their own, such as the queer community. In this article, I explain the educational opportunities provided by BookTok. I argue that by putting oneself into the mind of a character, the reader learns about a completely different or very similar experience to their own. I also discuss specific books that have "gone viral" through TikTok, and what, specifically, they can teach the reader.

(F) #31 Investigation of Ni(EtImPDI)2+as a Catalyst for Light-driven Hydrogen Production
Robert G. Musicante, Daniel Graham, and William Eckenhoff
Faculty Advisor: William Eckenhoff, Department of Chemistry
With an ever-increasing global population, the need for new sources of energy continues to advance as well. An alternative source of energy can be found via the implementation of artificial photosynthesis to produce hydrogen gas. Therefore, the development of more active and robust catalysts is necessary in order to make artificial photosynthesis a viable method of hydrogen generation. Recent studies have shown that metal complexes with redox non-innocent ligands and pendant base groups are highly active for proton reduction. Ni(EtPyPDI)2+ has shown to be a promising catalyst by producing hydrogen gas using Ru(bpy)32+ and ascorbic acid generating turnover numbers of 1400. Because the activity of this catalyst is in part due to both the pKa and hemi-lability of the pendant base, substitution of this group may lead to improved activity. In this project, the pyridine rings were replaced with imidazole rings to synthesize Ni(EtImPDI)2+. The increased basicity of the ligands resulted in a less labile ligand and more electron rich metal ion, leading to lower catalytic activity. An in-depth computational analysis supported the experimental findings. Coordination and evaluation for the ligand with other common metals such as cobalt is also under investigation.

#32 The relationship between ultrasonic properties and hair follicle density of human scalp
Phyu Sin M. Myat, Cecille Labuda, Blake C. Lawler, Shona C. Harbert, Ann Viano, and Brent K. Hoffmeister
Faculty Advisor: Brent Hoffmeister, Department of Physics
Ultrasonic properties of human scalp may inform the use of transcranial ultrasound. The goal of this study was to determine how the number density of hair follicles affect the ultrasonic properties of human scalp. 32 specimens of formalin-fixed human scalp from four donors were measured ultrasonically to determine the speed of sound (SOS), frequency slope of attenuation

(FSA) and integrated backscatter coefficient (IBC). Optical images of the specimens were analyzed using a particle counting tool in ImageJ to measure the number density of follicles in each specimen. Linear regression analysis was used to determine the correlation between follicle density and the ultrasonic properties of the specimens.

(F) #33 RHOK-SAT: Characterizing Novel Photovoltaics in Low Earth Orbit with a 1U CubeSat
Jess Hamer, Olivia Kaufmann, José Pastrana, Benjamin Wilson, Damian Nguyen, William Butler, and Mia Farraday
Advisor: José Pastrana, Department of Physics
RHOK-SAT is a 1U CubeSat whose primary mission is to provide real-world engineering experience to students at Rhodes College. Its scientific mission is to characterize the performance and degradation of novel perovskite photovoltaic cells in low Earth orbit. This presentation will detail RHOK-SAT's up-to-date mechanical and electrical payload developments. The payload consists of 36 experimental perovskite cells, one control CIGS cell, eight measurement microcontroller units, seven temperature sensors, and one sun sensor, all arranged in two printed circuit boards. The sun sensor is developed in-house from a quad-photodiode and a square aperture to determine the incident sunlight's angle on the satellite's payload face, signaling the satellite to collect measurements. To prevent degradation, a switching circuit is in-development to put the cells under a resistive load when illuminated but not measured. The new structural components to integrate the payload are being developed and machined in-house, along with a handful of tests to help increase confidence in their feasibility before being formally inspected according to NASA's requirements. As such, test-fitting resin-printed parts to confirm component specifications before machining, vibration testing to check components' durability, and thermal measurements to observe the cells under similar conditions to the satellite in orbit are being conducted.

#34 Antimicrobial activity, qualitative and quantitative analysis of purity and composition in commercial pineapple essential oil
Huyen Nguyen, Qian Shen, Elaine Frawley, Jon Russ, and Kimberly Brien
Faculty Advisor: Kimberly Brien, Department of Chemistry
Commercial essential oils extracted from pineapple (Ananas comosus) are available on the market for their versatile usages including flavoring in the food industry, fragrancing DIY products, and healthcare. Some components of essential oils from pineapple were demonstrated to have antimicrobial activity. However, few studies investigate the difference in antimicrobial effect among the components of pineapple essential oils. This experiment was conducted to evaluate the purity and antimicrobial activities of the composition of commercial pineapple essential oils.

(F) #35 Using Magnetic Particle Trapping and Transport to Investigate Magnetism at the Micro-Scale
Ryan Simms, Evan Duet, Iesha Phillips, Prannoy Lankapalli, Eliza Howard, and Chris Hoang
Faculty Advisor: Gregory Vieira, Department of Physics
We study the guided transport of fluid-borne micro-scale spherical particles about grids of permalloy disks, driven by varying, weak (<100 Oe) magnetic fields. These microspheres, made of iron oxide encased in polystyrene, are designed for bioseparation of cells, proteins, DNA, and

RNA, whereas they can be specifically bound to these targets allowing for field gradients to separate the particles from a mixture. We investigate phenomena that arise during transport of individual particles, for example variation in particle motion with external fields and transition from orderly phased-locked motion to less predictable phase-slipping behavior. We use results from these experiments to guide development of computer models for understanding magnetic characteristics of both the microparticles (i.e. susceptibility) as well as the permalloy disks (i.e. magnetization landscapes). Furthermore, we discuss recent updates to our lab's transport apparatus, including methods for minimizing unwanted surface adhesion and increased magnetic field stability.

#36 Does Experimental Context Influence Perception of Study Time and Subsequent Memory for Emotional Words?

Ethan Frischhertz, Madison Stringfield, Alexa Tiano, and Bella Sklena
Faculty Advisor: Geoffrey Maddox, Department of Psychology

Previous research indicates that perception of a word's emotional valence may shift across time as exposure to other emotional words increases (e.g., negative words may be perceived as less negative). However, it is unclear how shifts in perception of emotional words across an experimental context may influence attention and memory. In the current study, participant recall of emotional words was examined when those lists of words were preceded by a neutral or an emotionally valenced list of words. Participants were randomly assigned to receive either positive or negative words and were randomly assigned to a study condition in which words were presented at a predetermined rate or the participant controlled the study time for each item. It was predicted that memory would be enhanced when emotional stimuli were preceded by neutral stimuli versus when preceded by emotional stimuli. Further, it was predicted that participants would study emotional items longer when preceded by neutral stimuli than when preceded by emotional stimuli. Discussion will consider the role of distinctiveness and experimental context in EEM.

#37 Defining Factors That Can Control MCL-1 Protein Induction in Myeloma

Jeremy Wallace, R. Devin Bog, Vikas Gupta, and Lawrence Boise
Faculty Advisor: Kelly Ann Dougherty, Department of Biology

In previous studies, it was determined that freshly isolated myeloma plasma cells living in a co-culture with their bone marrow stromal cells had better cell survival than myeloma plasma cells living in isolation. The cell survival was attributed to IL-6. To determine the mechanism of IL-6-induced survival, the effect on the expression of the anti-apoptotic protein MCL-1 was determined. The study later saw that in all seven cell lines tested, IL-6 was increasing the synthesis of mRNA within the cells, but the actual MCL-1 protein was not upregulated, except in one cell line, KMS18. Therefore, the goal of this study is to understand why MCL-1 protein is upregulated in only this cell line. We hypothesize that there is a BCL-2 family member protein that can stabilize and bind to MCL-1 to prevent its destruction. In this work, we used CRISPR Cas9 to create cell lines lacking the expression of specific MCL-1 binding partners. We show that knockouts of specific BCL-2 proteins modulate the change in protein expression when cells are treated with IL-6, providing support to the hypothesis that IL-6 induction of MCL-1 protein is dependent on its ability to interact with other BCL-2 family members.

#38 "Understanding Co-Curricular Service Programs: How do alumni understand the Bonner experience and sustain critical hope after graduation?"

Leah Sullivan, Erin Walker, and Elizabeth Thomas
Faculty Advisor: Elizabeth Thomas, Departments of Psychology and Urban Studies

The Bonner Alumni Interview Project examines the experiences of young adults who participated in the Bonner Program, an intensive undergraduate community service program, while students at Rhodes College. Our current research includes semi structured interviews with 20 Bonner Scholars who graduated from Rhodes between 2012 and 2020. In initial analysis of our interview transcriptions, we have found that alumni report being sustained by a sense of critical hope (Duncan-Andrade, 2009). Themes related to critical hope include material resources that support mental health, tools for navigating imposter syndrome, developing a professional identity, critical reflection, and an ongoing sense of community. Alumni also report challenges that come from the obligations they feel as part of their identity as a Bonner scholar. Our poster will present findings as well as recommendations for colleges and undergraduate programs to equip students for continued democratic engagement and leadership.

* Takes place in days leading up to Symposium

URBAN STUDIES & HEALTH EQUITY
SENIOR SEMINAR CAPSTONE RESEARCH PROJECTS

Session I
Monday, April 17 – 11:00 am
West Campus Education Building 204

Presentation #1 Why is there a lack of representation of Black Primary Care Physicians and How does it Affect the Black Community?
Kirstin E. O'Neal
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies
Primary care is one of the essential ways to receive preventative care against chronic long-term diseases. However, what can you do if that care is inaccessible to you? There are 43, 534 active Black or African American physicians in the United States (AAMC, 2020). They make up only 5% of the total active physicians while their white counterparts make up 56.2 percent of the population. (AAMC, 2020) This research will investigate on experiences of black primary care physicians, residents, and aspiring physicians and their experience of having a career within the American healthcare system. It will also grasp important topics of medical mistrust and medical bias that the black community faces. Six interviews were conducted with Black Physicians, Residents, and aspiring physicians within the Memphis area. They were asked a series of questions that related to their experience in medical or pre-medical school and their experience as a physician if applicable. Data analysis will be conducted on the interviews through thematic coding to engage similarities of experiences that can be applied toward the black physician experience. Preliminary findings show that 4 out of 6 physicians, all Black women, experience a sense of imposter syndrome or a feeling of not belonging during their medical education training.

Presentation #2 The Influence of High-Income Country Partners Expertise in Health Equity and Colonialism in Decolonizing Global Health Partnerships: A Case Study of Zambia
Elena Romanic Caballero
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies
After reviewing much literature, it is apparent the practices implemented to maintain colonially founded systems of power in global health partnerships. One such practice includes disregarding the involvement of low-middle-income country partners by failing to include them in publishing. A growing understanding of the importance of health equity has begun circulating through the medical field resulting in doctors now becoming more aware of their biases and participating in the efforts to decolonize the medical system. The aim of this research is to better understand the influence this knowledge has on decolonizing transatlantic partnerships. In this paper, I discuss the case study I conducted on one of these global health partnerships with doctors knowledgeable about health equity and the need for decolonization. I conducted debriefing interviews with several of the doctors in the partnership to understand their sentiments on the partnership's progression, with special care to include the voice of the low-middle-income country partner. Findings will focus on relationship building, partnership continuation, and advice for others beginning transatlantic partnerships. The conversation needs to occur within partnerships and

globally to deepen the knowledge of what designates decolonization, the effects fields of knowledge such as health equity have, and practices to implement.

Presentation #3 Music Matters: Developing a Creative Classroom with Music
Erin Walker
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies
Music is a part of our everyday lives. Patricia Campbell states, in a time of global awareness, music can be considered the aural pathway for understanding ourselves and the world we live in (2005). The listening experience allows the discovery of artistic and social expression, catalyzing mean making of lyrics and sounds (Campbell, 2005). Youth guide their own musical experiences and can create their own musical voice and preference while also gaining an understanding of how music functions within the culture itself. While music education classes are the only explicit classroom setting where students can engage in conversations and curriculum, many students in the United States do not have access to music education. According to the National Arts Education Status Report (2022) it is projected that in the Unites States there are approximately 3,609,698 students in public schools that do not have access to music education (Morrison, McCormick, Shepherd, Cirillo). This study will allow scholars and practitioners to better understand the impact of integrating various genres of music into the classroom. More specifically, how do, teachers, and alumni of Greater Memphis Schools understand the role of music in their lives and how it has been incorporated into the classroom.

Session II
Wednesday, April 19 – 11:00 am
West Campus Education Building 204

Presentation #1 Code Red: Menstrual Hygiene Management (MHM) & Waste Disposal in Low/Lower-Middle Income Countries
Shannon Huang
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies
Menstruation is a naturally occurring biological process that half the global population will experience in their lifetime. Access to menstrual products as well as appropriate knowledge on the subject is a human right as it not only is a natural process that requires it but also because it preserves security, safety, and the sense of dignity. Most menstruating individuals in low-income countries (LICs) and lower-middle-income countries (LMICs), primarily in sub-Saharan Africa and South Asia, struggle to adequately manage menstruation, yet global institutions addressing global health continue to ignore MHM in the broader conversation on reproductive health, and research on this subject remains limited. This study will seek to answer the question: What obstacles/restrictions are preventing girls in LICs/LMICs from practicing good menstrual hygiene management and waste disposal practices? This study provides a case-comparison analysis for cases based in Peru, India, and Ghana. Findings will focus on the economic and social factors in these countries to explain the variation in MHM and waste disposal practices

Presentation #2 The Concerns of Women Post Roe vs. Wade and the Implications of Women's Mental Health in Post-Roe America.

Isabela Tablan
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies

The United States Supreme Court's decision to overturn the 1973 landmark case Roe vs. Wade and eliminate the constitutional right to an abortion shook the nation. Access to safe abortion is an important human right, as it contributes to maternal health outcomes, reduced socioeconomic inequality, and maintaining healthy communities (World Health Organization [WHO], 2022). The Dobbs decision will impact women emotionally and mentally, fueling health inequities in urban health communities. This study investigates the greatest concerns of women in Memphis, Tennessee, an urban community, after the overturning of Roe vs. Wade. Our research questions ask: What are women most concerned about with the overturning of Roe vs. Wade? How are these concerns affecting women's mental health in urban communities in trigger law states? This research uses a qualitative, semi-structured interview approach with open-ended questions to explore the range and contextual elements of women's concerns post-Roe. Interview data will be analyzed utilizing thematic content analysis to investigate the core concerns of individuals. Overall, this research will fill the gap of exploring women's mental health in United States urban communities as they navigate life post-Roe vs. Wade. The goal of this research is to inform strategies for combatting potential negative mental health outcomes.

Presentation #3 The Racial Middle: Amplifying Multiracial and Multiethnic Latinx Student Experiences

Emma Pennington
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies

This research amplifies the experiences of multiracial and multiethnic Latinx students regarding their racial and ethnic identifications, how those identifications developed, and feelings of connection to the Latinx community. Latinx people represent the largest minority group and the fastest growing population in the United States. However, there is debate over how to identify this group, as the number of multiracial and multiethnic Latinx Americans is growing. Given the diversity in the Latinx community, it is important to amplify the voices of those with layered experiences of race and ethnicity and to analyze how that intersection of identities affects lived experiences. Data focusing on themes between respondents is taken from semi-structured interviews with college-age students who identify as Latinx, as well as another racial or ethnic category. Respondents noted feelings of disconnect from the Latinx community, with lack of proficiency in Spanish and lack of cultural knowledge as barriers. However, desire for increased cultural contact with the Latinx community and determination to find one's own "Latinidad" were notable responses as well. Discussing diversity within the Latinx community and its effects on multiracial and multiethnic individuals strengthens solidarity and speaks to the experiences of those who resist concrete categorization.

Session III
Friday, April 21 – 11:00 am
West Campus Education Building 204

Presentation #1 Poor Communication and Maternal Mortality in Tennessee: How Maternal Mortality Review Committees Talk About Solutions
Taylor Harris
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies
Tennessee is among the states with the highest maternal mortality rates (MMR), and Black women are three times more likely to die than their White counterparts. Research has shown racial differences in physician-patient communication with Black patients more likely to report discrimination or lack of information-giving. This can affect health behaviors including postpartum appointment attendance which is crucial in identifying cardiovascular complications. Most states have established maternal mortality review committees (MMRCs) to investigate maternal deaths and recommend solutions. This study will explore the MMRC recommendations of Tennessee in comparison with those of five of the states with the lowest MMR. The questions driving this research are: what are Tennessee's current recommendations concerning communication and race, and how can the recommendations of states successfully lowering MMR be used as a reference to improve Tennessee's approach. The methods used will be content analysis and thematic coding of MMRC reports released from each state of interest. Preliminary findings indicate that a key area of difference is which recommendations are addressed toward healthcare providers/facilities, policymakers, or patients. This suggests that a point of improvement for Tennessee could be shifting targeted recommendations away from patient responsibility and towards provider/facility or policymaker responsibility.

Presentation #2 Campus Safety and Student Mental Health: A Case Study of Rhodes College
Houston Walker
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies
Mental health issues are common in Students in higher education, because they are subject to a number of risk factors such as intense levels of academic and financial stress, struggles of identity, and variable familial and social support systems (Jones et al. 2018). Fear of crime can exacerbate these existing stressors (Grinshteyn et al. 2017). The present research will investigate the relationship between campus safety and student mental health, using Rhodes College as a case study. This study uses semi-structured interviews to understand this from the perspective of a cross-section of the student body and two mental health professionals from the Rhodes College Counseling Center. Preliminary findings indicate that students are dissatisfied with the transparency and authenticity of the communication between campus safety, the administration, and the student body. Consequently, most of the anxiety surrounding safety is due to a lack of trust of the existing security systems. However, students reported that connection to their communities cultivates their sense of safety and supports their mental health. These results imply that Rhodes College should consider how they communicate with the students and take note to prioritize the campus community support navigating the stressful landscape of being a student in Memphis.

Presentation #3 Model Minority Myth: Health Barriers Amongst Laotian Americans
Ashley Phanthala
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies
This study aims to further investigate the health disparities and barriers Laotians in the U.S. face. These health barriers include, but are not limited to, differences in migration patterns, language and communication, socioeconomic reasons, lack of health insurance, poor education, and cultural differences. Through a qualitative approach, the study further investigates how these barriers are affecting the health experience and lives of Laotians in Middle Tennessee by conducting a series of semi-structured interviews of both Laotian community members and local health professionals of various ages in the area. The findings will focus on the health seeking behaviors that present a culturally different awareness of health information in Western medicine. Preliminary findings also indicate that migration patterns, lack of insurance, language, and socioeconomic background are major determinants in accessing adequate health care. Overall, the study calls for further examination of health outcomes and experiences within Laotian communities as well as other Southeastern populations in the U.S. Finally, it attempts to propose potential, feasible solutions or frameworks that are culturally adapted within healthcare settings to promote health equity amongst Laotians.

Session IV
Monday, April 24 – 11:00 am
West Campus Education Building 204

Presentation #1 Tourism Gentrification: The Displacement of Black Folk in Charleston, South Carolina
Taryn Graves
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies
This short-term, small-scale, case study investigated how the economic growth and tourism industry in Charleston, South Carolina, has affected the displacement and cultural identity of its historically Black communities. This study aims to provide greater clarity regarding the effects of tourism on the community and how it serves as a driving factor in gentrification. A qualitative analysis was conducted, which included semi-structural interviews with Charleston residents and local historians to identify how the economic prosperity of the city negatively impact Black folk. I recorded and transcribed my interviews and reviewed each transcription to develop themes based on the interviewees' answers to employ a discourse analysis. Preliminary findings indicate urban renewal projects are primarily to attract newcomers to the Black culture that has defined the city. Charleston exploits its Black history and results in Black individuals and families being displaced and forced to move due to rising rental prices. Charleston's ode to preserving historically Black sites is solely for the city's economic benefit to continue its prominence as a tourism destination at the expense of eliminating the once overwhelming Black presence in the area. Overall, the case study revealed the troubling implications of the expansion of Charleston for the Black community.

Presentation #2 Feasibility Study for Urban Vertical Farming Increasing Food Access in Memphis TN

Annalise Riekerk
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies

The towering structures of vertical farms lit with LED grow lights sprouting various vegetables often looks straight out of a sci-fi movie, or the most recent project to make Mars livable. These structures may have the potential to provide real-world solutions to the current food system's environmentally damaging farming practices and its failures in providing food to marginalized communities around the U.S. This study will use existing data on current vertical farming projects from around the U.S. to find what factors it takes to run a vertical farming system and what the challenges are. That data will then be compared to data on what resources and space Memphis currently has to see if it could sustain a vertical farming system. This includes evaluating whether the yield of produce from these systems is sufficient to supplement food at a scale large enough for the needs of the Memphis population. This study will also keep an intersectional lens to this new farming practice to ensure it addresses both the environmental and social injustices of our current food system.

Presentation #3 A comparative analysis of the media coverage and mental health response of Hurricane Katrina and the California Wildfires: How can disaster response and coverage be improved?

Mary Nusloch
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies

In August of 2005, Hurricane Katrina struck the Gulf Coast, leaving many residents of the area with nothing. The aftermath of the storm brought in many news outlets and little resources. The purpose of this research study is to reveal the long-term mental health implications of the false media coverage and lack of mental health services after Hurricane Katrina. This study is important because prior literature highlights the discriminatory media coverage surrounding Katrina victims and the lack of mental health resources after the storm, despite a large portion of victims in need. To accomplish this goal, the methods will utilize document analysis of Katrina reports following the storm and reports of similar natural disasters. Reports on the mental health response to the California Wildfires will be analyzed to reveal gaps in the disaster response. To analyze the data, coding and source triangulation will be implemented to extrapolate and interpret the information obtained. Preliminary findings indicate that the inaccurate media coverage and lack of mental health resources have serious impacts on victims. Additionally, initial findings also reveal many different methods implemented in the California Wildfire response to prevent this negligence in the future. The results of this study will inform government agencies and disaster recovery organizations on how to better care for future victims of natural disasters.

Session V
Wednesday, April 26 – 11:00 am
West Campus Education Building 204

Presentation #1 How we can aim to increase accessibility centering reproductive health information and services within Latina and Hispanic communities in the US South by implementing action-based initiatives and ideas
Kylie Feniger
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies
While women's reproductive rights have been debated for decades, the discussion only tends to center on the experiences of white women. Additionally, the recent overturning of Roe versus Wade has adversely affected women across the United States in many ways. In this study, the experiences of Latina and Hispanic women will be placed at the forefront of the discussion, highlighting the intersectionality of minority women in a city that lacks representation. This research project will combine preexisting data with qualitative interviews with local reproductive healthcare professionals, activists, and community supporters to provide action-based initiatives and ideas that advance reproductive healthcare services and information for Memphis's Latina and Hispanic communities. Using Memphis as a case study for the U.S. south, this research will demonstrate the growing need for improved representation for Latina and Hispanic women in reproductive healthcare and provide new initiatives to mitigate inequities within reproductive healthcare.

Presentation #2 Within the walls of Juvie: how buildings effect the development of adolescents
Piper Huddleston
Faculty Advisor: Elizabeth Thomas, Department of Urban Studies
Physical environments directly impact the development of the adolescent brain. However, the developmental implications of a prohibiting environment are not taken into consideration by the federal government of the United States when the development of juvenile penitentiaries occur. Utilizing socio-ecological psychology to guide research methodology, this research will focus on discovering the impacts of juvenile jail architecture and design on the development of at-risk adolescents. Preliminary findings indicate that the structure of juvenile jails directly contributes to challenges in cognitive and social development.

Session VI
Monday, April 17 – 11:00 am
West Campus Education Building 202

Presentation #1 Barriers to Public Transportation Improvement and Transportation Justice in the US South
Luke Chozick
Faculty Advisor: Austin Harrison, Department of Urban Studies
This paper seeks to address the limitations to implementing new transit plans and expanding public transportation in the US South. Transportation in US cities is mostly defined by car usage, with a tendency to have limited, inefficient public transportation options that do not adequately meet the needs of residents. Relative to other regions, cities in the US South have even fewer

transit options due to factors such as sprawl, limited funding, and negative public perception of transit. However, this region is mostly left out of existing literature about transportation. This research seeks to fill in that gap. Using data from semi-structured interviews with individuals from the government, private, and nonprofit sectors who work directly on transportation in the city, as well as primary source analysis of an existing transit vision, this paper will tell a story about the limitations and barriers to introducing expansive public transportation options in the US South. Identifying and understanding these constraints can inform future efforts to plan and implement sustainable, community-oriented transportation systems. These efforts are critical not only to ensuring that people can move through the city, but also to respond to the looming climate crisis.

Presentation #2 Understanding the Flawed Nature of Our Education System: A Deep Dive into Core Curriculum

Tess Herzog

Faculty Advisor: Austin Harrison, Department of Urban Studies

I plan to conduct a content analysis of existing core curriculums from both public and private schools in Shelby County. In addition to exploring the ways in which core curriculums function in compulsory education, I want to pay particularly close attention to the differences and discrepancies that arise regarding the way in which they operate in public schools in comparison to private schools here in Memphis. I was led to this research topic as I attended both public and private schools and was really interested in the differences between the two atmospheres and cultures. In my experience, the material I learned, the manner in which I learned it, the ways I interacted with my teachers, and the ways they were expected to interact with me were so incredibly different in the two sectors and had such profound effects on my educational experience and personal learning abilities. Because of this, I felt compelled to do a deep dive into the root cause of my differing experiences.

Presentation #3 Educator's Experiences with Sexual Harassment in Memphis Shelby County Schools

Devin Dearmore

Faculty Advisor: Austin Harrison, Department of Urban Studies

Despite students being protected against sexual harassment in schools since 1972 under Title IX, sexual harassment remains a pervasive and prevalent issue in schools (Finkelhor, Turner, Shattuck, & Hamby, 2013; Hill & Kearl, 2011; Mitchel et al., 2020; Ozaki, 2020) Harassment of this sort has been associated with many negative outcomes for students, impeding their safety, physical and mental health, and equal access to education (Chesire, 2004; Ozaki, 2020; Shakeshaft, 2004) Other literature reveals that girls (Hill & Kearl, 2011; Ormerod et. al., 2008), Black students (Morris, 2016; Wilmot et. al., 2021), LGBTQIA+ students (Mitchell et. al., 2014), and low-income students (Lipson, 2001) are the most affected by and vulnerable to sexual harassment in schools, and experience the most adverse effects as a result. Further, other research, including studies done in the Greater Memphis area, found that school culture normalizes sexual harassment of students, particularly for Black girls (Harris & Kruger, 2020; Ormerod et. al., 2022; Sagrestano et. al., 2019; Watson, 2016; Wilmot et. al., 2021).

Unfortunately, this previous research conducted in Memphis lacks a robust intersectional framework, despite MSCS being home to a predominately Black and low-income student

population (Ormerod et. al., 2022; Sagrestano, 2009; Sagrestano et. al., 2019). This research aims to explore the experiences of teachers and educators in MSCS high schools in relation to the sexual harassment faced by students and the preparedness of teachers to prevent and respond to sexual harassment in schools, while also filling the gap in Memphis area research by employing an intersectional theoretical lens.

Session VII
Wednesday, April 19 – 11:00 am
West Campus Education Building 202

Presentation #1 Tripping Over Patents: Big Pharma, Intellectual Property, and Recently Legalized Schedule I Drugs
Sage Martin
Faculty Advisor: Austin Harrison, Department of Urban Studies
This paper outlines a plan for evaluating the impact of pharmaceutical companies' (Big Pharma) response to the legalization of historically criminalized DEA classified Schedule I substances, such as cannabis and psilocybin, in the U.S. This study seeks to determine whether the pharmaceutical industry's response to the legalization of Schedule I substances will be reminiscent of historical instances of price-gouging and market manipulation. For example, the pharmaceutical industry has been previously accused of exploiting the patent system to create non-innovative drugs in order to maintain market exclusivity and resultantly drive-up pharmaceutical prices. The impact of pharmaceutical companies' behavior will be assessed by evaluating the presence of patent abuse, information asymmetry, and misleading marketing tactics– all of which indicate market manipulation. The study will use a criterion purposive sample of patent data and marketing content from 20 prominent synthetic-variant pharmaceuticals related to Schedule I drugs. These documents will be coded in accordance with literature on market manipulation in the prescription drug industry. The results of the study will provide insight into how the pharmaceutical industry's response to the legalization of Schedule I substances will potentially impact market competition, public health transparency, and pharmaceutical profits. Big Pharma's manipulation of the prescription drug market exemplifies the power and influence our country gives corporate interest groups to perpetuate income disparities, sway political decisions, and impact the health of Americans.

Presentation #2 School-Based Interventions for Pediatric Asthma in Memphis, TN
Merrick Moore
Faculty Advisor: Austin Harrison, Department of Urban Studies
This research proposal examines pediatric asthma interventions in a school-based setting in Memphis, Tennessee. Asthma is one of the most common chronic diseases among children in the United States, with a particular presence among children of racial or ethnic minorities (Oh et al. 2016). Asthma is heavily influenced by social context; therefore, multiple levels of intervention are necessary to promote positive health outcomes among children (Harris 2019; Sullivan et al. 2018). High hospitalization rates and emergency department visits, as well as the impact of pediatric asthma on school attendance and performance, call for increased intervention in school settings (Witt et al. 2014; Sullivan et al 2018). The following research will center around the Le Bonheur Community Asthma Program (LCAP), a community and school-based intervention for pediatric asthma, and ultimately, assess the obstacles and challenges faced by LCAP

stakeholders in program implementation. Data will be gathered from semi-structured interviews, and then put into conversation with secondary sources on other established evidence-based practices across the nation. This research aims to fill gaps in the literature by centering the lived experiences of school nurses, community health workers, and hospital administration.

Presentation #3 The Efficacy of Rhodes College Campus Safety
Lila Ingrum
Faculty Advisor: Austin Harrison, Department of Urban Studies
In recent months, campus safety has become more of a focus at colleges across the country, including Rhodes College in Memphis, Tennessee. After the death of a student during an armed home invasion, Rhodes rightly moved to prioritize the protection of its community members. Through the past semester, the college has implemented numerous measures in an attempt to reduce crime and promote safety. These include, but are not limited to, increased surveillance, third-party neighborhood patrol, and a strengthened relationship with the Memphis Police Department. The importance of fostering a safe college campus cannot be understated, but it must be considered in tandem with Rhodes' mission "to graduate students with… compassion for others, and the ability to translate academic study and personal into effective leadership and action in their communities and the world" (Rhodes, 2021). Policing's oppressive history, specifically in the United States, has shaped the way we know law enforcement today. The rhetoric of crime and safety can easily become, or may inherently be, stigmatizing and alienating. Standard crime and safety strategies have significant implications for freedom, inclusivity, and well-being within the institution and all of the networks/individuals it touches.

Session VIII
Friday, April 21 – 11:00 am
West Campus Education Building 202

Presentation #1 Utilizing Music as a Method of Community Engagement in the Memphis Nonprofit Sector
Liv Cohen
Faculty Advisor: Austin Harrison, Department of Urban Studies
Through four music-oriented nonprofit organizations in Memphis, Tennessee, this study will explore the relationship between music, community engagement, and race in Memphis' nonprofit sector. Interviews and surveys with Memphis Slim House, WYXR 91.7 FM, Memphis Music Initiative, and Overton Park Shell will offer a well-rounded view into the current interactions and relationships between different music-oriented nonprofits in Memphis while also exploring different models of arts-based nonprofit organizations utilizing music as a means for community engagement and their efficacy. This study aims to discuss the following questions:
1) How can music be effectively utilized as a method for community engagement through the nonprofit sector?
2) How does race influence individuals' experiences within music-driven community engagement efforts in the nonprofit sector?

Due to a current lack of scholarship about urban musicology in the nonprofit sector, especially in Memphis, a city rich with musical identity and history, this study is important for contributing to current and future practices in Memphis' own nonprofit sector. Further, Memphis is a

predominantly Black city, emphasizing the need for a focus utilizing race scholarship during this study. Findings can also be utilized for similar projects in other predominantly Black urban spaces in the United States.

Presentation #2 The Role of Local Government in the Jackson Water Crisis
David Caddle
Faculty Advisor: Austin Harrison, Department of Urban Studies
This paper contains a case study regarding the Jackson, Mississippi, water crisis. Specifically, it analyzes the effectiveness of federal policy (i.e., Safe Drinking Water Act), the relationship between local and state officials via Preemptive rights, and the limitations within the current system. Due to the recent event regarding the Jackson water plant shutting down and three major water crises occurring within the last ten years (Flint, Toledo, and Jackson), the need to discuss water security has never been needed more. Data will be taken primarily from semi-structured interviews with those working directly or adjacent to the Jacksons' water system, such as school district officials, constituents service managers, and plant workers. Coding of interviews will be completed for analyses and comparison of district responses. A review and policy interpretation can indicate areas of improvement that have the potential to secure community health.

Presentation #3 Dual Language Schools in Arkansas
Liz Newby
Faculty Advisor: Austin Harrison, Department of Urban Studies
This is a research proposal for undergraduate research related to dual language education programs from pre-kindergarten to 12th grade in the state of Arkansas. Most states in the US have at least one active dual language program, but Arkansas does not. Although there are required programs in every school to teach English to students who do not speak English at home, there is still an educational gap for students to thrive in language acquisition and understanding. With little to no state level support these programs are less likely to be created and supported. Data collected will be semi-structured interviews with educators and administration in schools in Arkansas and established dual language programs as well as state collected public data on students. Coding of the interviews will be used in conjunction with triangulation with data from current Arkansas and established dual language programs in other states to provide analysis.

Session IX
Monday, April 24 – 11:00 am
West Campus Education Building 202

Presentation #1 Community Land Trust Promoting Community Control and Health Equity
Amaka MgBoh
Faculty Advisor: Austin Harrison, Department of Urban Studies
This paper is an undergraduate research proposal concerning the role of community land trusts in sustaining control and local autonomy. Not only does this proposal analyze the impact of land trusts on low-income neighborhoods, but the conclusions drawn from the research could be used to promote affordable housing—the state of housing advantages wealthier stakeholders that undermines the cultural richness of neighborhoods. The study is working to advance the anti-capitalist narrative of the housing market by shifting the focus from wealth-building to collective

ownership of land. This research aims to find a relationship between community control and the mission of the land trust model, which is to prevent the unwanted market-driven displacement of low-income families from their neighborhoods. Not only is this pertinent to sustaining housing, but the studies show that low-income populations often lack capital mobility to change their financial situations, making them vulnerable to displacement. How does a community land trust promote control and reinforce expressions of health equity?

Presentation #2 Health Care Opportunities and Experiences for the Memphis Homeless
Shaili Samuel
Faculty Advisor: Austin Harrison, Department of Urban Studies
This proposed research informs the relationship between health and homelessness and the health opportunities and experiences of the homeless in Memphis, TN to assess if current resources are meeting the needs of this vulnerable community. Homelessness is a prevalent issue in Memphis and nationwide in a steady increasing trend. Medical resources to those experiencing homelessness are stringent and largely inaccessible. Poor health is often an antecedent of the financial instability that culminates in homelessness - a condition that aggravates already existing illness. This cycle is observable in homeless communities in Memphis. Physical barriers to healthcare access for the homeless stem largely from the cost of care and lack of health insurance, lack of transportation to and from appointments, and inflexibility of appointment times. Emotional barriers to healthcare also exist in the form of discomfort in medical environments arising from historical trauma and learned helplessness. Existing research acknowledges these overall barriers however does not create a comprehensive analysis of the observed needs of the homeless from the perspective of both healthcare providers and homeless individuals. Research has also been conducted in cities that do not resemble Memphis or the Midsouth - a region that encompasses a complex historical and social environment. Recent increases in homelessness in Memphis have correlated with the establishment of free clinics and health care options however it is unclear as to whether these clinics are meeting the specific needs of these communities. This research will provide a comprehensive analysis of the strengths and shortcomings of current health resources accessible to the homeless in Memphis- aiming to provide better data on what gaps exist and how they can be addressed for long-term solutions and better healthcare options for members of the homeless community.

Presentation #3 The Death Penalty in Tennessee: Challenges, Opportunities, And The Future Of Justice
Chance Lester
Faculty Advisor: Austin Harrison, Department of Urban Studies
This research aims to discern the challenges and opportunities that come in abolishing the death penalty in the state of Tennessee. Under Tennessee law, the death penalty is a legal punishment for crimes such as first-degree murder. The same is true for life imprisonment without the possibility of parole, which is a more reasonable alternative sentence. There has been racial bias found in the support of white citizens in their support of the death penalty, especially in the southern United States. The opinions of prosecutors who seek the death penalty is also a focal point in this study. A purposive sampling strategy will be used, and data will be taken from semi-structured interviews with Tennessee defense attorneys certified to practice capital cases with a minimum of five years of experience and anti-death penalty activists in Tennessee with an online presence. These interviews will be coded to analyze and compare participant responses across

several themes related to the death penalty in the state, such as reasons why the death penalty is sought, its effectiveness, and its place in society in the future. Quantitative secondary data will be used to produce a map of Tennessee death sentences imposed across the state. The results of this research are expected to add to death penalty debates, provide literature about the death penalty in Tennessee, and add to literature to contribute to the abolishment of the death penalty in both Tennessee and the United States.

Session X
Wednesday, April 26 – 11:00 am
West Campus Education Building 202

Presentation #1 Diversity-Informed Infant and Early Childhood Mental Health
Rachel Ross-Davis
Faculty Advisor: Austin Harrison, Department of Urban Studies
Diversity-Informed Infant and Early Childhood Mental Health (DI-IECMH) is a multilayered field that has yet to be fully defined. To begin creating and implementing a definition and the concepts within the field, it is essential to unpack the many subsections within the larger work that make the field what it is at play in work. Dr. Kandace Thomas, a leader in the field of IECMH, created a list of tenets aiming to address the gaps in Early Childhood and Diversity-Informed care. However, a concrete and applicable definition has yet to be created and published for societal reference. With all of this in mind, I will work to develop answers to these research questions: What is Diversity-Informed Infant and Early Childhood Mental Health? How do we create a sustainable implementation of the field and what is the best practice surrounding this intersectional approach to our children's health (care)?

Presentation #2 Why are African-American Women Disproportionately Affected by Higher Breast Cancer Mortality Rates in Memphis, TN?
Leona Middleton
Faculty Advisor: Austin Harrison, Department of Urban Studies
The purpose of this study is to identify different variables that cause African American women to be affected with higher breast cancer mortality rates with a case study of Memphis, Tennessee. The study seeks to answer the research question, why are African American women affected with higher breast cancer mortality rates disproportionately in Memphis, TN? The goal is to analyze the demographics of deceased breast cancer patients, identify possible variables of cause, and make a connection to previously established hypotheses. Hypothesis 1- socio-economic disparities in the African American community affect access to care and disease screening; Hypothesis 2 - the biological nature of breast cancer and manifestation of the disease are worse for African American women. This project uses a non-probability, purposive and snowball sampling strategy with the following participants: (1) African American female breast cancer patients with two years since diagnosis, (2) African American breast cancer patients' post-treatment/survivors, and (3) breast cancer treatment professionals. The main methods of this research project include demographic surveying, semi-structured interviews, and data analysis from the Tennessee Department of Health Cancer Registry and mapping of data through ArcGIS. The benefit of this research project is to understand how both the social determinants of health and genetic factors that can contribute to racial disparities in African American breast cancer mortality rates and determining possible solutions to reduce disparities in Memphis, Tennessee.

Presentation #3 Resilience and Resistance to Misogynoir: Coping Mechanisms amongst Black Women

Cabria Shelton
Faculty Advisor: Austin Harrison, Department of Urban Studies

This paper is an undergraduate research proposal addressing coping mechanisms present amongst Black women as a form of psychological resistance to misogynoir. Black women face immense consequences of intersectional discrimination, including racial bias and sexism, which positively correlate to adverse mental health outcomes. Sufficient coping mechanisms as a mode of resistance to the effects of misogynoir are essential to target improved health outcomes. Black women's experience in the United States has been centered around dehumanization and many controlling images. The most infamous image in contemporary society is the Strong Black Woman (SBW) image that perceives Black women as strong, self-sacrificing, and resilient to all obstacles. Due to this, when attempting to resist against the SBW image, sufficient coping mechanisms are essential. In contrast, Black women are stigmatized when utilizing certain coping mechanisms because it conflicts with the Strong Black Woman (SBW) schema. Data will be taken from a survey using The Stereotypical Roles for Black Women Scale (SRBWS; Thomas et al., 2004). Additionally, a semi-structured interview with self-identifying Black women to explore the distinct experience of misogynoir will produce additional data. The coding of interviews will analyze various forms of psychological coping mechanisms. The intersection of spirituality, cannabis, and mental health can be evidence of intricate aspects of Black women's experience and help to minimize the effects of misogynoir to improve mental health outcomes.

Presenter Index

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Rhodes College