Carolyn and Norwood Thomas

16th Annual Undergraduate Research and Creativity Expo

Program with Abstracts

Undergraduate Research Week:

April 18-22, 2022

16th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo

2022

UNC GREENSBORO

Undergraduate
Research, Scholarship
and Creativity Office

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April 18, 2022

Dear Students, Colleagues, and Guests,

I would like to welcome you to the ***16th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo*** and the 3nd Virtual Undergraduate Research and Creativity Expo at UNCG. As we have all worked to navigate our lives and learning through the adjusted approaches required by this ongoing pandemic, we have seen an incredible commitment of the UNCG community to learning through research and creative inquiry. This year, we are thrilled to accept 180 presentations by more than 207 students, working with 95 mentors, and representing 27 academic departments/programs.

The ***Undergraduate Research, Scholarship and Creativity Office*** (**URSCO**) is dedicated to promoting and supporting student success through mentored undergraduate research, creative inquiry and other scholarly experiences for the UNCG community. The URSCO is also dedicated to helping faculty become increasingly effective with mentoring undergraduate research and integrating research skills into courses and curricula. These experiences can occur in many ways, including co- or extracurricular projects involving one or more students mentored by UNCG faculty and staff. Scholarship is achieved by using disciplinary/interdisciplinary tools and approaches to answer questions that enhance knowledge and understanding. We seek to highlight the diversity of disciplinary scholarship for and through our students in order to help cultivate a culture of life-long learning.

The URSCO offers financial assistance to promote faculty-mentored student scholarship and creativity. We have also provided support for 57 students through the ***Undergraduate Research and Creativity Awards (URCA)*** and 2 undergraduates through the ***Community Based URCA*** program. Finally, 10 students participated in the ***Pubantz Artists in Residence*** program, in partnership with the *Lloyd International Honors College* and the *College of Visual and Performing Arts*.

This week, April 18 - 22, is recognized nationally as Undergraduate Research Week and is designated as a time to celebrate your scholarly accomplishments. I would like to thank all students and their mentors for taking the time to share your work with the university community. Many thanks go to the Associate Vice Provost of the University Teaching and Learning Commons, Dr. David Teachout, Vice Chancellor for Research and Economic Development, Dr. Terri Shelton, Provost Debbie Storrs, as well as Chancellor Franklin Gilliam for their support of the office and their unwavering dedication to student success. As always, special thanks go to Mrs. Carolyn Thomas for her generous contributions in support of the Expo and faculty-mentored undergraduate research. I would also like to thank Adrienne Middlebrooks, Traci Miller, Vrinda Ganti, and Fatuma Tuider for their efforts to ensure the success of this program.

Sincerely,

Lee Phillips, Ph.D.
Director, URSCO

UNC GREENSBORO
Undergraduate Research, Scholarship *and* Creativity Office

16TH ANNUAL CAROLYN AND NORWOOD THOMAS UNDERGRADUATE RESEARCH & CREATIVITY EXPO

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CAROLYN AND NORWOOD THOMAS

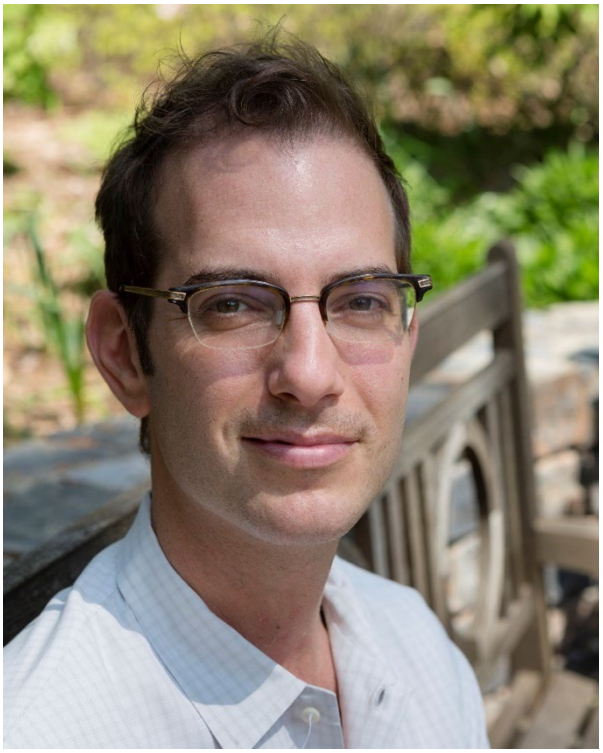
Carolyn Styron Thomas graduated from Woman's College, now UNCG, in 1954 with a bachelor's degree in business. She is very committed to the success of her alma mater and believes strongly in the value of education. "The experience of obtaining my college degree at Woman's College gave me confidence throughout my life to face challenges, raise my family and serve my church and community, all leading to a very rewarding life," says Mrs. Thomas. To express their appreciation for Carolyn's education, the Thomases established an endowed fund in 1996 to support undergraduate and faculty research.

Mrs. Thomas has served on the board of directors for the UNCG Alumni Association and, most recently, the UNCG Board of Visitors. She is a member of the Harriet Elliott Society at UNCG. She has also been involved in numerous organizations in her hometown of Durham, NC, including the Junior League, the United Arts Council and the Methodist Retirement Home.

Her husband, the late Norwood A. Thomas, Jr., graduated from Duke University in 1955. The Thomases dated in college and were married for 46 years. Mr. Thomas retired from his position as Executive Vice President at Central Carolina Bank after 37 years. He later was a founding partner of the investment firm of Wilbanks, Smith & Thomas Asset Management of Norfolk, Virginia, where he worked for more than 10 years. Mr. Thomas was very active in community affairs in the Thomas' hometown of Durham.

2022 Thomas Undergraduate Research Mentor Award

Tenured track: Dr. Asa Eger, Department of History



Associate Professor Asa Eger is a historian whose research interests include Islamic and Byzantine history and archaeology, the eastern Mediterranean, frontiers and borderlands, and environmental history. Since joining UNCG in 2009, Dr. Eger has mentored 12 undergraduates across 14 projects. With a collaborative approach to mentorship, Dr. Eger helps his students create individual projects that allow them to explore topics and real-world issues they are passionate about – while developing their research skills, in the process.

Dr. Eger has published four books, including the award-winning "The Islamic-Byzantine Frontier: Interaction and Exchange between Christian and Muslim Communities" and 2021's "Antioch: A History," which is through Routledge. He currently has four other books in preparation, with topics ranging from the excavation he recently directed at a 10th-century frontier fortress in Turkey and reexaminations of materials from a 1930s Princeton excavation at Antioch and from a survey of the plain of Aleppo.

Undergraduates have worked with Eger both locally and internationally, with six receiving support from UNCG Undergraduate Research and Creativity – or URCA – Awards. "The funding brings students in and out of archives, on international research trips, and helps them to develop research innovatively through digital means at home."

Seth Rumbley, for example, traveled to Israel to examine the site of a destroyed Palestinian village, speak with local scholars, correct oral histories, and dive into the state archives in Jeruselem. More recently, when Gordan Cathcart couldn't travel due to the pandemic, Eger helped him pivot to a digital project on a poorly known Bosnian community in Israel, which he pursued by examining British photography and connecting remotely with Israeli scholars and people whose grandparents and great grandparents lived in the region.

For Dr. Eger, undergraduate research is about opening doors permanently. "Broadening the historical narrative across interdisciplinary fields like archeology and public history challenges students to be critical of any one perception or story,"

2022 Thomas Undergraduate Research Mentor Award

he says. “I aim to prepare my students to become critical thinkers – empowered, better informed, intelligent, and independent humans.”

Seth Rumbley ’17 on his work with Eger:

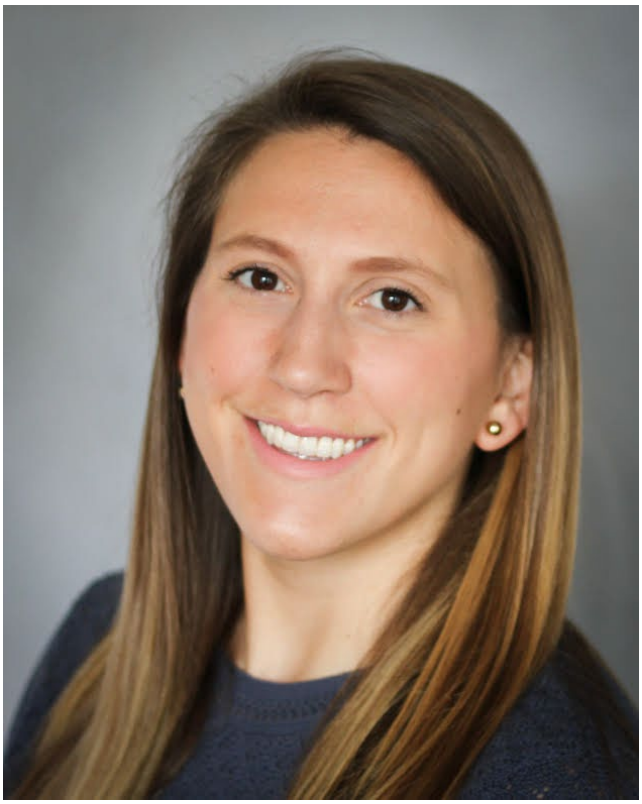
Dr. Eger and I collaborated to prepare a submission for a Globally-Engaged URCA, which involved data collection and archival research on Palestinians displaced from Al-Kabri. This experience was fundamental to my professional development … I gained a deeper understanding of the complexities of global conflict and displacement, which became my primary field of interest in my graduate studies in social work. While pursuing my graduate degree, I interned at local refugee resettlement agencies, where I drew from my experience as Dr. Eger’s mentee to aid in the development of rapport with refugees from Syria and Iraq … He is a role model, is dedicated to students’ education and success, and actively works to prepare students for their futures.”

Bret Dang ’19 on his work with Eger:

“Beginning in the spring of 2017, Dr. Eger supervised me on an URCA research project concerning archaeological surveys of the Cilicia region of Turkey and its historical settlement-patterns from the Classical to Early Contemporary eras. His guidance was invaluable and I was able to hone a great variety of skills and experience needed in preparation for my future graduate school plans … Outside of the URCA advisorship, Dr. Eger also counseled and facilitated nearly all of my honors works and independent studies, again seeking to encourage me as a student to pursue more rigorous and rewarding academic challenges beyond the scope of normal coursework, which ultimately culminated in his mentorship of my Senior Honors joint thesis in History and Religious Studies. His guidance was always with my long-term goal in mind – graduate studies in archaeological studies – and his support over the years made me more confident in my own abilities and readiness for continuing my education beyond undergraduate studies.”

2022 Thomas Undergraduate Research Mentor Award

Pre-tenure track: Dr. Jaclyn Maher, Department of kinesiology



Assistant Professor Jaclyn Maher is a kinesiologist with a research focus on motivational processes, the impact of physical activity and sedentary behavior on psychological well-being, and the use of technology to capture the dynamics of motivation, behavior, and feelings as well as to intervene in behavior. Since joining UNCG in 2017, Dr. Maher has mentored 21 undergraduates on independent studies in her Physical Activity and Lifetime Wellness lab, with three students continuing on in her lab beyond those initial independent studies.

Maher has over 50 publications and her work has received funding from institutions such as the American College of Sports Medicine and National Institutes of Health. Her most recent R15 grant, from the National Institution on Aging looks at motivational processes in older adults that impact healthy behaviors. By design, the R15 grant integrates undergraduate students into the research process, with Maher's project supporting two undergraduates per summer across three years.

In Maher's lab, students gain in-depth, hands-on experience with the processes of physical activity research, including participant recruitment, pilot study procedures, monitoring compliance, and data analysis. To date, three have received internal grants from the School of Health and Human Sciences to conduct independent research projects. Work involving undergraduates in Maher's lab has resulted in publications in Nutrients and Annals of Behavioral Medicine over the last three years – both with undergraduates as second authors. Two other publications are currently under review at the Journal of Aging and Physical Activity, with a student as first author, and the International Review of Sport and Exercise Psychology, with four undergraduates as co-authors. Her students have also presented work at the Society of Behavioral Medicine Annual Meeting, National Conference on Undergraduate Research, the UNCG McNair Summer Research Symposium, and the UNCG Thomas Undergraduate Research and Creativity Expo.

2022 Thomas Undergraduate Research Mentor Award

Rebecca Rice '19 on her work with Maher:
"My first semester working with Dr. Maher, I was given responsibilities such as piloting questionnaires, downloading and inputting accelerometer data, and helping to create instructions for the participants who were in the study. I was allowed to lead some of the training sessions with the participants as well. All of these tasks helped me to grow in my ability to problem solve, think outside the box, and become comfortable giving out instruction … Dr. Maher gave me the freedom to develop my own research question, which investigated athletic and exercise identities among student-athletes across the transition out of competitive sport. With her guidance I was able to conduct a literature review, create a scientific abstract, and present my findings. Dr. Maher instilled confidence in me, and no matter how many questions I asked, was always willing to help me, and taught me the skills to answer those questions myself."

Meghan Harduk, '19
"Working in Dr. Maher's lab was an amazing experience for me to see how research is collected and stored, and gave me the opportunity to have hands-on experience with concepts we discussed in class…The relationship I formed with Dr. Maher during this experience was a major part of my decision to continue working in the lab, even after my honors coursework had been completed … This extra time in the lab turned into my senior honors project … I was interested in the relationship between physical activity and dietary intake. This project quickly turned into an educational experience in research unparalleled to anything I would complete as a part of my undergraduate major … Dr. Maher continued to challenge me to do something I had not thought was possible: publish my honor's thesis findings in a scholarly journal … I am so proud to have been involved in that work during my undergraduate career and have something so prestigious, as an undergraduate, to show for it. If it were not for Dr. Maher's encouragement and support through my undergraduate career none of this would have been possible. "

Lillian Nile Undergraduate Research Assistantship

Dr. Terence A. and Julia B. Nile established the Lilian Nile Undergraduate Research Assistantship Fund in honor of Terry's mother with a named fund that will support undergraduate research in the field of Chemistry and Biochemistry at The University of North Carolina at Greensboro.

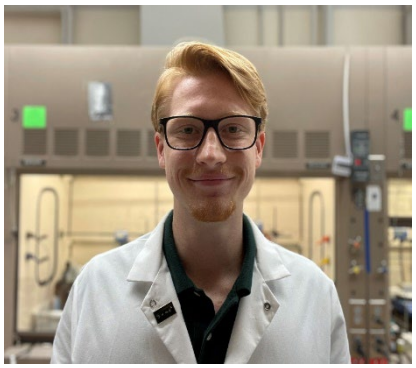
Dr. Nile's career at UNCG began in 1970 with a teaching internship sponsored by the Woodrow Wilson International Foundation. Following the award of his D.Phil. in Chemistry from the University of Sussex, England, in 1975, Terry returned to UNCG as an Assistant Professor and has subsequently served as Professor, as well as Head of the Department of Chemistry and Biochemistry (1998 – 2005).

Terry's mother, Lilian, was born in 1917 and lived her whole life in Cornwall, England until her passing in 2012. Although she was smart and well-read, the era and family circumstances meant that she never had the opportunity to go on to high school or further education. This was something she regretted for the rest of her life and, as a result, was determined that her only child would have the very best education possible. In earlier years she visited UNCG several times and took pride in all of Terry's accomplishments.

Terry has always focused on both teaching and research, as he has a gift for both. He has introduced hundreds of students to the world of research in Chemistry, the majority of them undergraduates. He is beloved by his students and research assistants, many of whom credit him with instilling in them their love of research, introducing them to careers in research and/or higher education or jump-starting their careers in industry. Terry's accomplishments are many and include the UNCG Teaching Excellence Award (1978) and the University of North Carolina Board of Governors Teaching Excellence Award (1996).

The Lilian Nile Undergraduate Research Assistantship Fund is a perfect legacy in that Terry is a proponent of undergraduate research and has positively impacted the lives of so many budding chemists through the years.

This year, the Assistantship was awarded to **Philip West. Philip** is a senior Chemistry student with a minor in Mathematics who has conducted undergraduate research for the last four years in the field of synthetic organic chemistry under the guidance of Dr. Mitchell Croatt. Upon graduating this spring, Philip plans to enroll in a Ph.D. program to further his training in synthetic organic and organometallic chemistry. Philip's goals for his career are to advance the field of synthetic chemistry and to have a meaningful role in training the ensuing generations of chemists and scientists.



ABSTRACTS

The Academic Challenges of Migrant Students and How Educators Can Aid This Process.

Student Author(s): Alexis Aguilar, Sophomore (Teacher Education and Higher Education, Strong College)
Faculty Mentor(s): Sara Littlejohn (Residential Colleges), Jessica Abell (Residential Colleges)

Over 1 million people migrate to the United States each year, some from countries that do not use English as their primary language. A fraction of these migrant/immigrant people are school aged children. This research project will highlight some of the major issues that migrant/immigrant students face when put into a position that forces them to become bilingual, and it will also discuss how educators able to contribute and aid in this learning process. The education of migrant students has changed drastically over the years, but yet, there are still many challenges migrant students must be able to adapt to. What makes this topic so interesting is that the diversity in the United States has impacting the education system forcing it to adapt in order to account for migrant/immigrant student population. Using one of the major issues is discussed by "Migrant Students: What We Need to Know to Help Them Succeed", I will inform readers on common issues facing these communities; One of which is the knowledge the guardians of these students lack and do not have access to in order to aid their children.

Investigating the impact of COVID-19 on Depressive Symptoms, Loneliness and Isolation, and Food Insecurity among Montagnards in North Carolina

Student Author(s): Laibba Ahmad, Senior (Psychology)
Faculty Mentor(s): Sharon Morrison (Public Health Education) & Sudha Shreeniwas (School of Health and Human Sciences)

The objectives of this project are to collect additional qualitative information on the impact of the COVID-19 pandemic on social isolation, loneliness, and depressive symptoms in the Montagnard community, to identify and compile helping resources, and to bring community needs to the attention of service providers. Montagnards are an indigenous multi-tribal group from the highlands of Vietnam. They were resettled as refugees to the U.S., specifically North Carolina, in the early 1980s. Despite their long presence in North Carolina, the Montagnard community has not substantially acculturated, and are at high risk of mental health challenges and food insecurity, likely exacerbated by the pandemic. The study will use qualitative research methods to answer the research questions, by conducting individual in-depth interviews with Montagnard adults. I conducted Zoom interviews in English during Summer 2021. Currently, there are interviews with six Montagnard participants from age 18-34, and one midlife participant (3 males and 4 females). Each interview lasted between 30 to 45 minutes. We will present the findings as themes and use quotes to illustrate the specific experiences of the participants as well as the community. We will discuss the implications of these findings for mental health experiences in Asian American populations.

ABSTRACTS

Effects of Carbon Nanodots on Liver Inflammation in Mice

Student Author(s): Shafaq Ahmed, Senior (Biology)
Faculty Mentor(s): Zhenquan Jia (Biology)

Cardiovascular disease affects many people around the world, and atherosclerosis is one of the main causes of cardiovascular disease. Atherosclerosis is the hardening of blood vessels and is strongly regulated by various pro-inflammatory molecules such as macrophage chemoattractant protein-1 (MCP-1), interleukin 1 beta (IL-1 beta), interleukin 6 (IL-6). The liver is closely related to metabolism of abnormal lipids and complex inflammatory disease and is the organ we have been studying. There is a new class of nanoparticles, called Carbon Nanodots (CNDs), which have been noted as potential candidates for bioimaging, biosensing, and drug delivery. However, there is not much research on the effects of CNDs on inflammation in the liver. In this study I studied the impact of CNDs on TNF-α-mediated expressions of pro-inflammatory genes in mouse liver tissues. C57BL/6 mice tissues have been treated with either TNF-α (25μl/kg bw), CNDs (2.5 mg/kg CNDs), both TNF-α and CNDs, or neither to serve as the control. The real time PCR performed shows that the TNF-α increased the expression of MCP-1, IL-1 beta, and IL-6 beta in the liver tissues studied. Other experimental data are still in progress. My study will gain a better understanding of the actions of the CND on liver inflammation in vivo.

Why aren't African-Americans being provided with the financial literacy resources to acquire wealth?

Student Author(s): Ayele Amavi, Sophomore (Marketing, Entrepreneurship, Hospitality and Tourism) Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

From the historical injustices to the current political barriers that are set against them, for decades African-Americans have struggled to build wealth in America. The question I have prepared is this "Why aren't African-Americans being provided with the financial literacy resources to acquire wealth?" I look through articles that clarify the historical background and injustices that have led African-Americans to little or no knowledge on financial literacy. I uncover statistical information on the wealth gap in the African-American community and how much knowledge they currently have on financial literacy. In doing this research I expect to discover how and why African-Americans have so little financial resources to build wealth that can be passed on for generations to come. I expect to learn how this has affected this group of people and what is currently being done to work to close this gap. I further expect to find solutions that can additionally help the individuals within this community who have lacked the resources to build their wealth and economic status.

Sieg Zeon: Gundamâ's Neo Zeon, Social Movements, and Justifying Violence for Social ChangeStudent

Author(s): Samuel Argueta, Sophomore (English) Ashby College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Fiction often reflects aspects of our society, portraying complex concepts with the intent to either find a solution to a problem or help viewers understand it. Even older stories can still apply to our modern issues. The science fiction franchise Gundam may primarily focus on the horrors of war, but it also shows how far an organization or movement will take to create lasting change. Char Aznable, a major character throughout the franchise, and his movement embodies this theme. In his final appearance in the movie "Char's Counterattack", he's portrayed as the leader of the militant movement Neo Zeon in order to force space immigration from the Earth for all of humanity by creating a nuclear winter. The movie asks viewers several questions. Is violence a necessary evil to create change? How is language used to create a black and white view of opposition? Does violence from one group invite more violence from others? Do the events that led him to this point justify his actions? In this research, I explore the character deeper and make comparisons of other radical movements, such as the Chicano Movement, to discuss whether a violent movement is justifiable to create social change.

Ethnic racial socialization and skin tone satisfaction in Latinx individuals

Student Author(s): Bianca Avila, Post-Bac (Psychology); Paula Sanchez-Hernandez Senior (Psychology)
Faculty Mentor(s): Gabriela Stein (Psychology)

Despite the uptick in research on Latinx populations in the past two decades, there is still a lack of nuanced understanding of within group racialized experiences (e.g., colorism). This mixed-method study aims to assess how ethnic racial socialization is associated with skin-tone satisfaction and whether this differs by type of cultural socialization messages. In a sample of 175 Latinx middle school students, regression analyses suggested that cultural socialization was not associated with skin-tone satisfaction. However, qualitative interviews suggest a more complex relation between cultural socialization messages and skin-tone satisfaction. Using thematic content analysis of semi-structured interviews, analysis revealed two themes: discrimination and colorism. Together, discrimination from both ingroup and outgroups (perceptions of approachability) and messages within the community associating with Eurocentric features with prestige impacted their skin-tone satisfaction. Ethnic racial socialization messages helped shape the developmental trajectory of their skin-tone satisfaction. While the broader focus within literature has been intergroup discriminatory experiences, there are important within group racialized dynamic that might also impact how Latinx adolescents navigate society. There were complex intersections of skin-tone, social class, perceived foreignness, and (dis)conformity to stereotypes of Latinx women that also shaped identity and self-esteem processes.

Picturing Time: Large Format Scanner Camera

Student Author(s): Bjorn Bates, Senior (Art)
Faculty Mentor(s): Derek Toomes (Interior Architecture)

For the past year I have been developing an experimental digital camera which uses a flatbed scanner in place of a traditional sensor or film. The camera captures images progressively as the scanner head moves across the film plane, which distorts moving and changing subjects in strange ways without blurring them. Photos from this camera give a unique view of time different from conventional photography: a statue could be seen in two places at the same time, or half my body could be missing entirely. The impetus for this project was to create a camera capable of taking the photographs I wanted to take, one that didn't exist yet and couldn't be bought. The scanner camera is a launch pad which will lead me to new creative exploration for years to come. Both in building cameras, and taking photos with them.

Mental Health Awareness within the African American Community

Student Author(s): Kolby Black, Sophomore (Political Science) Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

Envision being an American citizen traversing through everyday life with Dissociative Identity Disorder. You are dubious about seeking mental health assistance due to lack of racial diversity in hospital centers. As you make inquiries to trusted family members about potential solutions, these individuals respond with the sentiments: "untrustworthy" and "no Black health care workers". This then positions you to abandon your mental health out of confliction and causes your symptoms to be untreated. These conversations are exchanged between copious African Americans on a daily occurrence. The question often neglected is: "What main factors contribute to African American's decision to not seek mental health care assistance; and how to advocate for the proper care?" The proposition of my research is to investigate various stigmas, environmental factors, and statistics that contribute to the distrust of African Americans with health care workers. In addition, solutions will be researched that can be acted upon in order for African Americans to receive the proper care they deserve. These acts would include: African American representation in medical research, access to mental medical care for impoverished African Americans, and ultimately, being an advocate of advantageous results that will enable African Americans to prioritize their mental health.

Effects of Nitrogen Additions on Mycorrhizal Associations in Ambrosia psilostachya

Student Author(s): Trontaye J. Black, Senior (Biology)
Faculty Mentor(s): Sally E. Koerner (College of Arts and Sciences)

Mycorrhizae are fungi that have a symbiotic relationship with plants. In this relationship, mycorrhizae attach to the roots and allow plants to absorb more water and nutrients while the plant provides the fungi with sugars. In this experiment, we will observe whether Nitrogen (N) additions in the Tallgrass Prairie ecosystem will have an effect on the rate at which a common forb, Ambrosia psilostachya, forms symbioses with AMF (Arbuscular Mycorrhizal Fungi). In summer 2021, soil core samples of Ambrosia psilostachya were collected across different

experimentally imposed soil N levels at Konza Prairie Biological Station in Kansas. These root samples were washed completely clean of soil, stained using Trypan Blue, and counted for percent colonized under a microscope. Upon the completion of this study, we will be able to determine if mycorrhizal associations in Ambrosia psilostachya will increase with the addition of N.

How do Instructors' and Students' Perspectives of Team Teaching Relate?

Student Author(s): Maria Bonilla-Cooksey, Senior (Human Development and Family Studies)
Faculty Mentor(s): Heather Coleman (School of Education)

UNCG has a Birth to Kindergarten (BK)undergraduate program that utilizes an interdisciplinary approach with the departments of Human Development and Family Studies (HDFS) and Specialized Education Services (SES). Thus, many courses in the program are team taught between HDFS and SES instructors. Modeling team teaching practices in higher education has many benefits for students and faculty, including interdisciplinary faculty working together to enhance their teaching. This model of an effective collaborative relationship is especially important for pre-service Early Childhood Educators who will work in an inclusive environment with other teachers and therapists (e.g., speech, occupation, and physical therapists). This research team has completed two studies to understand student and instructor perspective regarding the BK team teaching practices. We have analyzed the data that explored the student perspective, and we are currently completing our analysis on the instructor interviews. From our preliminary results we have found several themes that are consistent in the student and instructor data. This understanding of team teaching, its benefits, and its challenges can be utilized to identify strategies that can be implemented to better support faculty involved in team teaching; hence, continuing the process of improvement towards better preparing preservice teachers for inclusive environments.

An Argument in Support of the ARVN and How It Has Been Forgotten as a Mere Scapegoat

Student Author(s): Cameron Boone, Sophomore (History), Strong College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Despite reputation and media, the ARVN was truly a competent fighting force that was fed by the US for too long and thus, when the US left, they were gutted. The point of my research is to shed some light on heroism and bravery in the ARVN while exposing how the United States and other countries prop up the facade of "ARVN Incompetence" as a scapegoat to justify their defeat. I believe that this is an important topic because thousands of ARVN soldiers gave their lives to protect their homes. I want to correct this and shed some light on the stories that get forgotten from the war to give the ARVN the proper recognition it deserves for the many sacrifices. As seen in many primary sources from the time, notably the 1969 peer-reviewed article "Prospects for the Army of South Vietnam", we see how Vietnamization effectively gutted the ARVN because of their reliance on American support; whereas as argued in "The ARVN and the Fight for South Vietnam", had Vietnamization occurred earlier it was very likely the South could've held on.

The Association of Community and Society Ladders with Happiness, Health, and Self- Esteem

Student Author(s): Saige Boris, Senior (Biology)
Faculty Mentor(s): Ethan Zell (Psychology)

Prior research indicates that perceived status in one's community and perceived status in society are significantly associated with self-rated health as well as psychological variables like happiness and self-esteem (Zell et al., 2018). In the present study, we explored whether these effects would extend to an undergraduate student population in the Southeastern United States. In the first part of the study, we assessed college student's perceived standing in their community and the United States. Next, students completed measures of happiness, health, and self-esteem. Finally, we asked each student to complete two objective social status measures—maternal education and family income. After adjusting for objective status, our analyses revealed a significant association between the community ladder and happiness, health, and self-esteem. However, we did not find a significant association between the society ladder and any of these measures. Our results thus suggest that the community ladder has a stronger association with happiness, health, and self-esteem than the society ladder. These findings also highlight the importance of college student's comparisons with local others.

An Assessment of ACL Injuries Influenced by Hormonal Contraceptives in Female Athletes

Student Author(s): Sally Broadus, Senior (Public Health Education)
Faculty Mentor(s): Sandra Shultz (School of Health and Human Sciences)

Objectives: This study aims to explore the association between hormonal contraceptive use and the potential to suffer an ACL injury.
Methods: Collegiate athletes were recruited between 2006-2011 to participate in pre-season participation health screening. Participants were measured on a number of variables that included sport played, year of eligibility, knee alignment, and landing biomechanics. Hormone history questions were used to determine how many athletes use hormonal contraceptives.
Results: Out of 228 females 111 (48.6%) took hormonal contraceptives during at least one year of their eligibility. Out of the 228, 15 reported an ACL injury. Additionally, of those who were on hormonal contraceptives, 9 (60%) athletes also reported an ACL injury. However, 96 (42.1%) athletes who were hormonal contraceptive users, did not report an ACL injury. Based on an observational analysis we saw that female soccer players using hormonal contraceptives represented the majority of ACL injuries.
Future Direction: 1. Data analysis to assess if hormonal contraceptive usage is statistically significant among female athletes who have sustained an ACL injury

Reactivity of Cyanocarbenes with Electron-Rich Systems

Student Author(s): Ashley Brown, Senior (Chemistry)
Faculty Mentor(s): Mitchell Croatt (Chemistry)

This study involves the highly reactive nature of a chemical functional group called cyanocarbenes. This is a functional group that has a carbon and nitrogen triple bonded,

creating a cyano-group; while the carbon of the cyano-group is bonded to another carbon that is classified as a carbene. A carbene is a type of carbon that is able to react as a nucleophile or as an electrophile. This species of carbon is able to carry two unpaired electrons and react either by donating and/or receiving the electrons. This carbene is then bonded to any other functional groups. Previous research in the Croatt group have discovered a method of synthesizing Hypervalent Iodonium Alkynyl Trifilates (HIATs) that can be reacted with azide to create a cyanocarbene intermediate that can react with other substrates present in the reaction. Current research in the geoup takes on the roll of evaluating the reactivity of this cyanocarbene intermediate with electron rich systems. The research herein presents the findings of different products created by these systems that contain variations of alkene and alkyl groups.

Analyzing the reproduction of the Little Bluestem, Schizachyrium scoparium, in a heatwave

Student Author(s): Jordyn E. Brown, Senior (Biology)
Faculty Mentor(s): Sally Koerner (College of Arts and Science)

Historically, longleaf pine (LLP) savanna ecosystems were one of the most abundant ecosystems in the Southern United States. LLP savannas are diverse ecosystems harboring many unique plant and animal species. Over the past century, there has been a rapid decline of LLP ecosystems, due to lack of fire and human destruction. Active restoration is the best way to restore the LLP savanna ecosystem. In order to restore the ecosystem, we need to understand how the LLP savanna will respond to climate change. In particular, heatwaves are expected to increase in frequency under climate change, which could hinder restoration effects. As part of the Bio 315 Ecology and Evolution class at UNCG, students conducted a year-long (2 semester) experiment to determine how heatwaves influence the growth of S. scoparium (Little Bluestem), an important understory grass species from the LLP savanna. In my independent project, I expanded on this project by including extra measures of plant physiology and morphology to gain a deeper understanding of how heatwaves impact LLP understory. Each week in the Spring portion of the experiment, I collected data on plant reproduction and overall plant stress. This project will be used to help land managers better restore the LLP savanna under climate change.

The Combination of Isomaleimide and Danishefsky's Diene in a Diels-Alder Fashion

Student Author(s): Logan Brown, Junior (Chemistry)
Faculty Mentor(s): Mitchell Croatt (Chemistry)

The Diels-Alder reaction is a well-known chemical reaction that creates new carbon-carbon bonds and ring structures. It functions through the combination of a diene, a compound with two double bonds in conjugation, and a dienophile, a compound with just one double bond. This reaction is an example of a ring closing reaction Ina concerted mechanism. The process is aided if the diene is lacking electron density and the dienophile has increased electron density around the double bond of interest. However, there are many types of Diels-Alder reactions that vary in that aspect. The project being presented focuses on reacting isomaleimide, an electron rich dienophile, with Danishefsky's diene, an electron poor diene in a Diels-Alder

fashion. Preliminary results and analysis show that this reaction has successfully proceeded to give desired cyclized product. The isolation and further characterization of the product as well as the investigation on a broader substrate scope is currently under study.

Quantifying Unknown Compounds in Goldenseal (*Hydrastis canadensis*)

Student Author(s): Isaiah Bucur, Senior (Chemistry)
Faculty Mentor(s): Nadja Cech (Chemistry)

Goldenseal (*Hydrastis canadensis*) is an herbal plant used for hundreds of years which has been acclaimed to help mucosal membrane irritations and have anti-inflammatory properties. The flavonoids and chemical compounds are responsible for the many benefits of Goldenseal; thus, the goal is determining the chemical composition of Goldenseal. A multi-detector approach incorporates two or more detectors (mass spectrometry (MS), ultraviolet (UV) detector, and/or charged aerosol detector (CAD)) to be collectively compared allowing the most accurate view of the chemical composition. Five known components of goldenseal were identified and quantified in both Goldenseal root and leaf extracts using UV and CAD detectors. Unknown constituents have been quantified using the same detection model, allowing an overall chemical profile of Goldenseal to be assessed as determined by each detector. The unknown compounds are yet to be identified or paired with biological activity.

Impacts of invasion on the insect communities of Montanan rangelands

Student Author(s): Zachary Bunch, Senior (Biology)
Faculty Mentor(s): Sally Koerner (College of Arts and Sciences)

Invasive species threaten nearly every ecosystem on the planet, negatively affecting resident populations via competitive marginalization leading to a reduction of native biodiversity. In this project, we are investigating the consequences of invasion by B. arvensis, a C3grass of poor forage quality, in Montanan rangelands, specifically its impact on insect communities. This study is part of a multi-year experimental field study at Fort Keogh Livestock and Range Research Laboratory in Miles City, Montana. We collected insects from our field site in Montana and transported them to our lab where they were sorted, identified, and counted. We found no significant impact of invasion on insect abundance and none on biodiversity($P=0.4624$). This indicates that insect abundance does not respond to changes in the invasion level of B. arvensis. Insects are critical components of an ecosystem's food web, and this research provides valuable insight into the consequences of invasion on biodiversity in Northern mixed-grass prairies.

The Natural Limit of Testosterone

Student Author(s): Avinson Burnette, Sophomore (Kinesiology), Strong College
Faculty Mentor(s): Sara Littlejohn (Residential College)

My research project is to find the natural limit of testosterone in the human body without synthetic help using all natural practices, herbs and nutrition. My current thesis is that there is a certain limit that the human body reaches considering that around 950 ng/dl doctors recommend decreasing your testosterone due to health issues like prostate cancer and balding. I am interested in this topic because I am a bodybuilder and the higher the level of testosterone

the more I can in the gym, plus it makes me feel good. I am definitely going to use 8 Ari Z;Kutlu N;Uyanik BS;Taneli F;Buyukyazi G;Tavli T; "Serum Testosterone, Growth Hormone, and Insulin-like Growth Factor-1 Levels, Mental Reaction Time, and Maximal Aerobic Exercise in Sedentary and Long-Term Physically Trained Elderly Males." The International Journal of Neuroscience, U.S. National Library of Medicine, https://pubmed.ncbi.nlm.nih.gov/15204068/. Because it helps in my calculations of how exercise affects testosterone and any other clinical trials about testosterone boosting ingredients. I am hoping my research helps anyone looking to boost their testosterone to the higher peaks. It could affect college athletes, trans men, old men and just really anyone who wants to feel better about themselves. Testosterone and anxiety negatively correlated with each other so increasing testosterone could solve a lot of mental problems.

Who Benefits from the Work of Speech Pathologists and How are they Helped?

Student Author(s): Alexis Byfield, Sophomore (Speech Pathology), Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

Have you ever heard of Speech Pathology or ever had a Speech Pathologist? In my research project, I will focus on "Who benefits from the work of Speech Pathologists and how they help others". I feel like everyone needs the answer to my research question. I feel like parents need to know about speech pathology in case their child might need to go to speech therapist when they are younger for delayed speech or speech impediment. I also feel like people who have a history of strokes or other health related reasons or any event that the brain might need a speech pathologist. I want to bring light to all the positive reasons for speech pathologists and how they are helpful to everyone. I will use all the resources I have available and credible sources to find my answer. I would like to send out a survey asking people if they have ever heard of speech pathology and if so, what have they heard about it. Throughout my research I will educate more people about speech pathology and how beneficial it is.

Are Black Artists Only Acknowledged or Celebrated by the Public When Their Work References Their Race?

Student Author(s): Adia Carter, Sophomore (Art), Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

How many black artists can you name? Is there a pattern to what their work is referencing? My research delves into art made by African Americans and the influence which public opinion and the opinion of critics and collectors have on it along with its correlation to the frequency and subject matter of what is being produced. Is the idea that the majority of black artists creating art which speaks to their ethnicity due to an issue of supply and demand? My research question is "Is there a correlation between the race of an artist, their subject matter, and the likelihood for the sale of their work?". It will reveal if there is a larger pool of potentially successful artists limited by what the public and upper echelons of art distribution expect or deem valuable from them. I look at research that examines the statistics surrounding the works of black artists in museums and markets, through which they are bought and sold, in regard to multiple criteria. This may help the marginalized artists that feel they cannot branch out of their pieces surrounding "the struggle" without jeopardizing their financial security along with

prompting discussion on a topic which is not often considered by the general public.

Female Athlete at the Brain Study
Student Author(s): Eman Carter, Senior (Kinesiology)
Faculty Mentor(s): Donna Duffy (School of Health)

Exposure to repetitive sport-related head impacts can lead to acute or chronic impairments in cognitive functioning and quality of life. Although female athletes have an increased risk of concussion compared to their male counterparts, the majority of existing research has focused on male athletes. To address this disparity, female semi-professional tackle football players (N = 11, M_{age} = 35.00 ± 7.89 years) completed a battery of cognitive assessments and quality of life measures before and after a single competitive season. The cognitive tests included the NIH Toolbox Flanker Inhibitory Control and Attention test, Pattern Comparison Processing Speed Test, and the Dimensional Change Card Sort Test. The NIH Quality of Life in Neurological Disorders (Neuro-QoL) measurement tool assessed symptoms of anxiety, depression, fatigue, positive affect and well-being, social functioning, and cognitive health. For each assessment, a paired samples t-test will be conducted to examine changes in cognitive performance and quality of life from pre- to post-season timepoints. The results of this study will guide future research and inform clinicians about the mental and physical health of female athletes who play contact and collision sports.

Social Media and its Effects on Political Polarization
Student Author(s): Leah Cavanaugh, Junior (Social Work) Strong College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

If we look at today's political climate, it's evident how divided our beliefs are. We've come to a point where naming your political party can cause major disputes between family and friends. I'm planning to explore the reasoning behind this divide, mainly focusing on the role of social media. As we've progressed technologically, social media has become an instrumental part of our everyday lives. As our dependency has grown, news outlets, journalists, and everyday citizens have taken the opportunity to spread news and information. Taking a closer look at credible sources and pulling information from books such as *Revolutionizing Political Communication through Social Media* by Tomaž Deželan and Igor Vobič, we will further understand the role social media has played in this political divide. The algorithms created by large social media companies, specifically Meta, are designed to feed you information based on what you have previously liked. This process can lead to an individual's homepage being filled with only beliefs they agree with, slowly directing the user towards more extreme views and neglecting any other ideas. Furthermore, I am researching if we as users are responsible for holding these social media platforms accountable and how we can effectively execute this.

ABSTRACTS

The Chaos of Social Media

Student Author(s): Chris Chan, Sophomore (Business Administration: Human Resources) Strong College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

I believe that children under 11 shouldn't use social media platforms because it affects your mental health. In this research you will find the main issues that emerge from the use of social media on children. Since 2004 social media platforms have been popular, but since the huge number of users on social media there has been lots of negative effects, especially on adolescents. In the book "It's complicated: the social lives of networked teens". The book points out personal stories that prove the negative effects on adolescents. "One study shows that children under 11 years old who use social media are more likely to have problematic digital behaviors". I grew up when social media started to become popular, and I saw firsthand that people were changing their image to make their social media presence more popular. Also, people's mental health has changed because of cyberbullying. In this research you will understand why children under 11 shouldn't have access to social media.

Forced out: Consequences of multiple sport related head injuries among female rugby players

Student Author(s): Melissa (MJ) Cherry, Post-Bac (Nutrition)
Faculty Mentor(s): Donna Duffy (Kinesiology)

The purpose of this qualitative study was to explore the chronic symptoms experienced by female rugby players after multiple sport-related head injuries.
IRB approval for this study was granted by the UNCG IRB. Female rugby players were recruited via social media and word of mouth. Four in person (pre-COVID) individual interviews were scheduled with participants who met the following criteria: (1) experienced multiple sport related head injuries (e.g., concussions), and (2) left their sport due to chronic physical and psychological symptoms. The principal investigator for this study conducted each interview. Each interview followed an interview guide that included questions related to the athlete's sports history, concussion history and post-concussed lifestyle and emotional/ mental well-being. Interviews were transcribed verbatim. Data was analyzed using Atlas ti. The data was coded independently and then clustered into two themes, (1) clinical care and (2) symptoms. Two subthemes emerged from the clinical care theme, (a) assessment of injury, and (b) referral for injury. One subtheme emerged for symptoms, (a) self-care.

Why do 80% of college students change their major at least once during their college career?

Student Author(s): Macy Clarida, Sophomore (Biology), Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

Have you ever changed your major during your college career? If so, you are a part of the 80% of college students who change their major at some point in their college career. This high percentage has led to me asking the question as to "why do so many students change their major at least once within their college career?" To find the answer to this question, I used academic papers and articles as well as performed my own surveys with high school and

college students to help examine the root cause. Through my research and by examining my surveys I found that the reason why people change their major is from lack of exposure to those majors and professions before entering college. Many people go into a major without having any prior experience in it and discover that it is not what they want to do. Then they have to discover what does interest them which can lead to multiple major changes, and a lot of extra schooling. This research can help to encourage students to pursue interest before entering college and can also encourage schools to help introduce students to different options and pathways in their lives.

Examining Interactive Effects of Group Membership and Untrustworthiness on Recognition Memory
Student Author(s): Grace Clark, Senior (Psychology)
Faculty Mentor(s): Brittany Cassidy (Psychology)

Faces provide certain cues, such as untrustworthiness, that have been shown to be more memorable than others. To better understand the strength of this untrustworthiness advantage in recognition memory, it is important to study faces that vary in trustworthiness and provide other cues known to affect recognition memory at the same time. This research measured recognition memory of faces that varied in group membership and trustworthiness. Participants took a bogus personality test to establish their relative ingroup and outgroup. Then, they completed an encoding phase in which they viewed ingroup and outgroup faces that were either trustworthy or untrustworthy. Because ingroup faces have been shown to be especially memorable, the untrustworthy advantage was expected to disappear for ingroup trustworthy faces. In addition, untrustworthy outgroup faces were expected to be remembered more than outgroup trustworthy and ingroup untrustworthy faces. These hypotheses were not supported, however. The current research builds on previous findings by investigating how two facial cues, trustworthiness, and group membership, interact together to affect recognition memory.

How pasteurization impacts fat, lactose, protein, and energy content in donor human milk
Student Author(s): Alexandra Clay, Senior (Nutrition)
Faculty Mentor(s): Maryanne Perrin (Nutrition)

A mother's breast milk is the first choice of food for a preterm infant, to provide them with adequate nutrients and immunity at such a vulnerable time in their lives. If a mother's milk is not available for preterm infants, donor human breast milk (DHM) is recommended. DHM is donated from breastfeeding mothers to their local human milk bank. As a safety precaution, milk banks screen, pasteurize, and test the milk, then distribute it to premature infants in need. Although there is extensive research on the many benefits of DHM for preterm infants, there are conflicting findings regarding how pasteurization affects the macronutrients (fat, lactose, and protein) in the milk. The purpose of this study was to assess these macronutrients in matched raw (n=50) and pasteurized (n=50) samples of DHM obtained from the Mothers' Milk Bank of North Texas. For successful analysis, we have been following specific procedures: To measure fat we have been using Gravimetric methods, Megazyme methods for lactose, Kjeldahl methods for protein, and Atwater conversion factors for measuring energy content.

We will present differences between raw and pasteurized DHM graphically and will assess mean differences using a 95% confidence interval to determine if pasteurization impacts fat, lactose, protein, and energy.

Colonialism and Cultural Change on Kea during the Hellenistic and Roman Periods
Student Author(s): Theresa Cole, Junior (Classical Studies)
Faculty Mentor(s): Joanne Murphy (Classical Studies)

This research provides the framework, research questions, and methods of my study into the impact of cultural change and colonialism on the Cycladic Island of Kea, Greece, during the Hellenistic (323 BC - 23 BC) and Roman (23 BC -450 AD) periods. The modern world provides many examples of societies and cultures being changed significantly by colonization and ensuing political disruption**.** By examining similar processes in the ancient world, I will elucidate how exactly such changes occurred and were manifested in the Cyclades.
To understand these processes, I will explore how trade and contact with other cultures impacted the local communities on Kea; how such trade altered the distribution of wealth on the island; how the shifted distribution of wealth impacted the local power hierarchies; how such major changes caused political upheaval; and how that upheaval disrupted the quality of life on Kea.
In order to address these research questions, I initially examine previous survey data from Kea and compare those findings to documented events on the island. I then compare these results to the data collected by the Kea Archaeological Research Survey.

Adaptive Clothing: Making Fashion Forward Clothes More Accessible to the Physically Disabled
Student Author(s): Kasey Condon, Senior (Consumer Apparel & Retail Studies)
Faculty Mentor(s): Grace Haeun Bang (Consumer Apparel & Retail Studies)

The disabled community is a popular target market that has been overlooked in the fashion industry for years. Adaptive clothing is clothing that has been designed for the disabled for easy access to body parts and making it easy to change or remove clothing. However, there is a lack of access to adaptive clothing in the market. This is a serious of my Honors Projects that I have been working on since Fall 2021. The goal of this project is to create fashion-forward apparel for a disabled customer who is an active wheelchair user for many years due to a spinal cord injury. The project aims to develop garments that have easy accessibility, make her feel comfortable and confident, and help her to be able to express herself nonverbally in the world of fashion. An online survey was conducted to understand the exact needs/wants of the customer before the ideation phase. The co-design method was used throughout the design and evaluation process. The customer picked the most desirable design and provided her feedback and evaluations for the final garments. This project can inspire designers and retailers in the fashion industry to take responsibility to make adaptive clothing normalized.

Social Media & Self Love Abstract
Student Author(s): Taj'Unique Cooke, Senior (Sociology), Strong College Faculty
Mentor(s): Sara Littlejohn (Residential Colleges)

My research has shown that many young women ages 18-27 are dissatisfied with their bodies because of unrealistic expectations imposed by the status quo. It's difficult to live up to said standards and people often lose themselves trying. On social media, women that are seen as socially attractive get more engagement than women that are considered less attractive. This topic is important to me because improved life satisfaction on social media could lower mental health concerns and suicide rates. In Hogue & Mills' book, the effects of active social media engagement with peers on body image in young women, they studied the effects of engaging with female peers on social media & how comparisons between women increased body image concerns in young women. In Oakes article, the complicated truth about social media and body image, they discovered that people tend to lower their self-esteem by viewing others as more attractive than themselves. In this article, the unconfident women were unaware that they were shown edited pictures of other women & in turn, felt worse about their appearances. My goal is for readers to see that their beauty is not defined by anyone else's on social media. Media users should only consume media that is positive & intentional.

Sustainability in Fashion in a Post-COVID World: Investigating Generation Z College Students' Knowledge, Perceptions, and Behavior toward Sustainable Fashion Apparel

Student Author(s): Kerry Cope, Junior (Consumer, Apparel, & Retail Studies)
Faculty Mentor(s): Jin Su (Consumer, Apparel, & Retail Studies)

Despite the significant contribution to the world economy, the apparel industry is widely believed to be the second most polluting industry in the world. Sustainability is a dynamic and rich concept in fashion apparel. As the apparel industry works towards being more environmentally and socially responsible, it is equally important to involve consumers in the process and encourage ethical consumption of apparel products. Gen Z is emerging as the sustainability generation, and it will soon become the largest cohort of consumers. Thus, fashion apparel brands wanting to tap into this powerful consumer group need to understand their tendencies and perceptions. Moreover, the COVID-19 pandemic, which is among the most disruptive events in modern history, has a way of profoundly shaping the lifetime spending habits of Gen Z. The pandemic didn't start the sustainability revolution, but it has put it into hyperdrive, and Gen Z is in the driver's seat. Young college students have learned to spend less and waste less since the pandemic. Using the qualitative approach, this study aims to: (1) assess Gen Z college students' knowledge about sustainability in the fashion industry in a post COVID world, and (2) investigate their perceptions and behavior toward sustainable apparel products.

Precursors Towards Enantioselective Synthesis of Lactones via the Pinner Reaction

Student Author(s): Johnathan Dean, Junior (Biochemistry)
Faculty Mentor(s): Kimberly Petersen (Chemistry and Biochemistry)

Chiral centers are common structural elements in many bioactive compounds, making them important synthetic targets in medicinal and pharmaceutical fields. To support future

development, reliable methods for the synthesis of chiral molecules are needed. One approach is to synthesize small chiral molecules which can function as building blocks to more complex compounds. This research focuses on the development of a novel method for the synthesis of lactones via the Pinner reaction, which has previously only been performed under harsh conditions that are not favorable for forming chiral centers. In past work, the Petersen group has successfully synthesized lactone diastereomers using the Pinner reaction under mild acid conditions. The goal of this current work is to develop an enantioselective Pinner reaction for the preparation of chiral lactones. This requires experimentation with various precursor compounds, with the work described here detailing the synthetic methods used for the preparation of said precursors. If successful, this research would represent the first example of an enantioselective Pinner reaction. Additionally, this work establishes an effective synthetic route to chiral lactones, improving access to more complex bioactive compounds.

How Did COVID-19 affect College Students' Mental Health

Student Author(s): Mikayla Deese, Sophomore (Biology) Ashby College
Faculty Mentor(s): Sara Littlejohn & Jessica Abell (Residential Colleges)

During the COVID-19 pandemic, college students had to adjust to online learning and the limitations of on-campus events. The COVID-19 pandemic has caused a lot of stress on college students mentally and financially. Considering there are multiple factors such as socioeconomics and race can also have a huge impact on that specific student. Students in the US college system have experienced different forms of it such as an increase in depression, anxiety, and self-harm. There is a lot of anxiety about people missing out on a normal college experience and catching the virus itself. I do want to educate the public on information based on accuracy. COVID-19 did affect my freshman year of college and continuing on. For this research, I will be using peer-review journals with data that shows how students' mental health was compared to before pre-pandemic. “The Covid-19 pandemic and mental health of first-year college students: Examining the effect of Covid-19 stressors using longitudinal data” explains how first-year students were affected by different stressors in the pandemic. For my thesis, I want to show that COVID-19 did affect students but there are ways for students to cope.

Are Enjoyable Poems Interesting

Student Author(s): Galen Dunkle, Senior (Psychology)
Faculty Mentor(s): Peter Delaney (Psychology)

Turner and Silvia (2006) found, in visual art, interest was driven by appraisals of comprehensibility and novelty/complexity, while enjoyment was driven by simplicity, calmingness, and positive valence(cheerfulness) (see also Silvia, 2008). We wanted to test if Silvia’s appraisal theory could apply to poems. The present study recruited fluent English speakers from Prolific.co. Participants read 3 poems from a pool. Participants made 1-7 ratings for interest, engagement, cheerfulness, enjoyability, familiarity, complexity, difficulty understanding, coherence, calming or disturbing, modernity, vividness of imagery, and self-relevance. We replicated Turner and Silvia’s findings that interest was determined by appraisals of novelty/complexity and comprehensibility, although enjoyment was highly

correlated with interest for poems as well. We also replicated Belfi et al.'s (2018) findings that vividness predicted interest, and that calming, or disturbing was a predictor for interest. Ratings for poetry may differ because literature can come with many nuances.

Making A Small-Town Marching Band Competitive and Successful

Student Author(s): Kelly Durham, Senior (Music)
Faculty Mentor(s): Abigial Pack (Music)

3 to 5 marching band programs located in townships with similar population, demographics, and financial resources to that of the Bassett High School Marching Band in Bassett, VA were surveyed to compare resources, background and methodology. The other programs were based on marked success. In depth observations were made in context during rehearsals and field preparations of each band in each location. There were several notable strategies used by each respective director that provided insight into defining and contributing to the long success of the program. These, in turn, provide patterns that can be documented and graphed. In particular, organization and planning of the daily schedules, specific budget allocation and support from the Band Boosters (a volunteer organization led by parents similar to the familiar PTA, but solely at the benefit of the band) and community were highlighted in each band. These were found to be the 3 most commonly present factors observed in these superior groups. The most significant feature of rehearsal structure was leadership roles within the band staff as well as leadership roles within the student leadership. Leaders were assigned specific tasks and were very efficient at getting each task completed. Staff had more overarching responsibilities of bigger ideas or objectives whereas student leaders had smaller more focused tasks on smaller groups of individuals. This type of leadership allowed for the most efficient use of time and allowed for multiple tasks to be completed atone time. Each leader within the staff and student leadership knew their tasks and made sure that each individual objective was being met.

Strategic Delay or Adherence?: A Study of Black/African immigrant college student perceptions and behaviors associated with COVID-19 vaccination

Student Author(s): Princess Ejindu, Senior (Public Health Education)
Faculty Mentor(s): Sharon Morrison (Public Health Education)

Currently, COVID-19 vaccines are available to everyone 16 years and older. There are multiple and complex determinants of vaccine uptake (Feleszko et al, 2020). For example, misinformation, cultural beliefs and fear may play a role in COVID-19 vaccine hesitancy and or delayed uptake among Black immigrants and refugees (Fadda et al, 2020). Preliminary results from a pilot qualitative study of Black/African immigrant college students (Phase I) indicated African immigrant students hold mixed views and understandings of COVID-19 itself and its impact on individuals. Now that COVID-19 vaccines have become available and have been strongly recommended for matriculation on college campuses, it is important to identify and understand the key determinants of vaccine uptake among Black/African immigrant college-age students. We conducted a cross-institutional survey to gather COVID vaccine perceptions, viewpoints, adherence decisions, behaviors and experiences of African immigrant/refugee students attending North Carolina college campuses and living in local communities. We will

present the findings from descriptive and inferential statistical analysis of the survey data as well as some thematic analysis of open-ended questions. We will discuss these results in the broader context of public health responses to COVID-19 and its prevention in immigrant and refugee populations.

Rewriting Visibility
Student Author(s): Andrea Ellerby, Senior (Art)
Faculty Mentor(s): Lindsay Metivier (Art)

I love photography because it can take a beautiful or important moment and it can be kept forever. The things I value most in my life are my relationships with my loved ones and with the community around me. That theme shows a lot in my work, as I love to capture moments relating to my culture and the beauty within it. I think it's very important to share these stories because everyone should be able to see themselves represented in a positive and strong way. I am constantly working on my craft and trying to become a better artist. I want to share all the amazing things I capture with the world and give them insight into a different place or lifestyle. I feel like many issues in the world can be resolved through understanding what others experience. I believe art, and especially photography, is one of the simplest but most impactful ways of doing so.

Do You Own Your Information? Children's Intuitions About Who Owns Different Types Of Information Shared With An App.
Student Author(s): Jason Fahey, Senior (Psychology)
Faculty Mentor(s): Shaylene Nancekivell ((Psychology)

The present study investigates young children's reasoning about who owns the information users share with apps. 39 children ages 5-years to 10-years were asked to judge who owned two types of information after it had been willingly shared: general and personal information. Based on an informational autonomy account, we predicted that young children would judge that the user owns their personal information but not their general information. We found that by 8-years-old children were indeed more likely to judge that user own the personal information they share with apps than they were to judge that user own the general information they share with them. However, younger children judged that the general information was owned by the user at similar rates to the personal information. Further exploration of our data suggests these changes are likely driven by beliefs about the ownership of general information.

A Comparative Study of Agonistic and Affiliative Behavior in Captive and Wild Chimpanzees (*Pan troglodytes*).
Student Author(s): Maegan Ferguson, Junior (Anthropology)
Faculty Mentor(s): Charles Egeland (Anthropology)

Chimpanzees (*Pan troglodytes*) have been prominent subjects in studies of primate behavioral ecology due to their complex social structure. During the formative years of primatology,

chimpanzees were misrepresented to be an innately violent species due to anecdotal observations of agonistic, or aggressive, behavior. Agonism and affiliation are key features of the repertoire of participant behaviors necessary for the maintenance of social hierarchies in chimpanzee populations. This paper aims to collate the types of agonistic and affiliative behaviors exhibited by high-ranking males in captive and wild settings. Observational data will be collected via focal follows of the two highest ranking males living at the North Carolina Zoo, utilizing an ethogram adapted from previous studies. An analysis of the data will evaluate to what extent the participant behaviors exhibited by high-ranking males vary between captive and wild populations. This study may be of use to future investigations into the roles that differing living conditions play in chimpanzee agonistic and affiliative behavior.

Working to Remember: An Exploration of Spontaneous Strategic Behaviors in Elementary School Students

Student Author(s): Shelby Finch, Senior (Human Development and Family Studies)
Faculty Mentor(s): Jennifer Coffman (Human Development and Family Studies)

The use of strategic study skills by elementary school students is a predictor of academic success (Moreira et al., 2013). Spontaneous study strategies appear in late elementary school (Brown & Smiley, 1978; Coffman et al., 2019), but these skills have not yet been documented in younger students. A nonfiction passage recall task was used to explore study behaviors of 2nd and 3rd graders. This task involved providing children with a pencil, paper, and highlighter, giving them 4 minutes to study a passage, and then asking for recall. Students did exhibit spontaneous study strategies, but variability was found in the use of these skills -ranging from unfocused and inefficient to highly strategic. The most common behaviors were rereading (90%), highlighting (41%), and note-taking (37%). Overall strategy scores were correlated with students' recall ($r=0.402$, $p=0.004$). This presentation will consider child-level factors (e.g., attention) that may underlie observed differences in the use of study strategies and contribute to our growing understanding of student learning.

What is the difference between how healthcare professionals treat African American patients vs Caucasian patients and what is the health outcome?

Student Author(s): Tristian Foster, Sophomore (Nursing), Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

Healthcare professionals take an oath which solidifies their commitment to professionalism and patient care, but that's not always upheld. There are numerous major differences in how healthcare professionals treat and tend to African American patient's vs Caucasian patients as well as the health outcomes. There are cracks in the medical system especially towards those that are African Americans. The cracks in the medical system are due to racial disparities which are fed by implicit and explicit bias that interferes with how healthcare professionals make decisions. As I conducted my research, I analyzed article findings on different diseases and mortality rates by race and I reviewed Ted Talks concerning the idea of racism and place-ism. I also analyzed scholarly articles of results on the Implicit Association Test (IAT) and Modern Racism Scale (MRS) to assess bias toward African Americans. Making changes to the systems would be by starting at the root of the problem and offering proper training or even

simply looking to hire new staff members by conducting the IAT or MRS to see their true intentions before being hired. My goal is to raise awareness and be an advocate for racial disparities and equality within the healthcare system.

What is Grogan too afraid to say?

Student Author(s): Jasmine Franco, Sophomore (Community and Therapeutic Recreation) Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

As someone who has created and been a part of many murals, I know the expectations and the benefits they have on people's perception of things. Creating a mural for the "Black Lives Matter" movement Downtown with other artists was an amazing experience because so many people from around town and out of state came and drove up and down Elm Street to see all the murals. It puts into perspective that other people support us on the issue. I am investigating the ideas of belongingness of a community in relation to murals by researching murals and the impact that they give on the communities, specifically murals that give an overall positive effect. With my research question being "What is Grogan too afraid to say?" I will send out a survey to Grogan students asking what they think should go into the mural, and then I am going to use the community's responses to create the mural. I expect to find murals having a positive impact and bring communities together through what is being conveyed. I hope that this will help students feel a sense of belonging and realize that other people's perspectives are similar to theirs.

Antibiotic Exposure Inhibits Development of Male Honey Bee Larvae

Student Author(s): Patrick Gallagher, Senior (Biology)
Faculty Mentor(s): Kasie Raymann (Biology)

Oxytetracycline (oxytet) is the most commonly used antibiotic in beekeeping to treat devastating bacterial infections that affect developing honeybees. The impact of antibiotic hive treatments on the development of male (drone) honeybees has not been studied. Honeybee reproduction and overall health have been declining in the last decade, making understanding drone health detrimental to honeybee hive survival. To this aim, we created a new method for raising drone larvae in the lab (in-vitro) while mimicking a singular antibiotic treatment and natural hive conditions. Larvae were split into two groups (control or oxytet diet) and fed daily; quantity determined by larval age. We repeated the experiment three times with decreasing amounts of oxytet to record larvae survivability until their next developmental stage (pupation). We hypothesized that oxytet exposure during drone larvae development would negatively impact their growth and ability to pupate. We discovered concentrations half of the recommended field dose severely inhibit larvae growth and ability to become a pupa. The suggested field dose (200 µg/mL) resulted in larvae death within four days, when using half of the recommended dose (100 µg/mL) larvae death occurred within seven days. Insight into antibiotic impacts on drone development will lead to a greater understanding of hive failure and provide valuable insight for beekeepers, veterinarians, researchers, and overall pollination services.

Conflict Saliency and Fake News Reminders Improve Memory and Beliefs

Student Author(s): Aaron Goldman, Junior (Psychology)
Faculty Mentor(s): Christopher Wahlheim (Psychology)

People can easily educate themselves on a variety of topics using the internet. However, with a greater wealth of information comes an increase in the pervasiveness of misinformation. Misinformation is misleading or false information later deemed to be true. Misinformation in news stories, referred to as fake news, can have dangerous consequences. For example, false claims that the coronavirus can be cured using home remedies can encourage the ingestion of harmful substances. Such effects have prompted fact-checkers and social-media websites to mitigate misinformation exposure, but research is necessary to empirically verify the best method for doing so. Previous research at UNCG showed that reminding people of misinformation before presenting a correction with true information can improve memory and belief accuracy. Other work has shown that merely tagging corrections as being true information and misinformation as being false information can also mitigate the harmful effects misinformation exposure. Our study directly compared these methods of tagging information to misinformation reminders. The results showed that misinformation reminders followed by corrections were more effective than correction or misinformation tags alone in facilitating memory for the correct information and accurate beliefs. Thus, media sites and fact checkers might consider reminding their audience of false information before correcting and clarifying it. The results may guide recommendations about how to best limit the influence of misinformation.

Covid-19 and the effects it has on mental health

Student Author(s): Alison Gomez-Torres, Sophomore (Marketing, Entrepreneurship, Hospitality and Tourism) Strong College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Covid-19 affected many aspects of life but one aspect that was affected the most was mental health. Mental health has been a serious problem that's growing. With the added pressures of covid-19 effects like changes in school environments, job losses, isolation, etc there has been an increase in the need of speaking with a health professional. These spikes in numbers are mostly seen in ages between 15-23, a delicate age of growth into adulthood. The result of these increases in numbers shows the importance of learning the causes of mental health and allows for a better understanding of individuals dealing with mental health. By using sources such as the book "Collateral Damage: the mental health effects of the pandemic." from the information service EBSCO, articles, websites, and surveys, I inform readers of the living situations that most of these teens and young adults finds themselves in and how much help is actually available to help them. Has the increase in the need of talking to a mental health professional caused an issue in the actual number of professionals available to them? Having seen some of the effects that covid had on the mental health of teens firsthand, it is a topic with many sides and intriguing views. This research will discuss the significance of covid-19 on mental health and its importance in today's society.

ABSTRACTS

Language Barriers persist with Immigrant Families in Education

Student Author(s): David Gonzalez Hernandez, Sophomore (Teacher Education and Higher Education), Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

How can we fix the language barrier families face when communicating with their students' teachers? The Immigrant Latinx population in the United States has exponentially been growing since the early 2000s. Many of the immigrant families come to this country with no or limited English. Typically, the parents only speak Spanish or a Native American language. In this context, the U.S. Department of Education's Office of Civil Rights has seen an increase in parental language complaints since 2000. In 2015, the Department of Education issued guidance to school districts for communicating with parents who don't speak English. The guidelines state that school districts should provide resources for parents in their native language. Barriers are still present today when communicating with parents who don't speak English. To investigate this question, I will examine studies that include interviews with immigrant students and their parents to determine what these immigrants themselves see as the major barriers they face, to determine the impact these barriers have on immigrant families. I will also examine government databases and research studies that document the scope of the issues in terms of the numbers of immigrant students who are affected. I expect to figure out what kind of repercussions immigrant families encounter and what can be done to address this language barrier.

How is substance abuse handled among the wealth as compared to low-income communities?

Student Author(s): Aja Goode, Junior (Social Work) Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

It is vital to understand the cause of substance abuse and the assistance to provide the individual, however, the status of substance abuse is excessively distinct between tax brackets. My research question is "How is substance abuse handled among the wealth as compared to low-income communities? "With the support of government databases and scholarly articles, I explore how substance abuse from low-income and wealthy communities differ, the difference in gender and minority connecting through those communities, the contextual factors that associate with substance abuse, and the media depiction of substance abuse between the low-income and wealthy/celebrity actions of the concept. As substance abuse is a subject that is strived to be controlled and eradicated, there are services and assistance from social workers, social services, and organizations that specialize in helping individuals and families find solutions to their current situation. I expect to find greater resources that help with aid and assistance of substance abuse will tackling the stigmatism with the topic in the media. Through my research, I hope to find further ideas that help all communities battle substance abuse that will benefit the area of my future career path.

The Role of Digital Technology in the Changing of the Human body

Student Author(s): Amauri Green, Junior (Media Studies) Ashby College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Cell phones are the means through which we stay connected, educated, and entertained. The importance of cell phones lies in their convenience and their nature of pure necessity in the modern world. This study focuses on the effects inflicted upon the human mind, the skeletal system, and the muscular system, as a result of cellphone use. The significance of this topic to my personal interest is a result of my micro-obsession with the things society holds most valuable. These very commodities can be the most harmful to our existence while being the most helpful. The primary sources used in this investigation utilizes brian scans that support the irregularities caused by cell phone use while the secondary sources provide commentary from professionals in the field of orthopedic surgery. One article, by Luisa Medeiros and Tanit Sanchez, entitled "Tinnitus and cell phones: the role of electromagnetic radiofrequency radiation" posits the linkage between the contraction of tinnitus, ringing in one or both ears, and the electromagnetic waves emitted by cellular devices. This study yields results that suggest that cell phones can influence the changing or deterioration of particular mental, motor sensory, and kinesthetic processes while implementing evidence of treatments and further developmental research.

Does day-to-day variability in physical activity impact health in older adults?

Student Author(s): Gina Guzman-Cisneros, Senior (Kinesiology)
Faculty Mentor(s): Jaclyn Maher (Kinesiology)

The goal of this project is to determine the association between mean level and day-to-day variability in step counts and health-related quality of life and physical functioning in a diverse sample of older adults. Investigating this problem would have important practical implications because it can inform how health professionals prescribe physical activity. Physical activity guidelines specify how many minutes of physical activity people should engage in each week, but they do not comment on the patterns which individuals use to accumulate that physical activity. It is unclear if being consistently active (e.g., 30 minutes/day) versus meeting the guidelines but accumulating physical activity on a few specific days per week (e.g., 75 minutes on two days/week) has different implications for health. To investigate this question, a secondary analysis will be conducted using device-based daily step count data and participant reports of health-related quality of life and physical functioning. A two-stage, Mixed-Effects Location Scale modeling approach will test subject-level effects of mean level and variability in daily step counts on subject-level health-related quality of life and physical functioning. In this study, we expect to determine whether greater consistency or greater variability in daily step counts is associated with improved quality of life and functional limitations.

An Investigation of the Race/Ethnicity of Composers Whose Compositions are Included in State Orchestra Adjudication Festivals

Student Author(s): Claire Haneberg, Junior (Music Education)
Faculty Mentor(s): Rebecca MacLeod (Music Education)

A core aspect of high school orchestra instruction in the United States is the preparation of students to perform at state adjudication festivals. State adjudication festivals are performance assessments where orchestra students prepare repertoire and receive feedback and a rating of their performance quality by a panel of experts. These performance assessments occur in nearly every state and the repertoire performed by school programs must be selected from a pre-approved repertoire list. The most widely used repertoire list is that hosted by the Texas University Interscholastic League. Composer race and gender is important as representation matters for youth enrolled in these orchestra programs. This study aims to discover the racial and gender makeup of the composers included on the Texas UIL list. This study focused on the full and string orchestra lists hosted on the UIL for grades 3, 4 and 5 (most common for high schools). Composer race and gender were determined using biographical sources, program notes, photographs, and websites. Early results from data collection point to the fact that the majority of composers included on the list are white males.

The Importance of Arts Programming in Childhood Development

Student Author(s): Sarah Hanlon, Sophomore (Arts Administration and Music) Grogan
Faculty Mentor(s): John Sopper (Residential Colleges)

Access to arts education has been proven to benefit children in many ways, in their academics, their behavior, and more. School districts in predominately white areas receive a much larger amount of funding to their arts programs than schools in more diverse districts receive. This causes the schools with a more diverse population to have to choose between what they use that funding for and what they cut. The arts are usually first to go in this process. My research question is “what are the benefits of art programs for children in underfunded schools?” With the help of peer reviewed research and data analysis, as well as reaching out to current teachers and school-workers who have seen themselves the impact of arts education and programming, I investigate the positive effects the arts have on children in school. I expect to find that arts programming has a multitude of positive impacts, like improved problem-solving abilities, improved concentration, improved social skills, and more. All children need access to the arts for their personal development, not just those who are most privileged.

The UNCG Mammal Collection as a conservation genetics resource for the Southern Appalachian ecosystem

Student Author(s): Maleah Harris, Senior (Biology); Amanda Weller, Post-Bac (Environmental Health Services); Hope Agresti, Junior (Biology)
Faculty Mentor(s): Bryan McLean, (Biology)

Biodiversity conservation is dependent on the confidence of verified species occurrences. Unfortunately, for most records of species presence across the world, we don't have clear genetic information confirming the species identification. As we continue to monitor the scope of global changes on biodiversity, including extinction risk, the need for open genetic data and their proper management is more important than ever. The UNCG Biological Diversity Collections are regional repositories for mammals and their associated parasites, focusing in part on providing genetically-based species identifications. We illustrate an example of this workflow here, which includes standard DNA barcoding at the mitochondrial Cytochrome B

(cytb) gene, Sanger sequencing, individual base editing and DNA quality analysis in Geneious software, identification to species using the BLAST search engine, and accessioning to GenBank. These data are open to researchers around the world, and they are linked to records of UNCG specimens themselves in the Artcos database. Our recent work provides barcodes for over 130 small mammal specimens native to the Southern Appalachians ecosystem. These results fill major gaps in genetically-based species records for North Carolina, and reiterate the need for the interoperability of biological databases to aid biodiversity conservation.

The Gender Gallery

Student Author(s): River Hedgepeth, Senior (Theatre)
Faculty Mentor(s): Natalie Sowell (College of Visual and Performing Arts)

The Gender Gallery is an interdisciplinary documentary theatre project that aims to uplift and explore the expansiveness of gender. Through the facilitation of interviews, surveys, creative submissions, a Story Circle Workshop, Gender Embodiment Workshop, and Zine Workshop, an ensemble-based devised performance has emerged. On February 25th, The Gender Gallery presented a night of celebrating the expansiveness of gender through community and creativity at the Greensboro Project Space. This showcase involved two devised performances, interactive living exhibits, and several creative submissions from artists across the country. Throughout the process of The Gender Gallery the project not only pushed the boundaries of gender but also theatre, performance, and the use of space. This project critiques the oversimplification of gender by exploring the ways we express our gender through language and movement as well as uplifting untold narratives around gender-expansive joy, love, expression, community, dreams, and art. The Gender Gallery has surfaced themes of found family, the intersectionality of identity, societal pressures to suppress fluidity, hopes and dreams, expansive language, and euphoria. Through the merging of theatre, art, and community engagement a mosaic of lived experiences surrounding the expansiveness of gender has been crafted through the lens of interdisciplinary documentary theatre.

What is the Distinction Between Discipline and Child Abuse?

Student Author(s): Samantha Hernandez-Pujols, Sophomore (Sociology), Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

A society's future lies within its children. The future generations determine and represent the embodiment of our culture, ideals, norms, and beliefs. They are what will challenge, change, and carry all of these throughout history. So, when it comes to their health, how can we be sure that they are adept and strong when obstacles such as abuse in early childhood development negatively impact these growing minds? It is with this idea in mind that I have decided to research and clarify one of the main issues society needs to address, which is to define the distinction between discipline and abuse when it comes to early childhood development. Through researching the long-term psychological and overall effects of abuse on a child's brain; the cultural/ethnical/racial aspects of White, Black, and Latino/Hispanic family households; and the correlation between socioeconomic contexts and child discipline practices; Relating to child growth and development, I intend to advocate and inform those communities of the long-term damages and trauma associated with unhealthy practices of

child abuse. Advocacy and difficult conversations are crucial ways to protect the children's overall health as well as the health of the society our future generations will shape.

Latino Children's Experience of Gratitude in the United States

Student Author(s): Abigail Herrera-Leal, Sophomore (Human Development and Family Studies), Cecily Horstman, Senior (Human Development and Family Studies)
Faculty Mentor(s): Elisa Avellar Mercon-Vargas (Human Development and Family Studies), Jonathan Tudge (Human Development and Family Studies)

We investigated experiences of gratitude from 23 Brazilian and 8 Hispanic children (aged 7-14) in the United States. After listening to two gratitude vignettes in which a character received help, children were asked to recall whether something similar had happened to them, how they felt about it, whether they did something for the person and if so what, their feelings about the person, and whether their feelings had changed after receiving the benefit/help. The children identified gratitude-related situations in different contexts (e.g., school, home) and indicated positive feelings; friends mostly served as benefactors. Older children took others' perspectives when reciprocating the help/benefit received. Younger children tended to reciprocate by responding in similar ways to benefactors. Children recognized that gratitude responses either strengthened or helped maintain relationships, with the latter more common among Hispanics. By understanding children's gratitude experiences, we can promote ways to develop children's gratitude in culturally sensitive ways.

Disabling Barriers On Screen: The Fight for Disabled Representation and the End of Ableism

Student Author(s): Tiana Howard, Sophomore (Media Studies) Ashby College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Representation matters greatly. When executed genuinely and accurately, people from all walks of life can see themselves positively represented on screen. Film and television are not solely consummatory aspects of society; they are also instrumental tools that can educate and change audiences' perceptions. America and the entertainment industry have a viewable history of discriminating against and excluding marginalized groups. Although progress has been made, representation for disability remains stagnant and chained to outdated stereotypes. The inadequate representation of disabled characters and stories, or the lack thereof throughout film and television history, is not only a direct effect of America's long history of misinformation, exclusion, and ableism but continues to influence societal views and biases against disability. Utilizing sources such as Routledge Companion to Disability and Media, articles from academic journals such as the Journal of Literary & Cultural Disability Studies, data from surveyed audiences, and relevant examples from films and television shows throughout history; this research will analyze and critique the harmful consequences of underrepresentation and discuss its effect on audiences and current disability issues and rights. As a media studies major, aspiring filmmaker, and disabled individual, this research will educate readers and jumpstart a conversation for change.

Dance and Disrespect

Student Author(s): Victoria Howard, Sophomore (Middle Grades Education) Ashby College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Dance remains and continues to greatly be undervalued. The diversification of dance styles in any dancer's repertoire can only make a dancer stronger, both mentally and physically. Exploring other dance styles allows dancers to grow deeper in their understanding and appreciation of the abilities and capabilities of their own bodies and the bodies of others. Some of those in the dance world seem to be closed minded when other dance styles come into play. Ballet gives you the basic arm and leg movements you need and helps you find your center of balance, gain strength and agility and move gracefully but, on the other hand, engaging with other styles of dance can help unlock a new understanding of how your own body moves and translates movement. Other dance styles also engage your muscles in different ways, building a greater physical and mental strength and awareness. Certain dance genres seem to be undervalued due to the fact that there isn't enough color representation, those in the dance world are afraid of change, and ballet seems to be the only dance genre that helps dancers gain the attention they believe they deserve.

Metabolic plasticity in the frog brain involves the emergence of mRNA co-expression across glucose metabolism

Student Author(s): Min Hu, Post-Bac (Chemistry)
Faculty Mentor(s): Joseph Santin (Biology)

Vertebrate brain function is costly and requires aerobic metabolism to fuel circuit activity. We recently identified a brainstem network in American bullfrogs that breaks this rule and improves function from minutes to two hours during ischemia upon emergence from hibernation. Such remarkable ischemia tolerance resulted from a shift to anaerobic glycolysis using brain glycogen breakdown. Thus, we hypothesized that extreme metabolic plasticity in the frog brainstem arises from a transcriptional program for glycogenolysis and glucose metabolism. For this, we measured mRNA copy number of multiple candidate genes along the path from glycogen metabolism to lactate production using real-time quantitative PCR. We found that the abundance of individual genes did not reflect enhanced glucose metabolism. However, the number of co-expressed gene pairs increased early into hibernation, and by the end, most genes involved in glycogen metabolism, glucose transport, and glycolysis exhibited strong linear co-expression. Genes for each of these processes also became correlated with regulators of metabolic homeostasis, AMP-activated protein kinase (AMPK) and hypoxia inducible factor 1α (HIF-1 α) early into hibernation, while HIF-1 α lost all co-expression by the end. These results point to the reorganization of the metabolic network to promote brain glycogen metabolism in the ischemia-tolerant brain. Our results suggest that the induction of a transcriptional co-expression program may be a critical step in synchronizing storage, production, and use of brain glucose to achieve hypoxia and ischemia tolerance in neural circuits.

Finite Element Method

Student Author(s): Le Hugh, Senior (Mathematics & Statistics), Nathan Tolodziecki, Senior (Mathematics and Statistics)
Faculty Mentor(s): Yi Zhang (Mathematics and Statistics)

Finite element method is a popular numerical method that applies mathematical procedures in many practical engineering problems. It helps to approximate numerical solutions through the use of differential equations over certain regions of boundary. Instead of solving the problems analytically, the finite element method implements ordinary and partial differential equations to numerically approximate the solutions where the exact answers could not be found. Then, the computation is transformed into a system of linear equations to solve for particular values of the dedicated finite element method problem. In this research, we will analyze the role of finite element method as an essential tool for the approximation of numerical solution of two-point boundary value problems (BVPs). Specifically, we will focus on researching the concept of finite element method in the one-dimension linear equation problems. The presentation structures cover the definition of finite element method, the history of its establishment, and its examples. At the end, the presentation will summarize the general concept of finite element method and reinforce its importance in the mathematical field.

The effects of newly constructed wetlands on mosquito abundance and species composition over a period of time

Student Author(s): Mason Ibrahim, Senior (Biology)
Faculty Mentor(s): Malcolm Schug, Rada Petric, & Gideon Wasserberg (Biology)

In North Carolina, development has led to the drainage of wetlands. Wetlands provide a myriad of ecosystem services; thus, restoration of wetlands is a significant concern. Yet, there is reluctance to build wetlands because of potential negative effects, such as increases in mosquito populations. Mosquitoes cause nuisances and may be vectors of pathogens. Shallow waters of wetlands provide a suitable habitat for mosquito larvae and their predators, which help control their populations. The objective of the study is to evaluate the effect of two constructed wetlands on UNCG's campus on mosquito abundance and species composition. Using standard methods for sampling mosquitoes, I collected adult mosquitoes at wetland sites and corresponding control sites. I found no significant difference amid the mosquito counts between the wetlands and the control sites, suggesting that wetlands do not increase mosquito abundance. Considering the composition of the genus of mosquitoes, the open control site had twice the amount of Coquillettidia than the experimental wetland site, while the wetland site had twice as many Anopheles. There was no significant difference found between sites in Aedes, Psorophora, or Culex. Recognizing effects that man-made wetlands have on genus composition allow us to assess associated risks of pathogen transmittance. Increases in Coquillettidia may be a risk in wetlands because they transmit West Nile virus and eastern equine virus.

Artifact Authenticity: Investigating the Role of Creators' Social-Cultural Identity

Student Author(s): Adanna Iloabachie, Senior (Psychology)
Faculty Mentor(s): Shaylene Nancekivell (Psychology)

We conducted one study (N=183) which investigated adults' beliefs about the authenticity of artifacts. We found that the social-cultural identity of creators influenced the degree to which people believed that artifacts were authentic and therefore belonged in museums. For example, people judged that Zarian-stylebaskets were more authentic when they were created by an artist with a Zarian identity. However, this same social-cultural identity information did not influence their judgments of aesthetic value or monetary judgments. We also found individual differences among judgments; namely, those that referenced visual information in their justifications were also less sensitive to our social-cultural identity manipulation. This suggests that not everyone places equal value on creators' social identity when reasoning about authenticity. Overall, these findings demonstrate new under-explored ways artifacts gain authentic statuses and contribute to our understanding of individual differences therein.

Influence of Urbanization and Water Quality on Appalachian Insectivorous Bat and Arthropod Populations

Student Author(s): Leo Ivey, Senior (Biology)
Faculty Mentor(s): Radmila Petric (Biology)

Sources of freshwater are essential for maintaining healthy arthropod populations, which comprise the diet of many insectivorous bat populations in the Southern Appalachians. Increases in urbanization and human development around these water sources introduce chemical contaminants and degrade water quality to such an extent that the diversity and abundance of insect populations are reshaped, which strongly influences the composition of bat communities around the water source. From June to September 2021, data on acoustic activity of bats, arthropod identities and biomass, and water quality were collected across 32 freshwater sites across a gradient of urbanization. At each site, bat activity was monitored using an ultrasonic recorder continuously for four hours after sunset. Insects were collected at intervals of 30 minutes during this time, resulting in eight timepoints at each site. Correlations between disturbance levels, bat activity, and insect biomass were analyzed and revealed significantly more bat activity at medium disturbance sites than high or low disturbance sites, and higher insect biomass at areas of low disturbance. These correlations were even more strongly pronounced in the 13 individual bat species observed throughout the duration of the project.

Testing Dehnel's Phenomenon in Mammals of the Eastern United States

Student Author(s): Leo Ivey, Senior (Biology)
Faculty Mentor(s): Bryan McLean (Biology)

Energetic adaptations in mammals present in a wide variety of forms, and function in many different ways to achieve one ultimate goal: keeping organisms alive in periods of extreme stress. This is particularly pertinent to small mammals facing the ravages of winter, and Dehnel's phenomenon is a prime example of such adaptation. This phenomenon describes

significant reductions in brain mass, bone density and total weight and has been documented in a handful of small mammals - shrews, stoats and weasels - as these mammals endure the harsh winter months, and it has been shown that these species are capable of reversing many of these extreme bodily changes with the arrival of warmer months. However, this phenomenon has not been widely examined since its first observation in 1949, especially outside of Eurasia. This project aims to fill the gaps in Dehnel's documentation in Appalachian small mammals, with a focus on Deer Mice (*P. maniculatus*) and Masked Shrews (Sorex cinereus), by using high resolution CT scans of specimens collected from each season of 2021, and 2022. This work will provide tests of the existence of Dehnel's phenomenon in new species and regions of the world, improving our understanding of energetics of wild mammals.

Diversity and Equity in the Audition Room: Is there room for new life in degree-granting colleges and universities?

Student Author(s): Asa Jackson, Sophomore (Music), Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges); Gavin Douglas (Ethnomusicology); David Aarons (Ethnomusicology)

Society as we know it is ever-changing. It is extremely rare that our senses are engaged with exactly the same every time we use them. As such, the elements that surround the way in which we engage our senses is too, ever-changing. In the last few decades, the degree-granting music university has been riddled with stigma. It is safe to say that collectively, a music school has been seen as a surrogate home to the godfathers of music, who even in death, thrive in their great reverence. For those who have found a way to excel in their respective instruments, these universities are something of a rite of passage, to hone and refine one's skills for their up-and-coming careers. However, audition requirements are often limiting, restricting prospective students to a repertoire of specific genres, composers, and eras among other factors. For my residential college research capstone project, I investigated the potential introduction of other genres of music to auditions for degree-granting music colleges and universities. Among such investigations lies the advocation for, limitations against, and potential solutions to the underlying stigma against education in a non-traditional/non-classical sense.

Funding for AI Safety Research: An Analysis of Attitudes and Investments

Student Author(s): Fox Johnjulio, Junior (Computer Science) Strong College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

When viewing the growing field of AI, one would be surprised to hear how little money is put into research devoted to fundamental safety concerns inherent in intelligent systems. The attitude towards funding it appears ambivalent at best, and negligent at worst. In this paper, I will explore attitudes towards AI safety by discussing the results of several of my interviews with AI researchers. I will be looking at different AI developments, ranging from nascent startups to cutting-edge research institutions, to get a thorough view of the kinds of investments in these companies and the research being done. Using sources such as "Concrete Problems in AI Safety" and others like "AI Safety Needs Social Scientists", I will show that people in the AI community recognize the importance of safety, but that research is often underfunded compared to AI startups as detailed in "This is Just a Prototype..." and the 2021

AI Index Report. AI will have a profound impact on the world, and it's important that the safety research conducted is funded adequately. If not, the consequences will be terrible.

Impacts of inoculation methods on above and below-ground biomass in Chamaecrista nictitans

Student Author(s): Ashley Jolin, Senior (Biology)
Faculty Mentor(s): Sally Koerner (Biology)

The longleaf pine savanna is found all throughout the Southeastern United States including North Carolina, South Carolina, Texas, Florida, and Georgia. Legumes are a common occurrence in the North Carolina longleaf pine ecosystem however there is not much research looking at how inoculation can impact the rates of above and below-ground biomass. Legumes contain nodules which house rhizobia, a symbiotic bacterium, that are able to take the nitrogen from the air and convert it into nitrogen compounds usable in the plant, thus increasing its competition with other plants. In order to begin observing how legumes react to excess inoculation, a prior experiment was conducted to find the best germination method for two legume species, *Chamaecrista nictitans and Lespedeza hirta*. My results show that C. nictitanshad the highest germination and survival rate, 32.5%, when planted straight into the sand/soil mixture and L. hirtahad the highest germination and survival rate, 7%, when germinated on filter paper and stored in the growth chamber with regular light and planted into a sand/soil mixture. The next step for this project is a greenhouse experiment, where I am researching how inoculation methods affect both above-ground and below-ground biomass.

Dinner Party

Student Author(s): Jasmine Joyner, Senior (Art)
Faculty Mentor(s): Lee Walton (Art)

Throughout my time of image making, my focus has been to make sure that my family, friends, and I realize that our lives are worth documenting. The photos in this series are about the relationship between food and identity. At all of my family functions and gatherings there is a full spread. Food is what often brings us together. The memories built up in my head of a small kitchen and a table that's way too big for the space covered with desserts brings me joy, even as I write this. The food of my culture has a deep history but that is not what this project examines, instead personal characteristics and experiences shape the food we find solace in. I ask each subject what food brings them comfort? Then my partner and I will prepare the dishes of each individual and invite them over for a dinner party. The whole process will be documented, and audio will be recorded. This work is a visual representation of fellowship and community in a time where grief and indefinite worry are all around us.

Calcium Requirements of Photosystem II for the Production of Oxygen During Photosynthesis

Student Author(s): Hannah Kern, Senior (Chemistry), Monica McDaniel, Senior (Chemistry & Biochemistry)
Faculty Mentor(s): Alice Haddy (Chemistry)

Photosystem II (PSII) is a light-absorbing protein complex found in plants and cyanobacteria that produces almost all of the oxygen in the atmosphere. In this study, calcium (Ca2+), chloride (Cl-), and pH requirements of PSII were studied through measurements of oxygen evolution activity and the Tyrosine Z radical, which participates in electron transfer. Through these experiments it was found that oxygen evolution levels were increased with the addition of both Ca2+and Cl-. Using electron paramagnetic resonance spectroscopy, an increase in the Tyrosine Z radical was observed when the Ca2+was absent with the highest signal signifying the greatest amount of calcium depletion. Overall, this then indicates inhibition in the sample. Similarly, the addition of high NaCl at a low pH (5.5) was found to displace calcium but did not permanently remove it as seen by recovery of oxygen evolution activity. In conclusion, the presence of calcium is needed in order to promote oxygen evolution activity as well as for electron transfer to Tyrosine Z in the photosystem II process.

The role of Nrf2 in lipopolysaccharide-induced inflammatory injury in mouse hearts

Student Author(s): Katie Khang, Senior (Biology)
Faculty Mentor(s): Jia Zhenquan (Biology)

Sepsis is an immune response to infection or injury of the body. Sepsis is a severe condition characterized by the dysregulation on inflammation. It is the leading causes of death in intensive care units, with no current cure. Previous studies have shown that the expression of pro-inflammatory genes, including TNF-α, MCP-1, IL1beta, IL-6, plays a vital role in the development and progression of sepsis, ultimately leading to multiple organ failure and death. The heart proves to be a crucial organ to major bodily functions and is often most severely affected in sepsis. Nrf2 is a transcription factor that regulates downstream antioxidative stress genes, which play an important role in regulating inflammation. Lipopolysaccharide (LPS) is an endotoxin that is essential for triggering septic shock. However, there is a gap in understanding the role of Nrf2 in LPS-induced inflammatory injury in heart tissues. In this study, I used the heart tissues from the C57BL/6 mice to study LPS-induced inflammation and examine the effect of Nrf2. C57BL/6 wild-type mice and Nrf2 knockout mice have been treated with either LPS (7.5 mg/kg bw) or neither (control) to serve as control. My data suggested that LPS can increase in expression of MCP-1 IL1beta in heart tissues. Other results are still in progress. My study would increase the understanding of the role of Nrf2 in regulating LPS-induced inflammatory injury.

North Carolinas Meal Draught: Exploring options to cure food insecurity in North Carolinas Triad Region

Student Author(s): Elijah King, Sophomore (Political Science) Strong College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

This analysis investigates how North Carolinas Triad region, consisting of High Point, Greensboro, and Winston-Salem can best approach the problem of food insecurity. As one of the Triad regions leading health and nutrition issues among children, non-senior adults, and seniors, many solutions have been proposed to reduce food insecurity in the region, but not cure. For context, this analysis will first establish the meaning of food insecurity that will be used as well as provide an overview of how food insecurity is measured, followed by a presentation of latest trends in the prevalence of food insecurity in the Triad region. By using online sources such as Feeding America's Map the Meal Gap statistics, as well as research articles such as *Everybody Eats: Communication and the Paths to Food Justice* I will conclude that the best way to solve food insecurity is through community enterprise approach, instead of the three-pronged approach consisting of the government, business, and community. This research will discuss all three, their impacts, and will reveal the community aid is the best solution to food insecurity.

A Reach Past the Barrier, A Pull towards Vulnerability.

Student Author(s): Annabelle Kizer, Sophomore (Art)
Faculty Mentor(s): Dane Winkler (Art)

Art is a fascinating form of communication that allows one to explore unknown places and knowledge. It is a universal language that spans across the barriers of space, vocabulary, and culture to create a mutual understanding or experience.
I create sculptures that convey abstract emotion. I use plywood, screws, glue, and paint to symbolize "a growing understanding" of the emotions that people feel throughout their life. The piece portrays the desire to open up and be emotionally vulnerable with someone, but not being able to because of external barriers. Covid-19 has greatly affected how we approach new relationships. With its contrast of curves and sharp angles, splash of color, and conveyed movement, this piece reflects that struggle.

Diversifying the Classical Music Canon

Student Author(s): Allyson Kreider, Senior (Music)
Faculty Mentor(s): Tim Hagen (Music), Erika Boysen (Music)

As a musician, it is important to encourage the study and performance of new works by composers of color and female composers. The classical music canon consists of foundational works worthy of being studied and learned, the majority of which were composed by white, Western European men. The compositions of that era and demographic are widely admired and celebrated, but it is essential to promote diversity and inclusivity by selecting diverse composers for recitals and concerts. It is my initiative to perform works by underrepresented composers, as a means for the widespread recognition of the brilliant and gifted composers whose voices have been left out of the classical music canon for centuries.

I will program, perform, and professionally record a recital fully dedicated to amplifying the voices of female and BIPOC composers by sharing the product to several social media platforms. It is common for a young student to program music in their recital because it is considered "standard." However, works by living female composers and BIPOC composers have not received the same opportunities and recognition to enter the canon, not because of merit, but because they have been unfairly disregarded in the eyes of our society.

From Boomers to Gen Z; how are previous generations' lifestyles affecting you?

Student Author(s): Karabuning Kupradit, Freshman (Biology), Seraiah Coe, Post-Bacc (Biology)
Faculty Mentor(s): Ramji Bhandari (Biology)

For decades, people have come into contact with thousands of manufactured items that contain the plastic and plasticizer chemical, bisphenol A (BPA). This constant interaction led to BPA induced modifications on the germline epigenome (i.e. epimutations) beginning three generations ago; research suggests that these epimutations have been passed down to subsequent generations. The current generation is believed to harbor these epimutations while being exposed to novel and emerging environmental contaminants, such as perfluoro octane sulfonic acid (PFOS). PFOS can be found in a multitude of manufactured products including non-stick cookware and fast-food packaging. This extensive exposure is concerning as PFOS has been linked to numerous negative health effects. However, if the history of ancestral BPA exposure will alter the survival of embryos during embryonic and neonatal development when exposed to PFOS is currently unknown. To answer this question, we exposed the medaka fish (*Orizias latipes*) both with and without ancestral BPA exposure to five unique concentrations of PFOS beginning in embryonic development. The concentrations range from below environmental relevance to above sublethal levels. We demonstrate that almost all concentrations of PFOS can induce significant mortality in fish that have a history of ancestral BPA exposure. These results warrant further investigation into the population and ecosystem level health risks of organisms living in previously contaminated sites.

Early Scientists: Breaking Language Barriers through University-Community Partnership

Student Author(s): Chandni Lal, Senior (Psychology); Grettel Arias-Orozco, Senior (Psychology); Xinru Yan, Senior (Education); Charity Odetola
Faculty Mentor(s): Aileen Reid (Educational Research Methodology)

Dual-language schools produce barriers among youth namely communication, stigma, discrimination, and diminished quality in education. These restrictive barriers have not been addressed or acted upon. Cena Y Ciencias (C&C) is a university scientific outreach program collaborating with the Urbana Public School District that conducts interactive small groups for bilingual families providing high-quality and unique lessons with the purpose of integration and equality. This study evaluated the impact and challenges of this university-community partnership. Using qualitative data collection, we tracked the effectiveness and outcomes of the program. We found this collaboration created a space for a diverse and optimistic community, an excellent learning environment, and the development of a growth mindset among youth

and scientific leadership among historically underrepresented minorities. Action toward marginalization, with programs like C&C need to be integrated within schools to address disparities in dual language program sand advancement among youth.

Impact of COVID 19: Typical Drinking Norms & Loneliness Among College Students

Student Author(s): Chandni Lal, Senior (Psychology); Evan Fontaine, Senior (Psychology); Ashley Rendon, Senior (Psychology); Antasia Stanback, Senior (Psychology); Gregory E. Chase, Senior (Psychology)
Faculty Mentor(s): Michaeline Jensen (Psychology)

A potent predictor of alcohol use in college students is their risky social involvement (Lorant, 2013). However, the COVID-19 pandemic has disrupted traditional drinking behaviors and socialization with peers. This study explores drinking norms and how pandemic related loneliness associates with alcohol use. We hypothesize the pandemic has heightened loneliness, associating with increased alcohol use. Participants were recruited via SONA in the Fall of 2020 and were surveyed on the frequency of daily alcohol use, living situation, and feelings of past-month loneliness (UCLA Loneliness V3, Russell, 1996). After identifying typical drinking days of participants, we will then regress feelings of loneliness and living situation on alcohol use to examine the association. Results may inform our understanding of pandemic related loneliness and associations with college student drinking norms. Potential new norms of drinking may inform potential prevention strategies that can be implemented at the college level to reduce risk of alcohol abuse

Intra

Student Author(s): Gadisse Lee, Senior (Art)
Faculty Mentor(s): Walton Lee & Leah Sobsey (Art)

I am very passionate about visual self-expression, especially in moments of darkness. I often find myself not able to communicate my feelings. I explore visual self-expression using photography. I have found this process helps me understand myself. The materials I use in my photography practice are limitless and depend on the concept of each project. Currently, I work with fabric and light. I am finding a beautiful connection between the two. Within my practice I want to show where I was in moments of vulnerability. I want others to acknowledge there are moments of vulnerability. I think we live in a culture where we are afraid to show ourselves when we are not okay. My practice and work matter because there is value in sharing, it can connect us to each other. In my work I tend to do a lot of self-portraiture and most of the time is a reflection of how I felt in a past moment. A lot of it has to do with trust in myself and in people. For me to trust and be vulnerable with people was shattered from a very young age, so growing up I was struggling to find those moments in people or even within myself. When I was 7 years old my birth parents passed away, my relatives chose to put me up for adoption. I wasn't aware that my relatives are putting me up for adoption until I woke up in an orphanage. Ever since then I always felt like people are hiding truths from me. In my self-portraits there's an element of loneliness and emptiness in the background, I've come to realize that it is a "reflection" of my environment. I am the product of what's around me, so what I try

to communicate, look at me and see what you can gather from the environment I lived in.

Oviposition Site Repellents and Deterrents: Are Gravid Sand Flies Afraid of Predatory Mites?
Student Author(s): Tricia Levi, Senior (Biology)
Faculty Mentor(s): Gideon Wasserberg (Biology)

The vector-borne disease leishmaniasis, which is transmitted via phlebotomine sand flies, affects millions of people worldwide. The most common sand fly control methods involve chemical insecticides that are harmful to the environment, so biological methods of control are preferred. The Wasserberg lab is currently focusing on a "push-pull" method by deterring or repelling flies away from breeding sites and luring them to lethal traps with attractant compounds. I have begun the process of identifying effective deterrents and repellents based on natural enemies of the sandflies. In this study, I tested the hypothesis that gravid sand flies will be repelled or deterred from laying eggs in the presence of predatory mites identified as Stratiolaelaps scimitus womersley. To test the deterrence hypothesis, I evaluated the oviposition activity of gravid female sand flies via separate oviposition bioassays using live and crushed mites. The number of eggs laid by the flies was counted for each replicate. To test the repellence hypothesis, I conducted attraction bioassays with live and crushed mites using free flight cages and sticky traps. The number of flies that landed on the traps was counted for each replicate. The results of the deterrence experiment showed no effect of mite presence on oviposition response. Repellence experiments are on-going and will be presented during the expo.

A Chromogenic ABTS Redox Indicator for Applications in Organic Media
Student Author(s): Runzi Li, Senior (Chemistry)
Faculty Mentor(s): Shabnam Hematian (Chemistry)

ABTS, or 2,2′-azinobis(3-ethylbenzothiazoline-6-sulfonate, is a popular chromogenic redox indicator. The commercial ammonium salt of ABTS is soluble in water as well as a limited range of organic solvents, producing a colorless solution in its neutral, unoxidized form (ABTS), or a blue-green solution in its one-electron oxidized radical cation form ($ABTS^{\bullet+}$). Due to its ability to change color in solution upon reacting with oxidants such as free radicals, ABTS is commonly used in a variety of contexts: to detect molecule binding using the enzyme-linked immunosorbent assay (ELISA) in biochemical research; to measure antioxidant activities in the food and agricultural industries; and, in biomedical applications, to detect reactive oxygen species (ROS) in tissues experiencing oxidative stress. Despite its widespread use, little is known in literature regarding the effects of varying solvent environments on ABTS redox behavior. In this study, we investigated the varying redox behavior of ABTS in water as well as a selection of organic solvents using electrochemical techniques. An ABTS analog that is soluble in a wider range of solvents, (n-$Bu_4N)_2ABTS$, was prepared, and its ABTS/$ABTS^{\bullet+}$ redox performance was investigated in various solvents such as acetonitrile, dimethylformamide, and dichloromethane. Additionally, the much less explored second redox couple (i.e., $ABTS^{\bullet+}/ABTS^{2+}$) and its comproportionation reaction were investigated in various solvents. The findings of our electrochemical studies will be discussed.

What are the Therapeutic Uses of Animation?

Student Author(s): Joselyn Lopez, Sophomore (Speech Pathology) Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

My objective with this project is to determine the therapeutic uses of animation. Throughout the pandemic, many people's mental health has plummeted. Many people
would try to find an escape; animations such as cartoons, Japanese style animation, or CGI have been many people's escapes from the pandemic. I noticed how plenty of my peers have found comfort in animation and it helped them improve their well-being. My research question is "What are the therapeutic uses of animation?" Through my research, I want to see if animation as a whole can improve people's mental health. Answering this would possibly provide a new healthy coping mechanism for others as well as help connect others. The research methods are an interview from a professional in the psychology field, a review from scholarly articles, and surveys from my peers. What I expect to find is the benefits of watching animation such as influencing creativity, improving cognitive function, and reducing stress.

Saturated fat increases immune cell activation in the mouse brain

Student Author(s): Madison Loudermilt, Senior (Nutrition); Brenna Nishan Senior (Nutrition)
Faculty Mentor(s): Steve Fordahl (Nutrition)

Diets high in saturated fat (HFD) promote obesity and dampen dopamine neurotransmission in the nucleus accumbens (NAc), a brain region that integrates food reward and helps communicate satiety to the hypothalamus. Inflammation caused by a HFD is hypothesized to dampen dopamine neuron function. Our study aimed to determine whether a high-fat diet activated microglia, the brain cells that release pro-inflammatory cytokines, near dopamine terminals in the NAc. Six-week-old male and female mice were given diets containing either 60%, 30%, or 10% of kcals from saturated fat for six weeks. We then used immunohistochemistry to visualize and measure the effect of saturated fat on microglial activation around dopamine terminals. Preliminary findings indicate a consistent population of total microglia across all groups, measured by the microglial protein CD11b fluorescence. However, the protein specific to microglial activation, Iba1, increased as the saturated fat percentage increased. This indicates a greater immune response in the brain with the consumption of a HFD and suggests enhanced capacity for cytokine release in close proximity to dopamine terminals in the NAc. Overall, our preliminary data show that increasing the saturated fat content in the diet triggered an immunological response by increasing microglial activity.

Application of Hannah Arendt's On the Origins of Totalitarianism to Suzanne Collins' The Hunger Games Series for understanding overextension of state control

Student Author(s): Rebecca Lustig, Junior (Political Science), Ashby College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Twentieth-century political theorist and philosopher Hannah Arendt's 1951 work On the Origins of Totalitarianism traces the development and quintessential characteristics of totalitarian regimes. Developing her theory from the rise of Nazism in Germany and the Bolshevization of Eastern Europe, Arendt compares totalitarian regimes to non-tyrannical and tyrannical regimes, specifically focusing on terror as "the essence of totalitarian domination." I will apply Arendt's theory as dictated by On the Origins of Totalitarianism to The Hunger Games series by Suzanne Collins for clearer understanding of how Arendt's theory applies in a different situational context. Additionally, using modern frameworks such as Johannes Gerschewski and Seraphine F. Maerz's spherical models of authoritarian regimes and Freedom House's measurement of global freedom status, I will distill how Arendt's theory on how governments use terror applies today. This research will illustrate the continued relevance of Hannah Arendt's writing through her recognition of specific aspects by which oppressive governments operate.

Bee and Plant Interactions in Urban Areas

Student Author(s): Kathy Ly, Senior (Biology)
Faculty Mentor(s): Kasie Raymann (Biology), Sally Koerner (Biology)

Urban communities typically have less green space, and more stressors present for bees than rural areas.1Although there is less forage available in urban environments, there is also far less pesticide use than in rural agricultural areas. Pollinators are key for the pollination of both native and agricultural plants and require pollen and nectar in order to survive. Since the importance of pollinators has become more apparent and community and personal gardens have become popular in urban areas, the need and desire to attract pollinators has increased. Bee balm and lavender are both popular garden/landscaping plants that are marketed as great for pollinators. These plants are perianal and can be grown in the limited spaces available in urban areas to provide continuous support for pollinators. Although honeybees are crucial for agricultural pollination, other pollinators also contribute to pollination services and are environmentally very important. In fact, honeybees are not native to North America and serve as competitors to native species2, making it imperative to find ways to maintain native pollinator diversity even in the presence of honeybees. Over the years, native pollinator populations have been reduced greatly and some have been listed on the endangered species list.3Implementing bee balm and lavender in urban areas could reduce the decline of native species and promote pollinator diversity. By investigating which of these two plants native species prefer, we will be able to determine which should be used in urban gardens to promote native pollinators.

Overexpression of thermostable superoxide dismutase enzyme in tobacco for enhanced heat stress tolerance

Student Author(s): Jade Lyons, Senior (Biology)
Faculty Mentor(s): Ayalew Osena (Biology)

Heat stress is a major environmental stressor that inhibits proper crop growth and development. Exposure of plants to high temperatures causes them to produce reactive oxygen species (ROS) which cause damage to many cellular components. Superoxide dismutase (SOD) plays an important role in protecting plants against oxidative damage by breaking down harmful oxygen molecules. In this study, we are proposing to improve the heat stress tolerance of tobacco through the overexpression of SODs derived from the thermophilic red algae *Galdieria sulphuraria* (GsSOD). Genetic constructs containing the expression cassette of GsSOD were introduced into tobacco via *Agrobacterium*-mediated transformation. Seeds of the transgenic and wildtype tobacco plants were germinated in the presence of the kanamycin antibiotic. Kanamycin-resistant lines will be transferred to soil and grown in the greenhouse. The transgenic and wildtype lines will be exposed to heat treatment to study whether the GsSOD enzyme confers heat resilience in plants. The transgenic lines will be characterized using molecular and biochemical techniques. We expect that the overexpression of GsSOD in transgenic tobacco will lead to enhanced heat stress tolerance. This study may provide valuable insight into the potential of thermophilic antioxidant enzymes in improving heat stress tolerance in crops.

Microhabitat selection in Sand Fly Larvae; Preference to Different Types of Rearing Material

Student Author(s): Nadia Maji, Junior (Biology)
Faculty Mentor(s): Gideon Wasserberg (Biology)

Leishmaniasis is a parasitic disease transmitted by sandflies that kills between 20,000 and 30,000 people yearly. In the absence of parental care, oviposition (egg laying) site selection by female sand flies is the most important fitness enhancing decision a sand fly mother can make. It was shown that females are attracted to sites containing appropriate larval rearing conditions. However, it is not known if larvae have the capability of adjusting their location within the oviposition sites to do the same. In a previous study it was shown that adult females preferred laying eggs in rearing medium containing 2nd/3rd instar, followed by "expired medium" (rearing medium from which all larvae have matured), and "fresh larval food", respectively. In my study, I hypothesized that the larvae would show similar preferences to these rearing medium types. Ten 1st instar larvae were placed in the center of small Nalgene jars, with a plaster-of-Parris base, with 2 pieces of small filter paper discs, one dipped in an aqueous solution of one medium type and the other in water as the control. The larvae were left for 24 hours in an environmental chamber (26C, RH = 80%) and the results were recorded. They appeared to prefer the rearing media over the water control. However, the 2nd/3rd and fresh media appeared be the most attractive. We are currently evaluating the microhabitat selection of 2nd/3rd and 4th instar larvae. My current results (based on 1st instar larvae) suggest that larvae can adjust the location of their rearing sites by dispersing into sites containing their required nutrients.

An Evaluation of an NSF INCLUDES Alliance's Efforts to Promote DEI in STEM Fields

Student Author(s): Caraline Malloy, Senior (Psychology); Briana Hooks-Singletary, Post-Bac (Educational Research Methodology); Charity Odetola, Post-Bac (ERM)
Faculty Mentor(s): Aileen Reid (Educational Research Methodology) & Ayesha Boyce (Division of Educational Leadership and Innovation, Arizona State University)

The lack of racial and ethnic diversity in STEM fields in higher education is well documented. Racial and environmental disparities among Black and Brown students (e.g., less access to test prep resources) result in poorer performance on standardized tests than Whites. This filters them out of the admission process as standardized tests are prioritized in undergraduate admissions. Pre-college STEM programs (PCSP) have been proposed by the STEM PUSH Network to increase the number of underrepresented students in STEM by providing a more accessible, success-predictive metric. PCSPs provide students with hands-on experiences in STEM fields and success in higher education.
Using qualitative data collection, we tracked the STEM PUSH Network's efforts to form an alliance to address inequities in college admissions for Black and Brown students. These efforts include the recruitment of PCSPs that focus on equity and inclusion. Suggestively, the project should fine-tune their PCSP selection criteria and consider ways in which they can best learn from other PCSPs and Black and Brown students.

Group Membership Effects on the Positive Relationship Between Facial Trustworthiness and Likability

Student Author(s): Caraline Malloy, Senior (Psychology)
Faculty Mentor(s): Brittany Cassidy (Psychology)

Facial trustworthiness positively relates to evaluated likability, but how external group membership cues affect that relationship is understudied. Using political ideology to denote group membership, we found that ingroup and outgroup membership strengthened and weakened, respectively, this relationship. Group membership and facial trustworthiness cues may be additive in relating to likability.

By Considering Students w/ Learning Disabilities, Educators Can Create a Welcoming and Supportive Environment

Student Author(s): Grace Marder, Sophomore (Secondary Education) Ashby College
Faculty Mentor(s): Sara Littlejohn (Residential College)

In the United States, there is an increasing gap between students with learning disabilities and their peers without learning disabilities in terms of academic success and graduation rates. Learning-disabled students have been integrated into public education in large numbers following the Rehabilitation Act of 1973. Many approaches have been tried to ensure that learning-disabled students succeed in their education but by ignoring students with learning disabilities in the classroom, student success is not guaranteed. Inclusion in the classroom only works when educators collaborate, get the support they need and believe in the value of all students. Learning and attention issues hinder students' opportunities and lead to poor

outcomes, as they are often misunderstood as not being capable or not trying hard enough. Nevertheless, students with learning and attention issues can be very successful with the proper amount of support. By using sources such as resources by the National Center on Accessible Educational Materials, Adolescents with Learning Disabilities: Unique Challenges and Reasons for Hope by Donald Dreschler, and my own experiences as a student with a learning disability in the school system I hope to convey the importance of creating an inclusive learning environment where all students, regardless of their abilities, can succeed.

The effects of a single bout of moderate intensity exercise on cognition in mostly racial and ethnic minority college students

Student Author(s): Ashley Mark, Senior (Kinesiology); Sarah Musselwhite, Senior (Kinesiology); Megan C. Johnson, Post-Bac (Kinesiology)
Faculty Mentor(s): Eric S. Drollette (Kinesiology)

Physical inactivity is greater among racial and ethnic minorities in the United States. Research suggests that exercise, even a single bout, improves cognition. However, few investigations have sought to replicate these findings in a sample of mostly racial and ethnic minority college students. **Purpose:** This study aims to determine if acute exercise is beneficial to cognition in mostly racial and ethnic minority college students. It was hypothesized that exercise will improve cognition. **Methods:** Thirty students (14 Black or African American, 9 Caucasian, 3 Asian, 3 mixed or other, 1 not reported) between the ages of 18-30 (22 females) completed the cognitive tasks before and after engaging in 30-minutes of aerobic exercise or 30-minutes of seated rest on separate days. **Results:** The data revealed no changes in cognition regardless of the condition (rest, exercise) or time (before, after). **Conclusion:** These findings are contrary to the existing literature demonstrating that an acute bout of exercise at a prescribed moderate intensity does not improve cognition in mostly racial and ethnic minority college students. These data emphasize the need to replicate prior research findings in diverse populations that experience barriers to active opportunities.

Does RNA modifications play a role in the cellular survival under extreme temperature?

Student Author(s): Elizabeth Martin, Senior (Chemistry)
Faculty Mentor(s): Norman H. L. Chiu (Chemistry)

Thermus Thermophilus is an extremophilic bacteria that was originally isolated from a Japanese hot spring, which can be cultivated at temperature as high as 70 degrees Celsius. Despite of the high temperature, the bacterial transcriptome ought to be available for supporting the biosynthesis of protein molecules. In this study, *Thermus Thermophilus* has been selected as our model. The goal is to determine whether RNA modifications play a role in maintaining the integrity of RNA molecules at high temperature. Initially, a stock culture of *Thermus Thermophilus* was prepared. By monitoring the absorption at 600nm, the bacterial growth curve was established under 70 and 37 degrees Celsius. The latter case was set up as a control. When comparing the two cultures under the microscope, the cell morphology and the extent of cell clustering were different. Prior to the analysis of RNA modifications, the total RNA was extracted; and their purity were determined by the absorbance ratio of 260 to

280nm. By using an established mass spectrometric method in our laboratory, the RNA modifications in each sample will be analyzed.

Rescuing Environmental Children's Literature Created by Writers of Color and Child Authors in Nineteenth-Century America

Student Author(s): Rene Marzuk, Senior (English)
Faculty Mentor(s): Karen Kilcup (English)

The Envious Lobster is a searchable, annotated, and open-access anthology that collects forgotten nineteenth- and early twentieth-century American children's writing about nature and the environment. As an undergraduate contributor, I have worked closely with my mentor, Dr. Karen Kilcup, Elizabeth Rosenthal Excellence Professor and founder of this project, to expand the number of texts from writers of color and child authors in the anthology. My involvement has included researching, reading, and discussing a wide range of primary texts produced between 1824-1925, as well as contributing to the significant interpretive apparatus that accompanies each anthology entry and illuminates its contexts. Writing for children is writing for the future, and in nineteenth-century America, a period of significant social, cultural, scientific, and economic changes, most writers who wrote for adults also wrote for children. In many cases, cross-written pieces addressed both audiences simultaneously. Unfortunately, there is currently no print or online resource that gathers and interprets these historically, culturally, and aesthetically important materials. Besides addressing this omission, locating, and supplementing texts for *The Envious Lobster* also functions as case study in culling the public domain archives, a valuable resource we should approach methodically, while at the same time allowing space for serendipity.

What is the Historical, Cultural, and Social Significance of Quilting in the United States?

Student Author(s): Mary McCaskill, Sophomore (Teacher Education and Higher Education) Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

Quilts are the most underrated yet powerful symbols of American heritage that have ever existed. This is not because they are exquisitely handcrafted blankets composed of different colors, patterns, shapes, and sizes but rather because of their hidden historical meaning that is often masked by their beauty. Quilts are iconic American symbols that deserve their own slice of recognition because they quite literally embody the "American Story". Throughout our nation's history, quilts have acted as mirrors reflecting American historical events, social movements, and cultural ideals of the time period they were crafted in. Whether it be from the Revolutionary War, the Underground Railroad, the Great Depression, the Civil Rights Movement, or any other significant area of American history, quilts have successfully captured the most meaningful periods of our nation's history through their patterns, designs, and the people who craft them. Anyone can benefit from learning about this national symbol because it connects with our collective historical heritage, cultural roots, and social standings. Quilts are such iconic American symbols because they have always been and will always be a part of our history. Within every block, every stitch, every pattern, they tell a story…*our* story.

How has the demonization of magic affected modern Christianity, and where are these effects being felt today?

Student Author(s): McKinley McDonald, Sophomore (History) Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

Christianity has been unkind to many things and people, including magic and non-Christian ways. My research question is "How has the demonization of magic affected modern Christianity, and where are these effects being felt today?" I investigate the demonization of magic since the Early Middle Ages to the Early Modern Period, and the cultural influences resulting from it. Cultural influences include syncretizing pagan traditions and symbols into Christianity, such as Christmas and Easter; the modern portrayal of witches and magic in pop culture; and the misogynistic effects on women in the Christian tradition. I find significant influence from the absorption of pagan culture into Christian culture, especially in symbolism adopted by the church. I also find that the modern Christian view of women has been affected by the actions of this time, as women were often accused of witchcraft and vilified alongside magic. Lasting in today's pop culture is also the classic portrayal of the witch as being a woman taking part in such magic. This research is important to the world because it is important to understand how widely the demonization of magic has affected Christian culture because in many parts of the world, Christianity dominated culture and politics.

Means of Production

Student Author(s): Ethan McKellar, Senior (Art)
Faculty Mentor(s): Nikki Blair (Art)

The feasibility of ceramics past the view of it as a craft, and into as an action of art is a narrow yet wide field. The state of North Carolina has a rich history of ceramics and pottery that has drawn various cultures and nationalities to converge into communities. Over the course of a year a study of creating functional vessels through the practice of production pottery.
This process started in June of 2021 with formulating new clays and glazes that could be used for the sake of application. Formulaically the glazes need to be stable and contain no harmful materials. In August of 2021 testing of different glazes and clays. Over the next month's different changes would be applied in order to adjust for food safety, and with designing vessels to also consider consumer use. Consistency of forms and appearance proved to be a difficult challenge, but through repetition concise and identifiable tumblers, bowls, plates, mugs were made. Each kiln firing was overseen through and through for the explicit learning of the process and its results.

Is the internet taking my privacy?

Student Author(s): Emanuel Mendez Aquino, Sophomore (Political Science) Strong College
Faculty Mentor(s): Sarah Littlejohn (Residential Colleges)

Even with the advancement of technology and the internet, cannot eliminate all problems as a new issue is on the rise and that is maintaining one's privacy. The age of technology has truly solved so many problems and has been able to give people a more comfortable life but an issue that has arisen is one dealing with maintaining one's privacy and personal data. Being able to

access the internet comes with a drawback as an individual needs to give permission to certain browsers and that has led hackers to be able to access people's personal devices. Understanding and comprehending this problem is the reason that I want to look into this topic as the internet genuinely scares me as it is advancing too fast. A source that needs to be looked closer into is “Securing Privacy in the Internet Age” by Anupam Chandler, as this book talks about trying to maintain privacy in these times and even goes into the possible problems that cause privacy problems, to begin with. Like this source, I will be using primary sources to talk about the dangers of the internet. After I go into further research, I am hoping to be able to understand and identify the possible sources that can cause internet privacy to become insecure, that way I would know to be safe on the internet.

Why are careers in medicine, law, and engineering held in such high respect among Nigerians today?

Student Author(s): Jamie Metume-Ibe, Sophomore (Biology) Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

At such an early age, most Nigerian youngsters are expected to know their life goals. Some children have a clear idea of what they want to be when they grow up, while others are unsure. When youngsters get disoriented, they frequently receive direction from their parents or their role models. After surveying and interviewing a few Nigerians, I discovered that the majority of their future occupations will be in medicine, engineering, or law. When asked what prompted them to pursue careers in these professions, the majority of their responses revolved around their parents' guidance. Which is why my research question is "Why are careers in medicine, law, and engineering held in such high respect among Nigerians today?" I'll look at the reasons behind this standard, the current number of employees in these sectors, and what pushed them into that path using surveys and interviews with Nigerians who work in these fields. I'm hoping to learn about alternative occupations that Nigerians are interested in, as well as why their parents steer them in this path. In response to this topic, I aim to address Nigerians, reassuring them that it is acceptable to pursue occupations outside of these fields.

Breaking through the glass ceiling: How do women in executive positions impact a company’s performance and function?

Student Author(s): Kayce Meuse, Sophomore (Marketing, Entrepreneurship, Hospitality and Tourism), Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

Although women in the United States comprise approximately 40% of all managers, in the largest corporations’ women hold less than 0.5% of the highest paid management jobs. There is no doubt that there is a gender imbalance in the corporate world, but what happens if that were to change? This brings up a very important question: What are the outcomes for companies who hire women into management and executive positions as opposed to companies who do not? By using previously conducted data collection and analysis, I plan to use this information to construct evidence that women have a positive correlation between being hired into executive positions and improved company performance. The findings will likely include the impact of gender diversity on the operations of business, the breakdown of

gender gap for wages and job opportunities, as well as external factors that skew employer choices. Through this research, I hope to bring attention to the positive impact's women have on companies when employed in positions like being CEO or occupying top managerial positions, as well as their strengths in leadership and how crucial equitable opportunities are for women to climb up the corporate ladder and break the glass ceiling.

Why isn't Nuclear Power a Major Source in the World?

Student Author(s): Megan Mieure, Junior (History) Ashby College
Faculty Mentor(s): Sarah Littlejohn (Residential Colleges)

Since the first nuclear power plant's construction in 1951 there has been controversy about if and how nuclear power plants should be operated. There have been a few high-profile cases of malfunctions at nuclear plants that have made it clear that there needs to be more done to make the plants safer. Other reasons that the nuclear power industry declined, one that the current leaders in fossil fuel industries would not see profit from nuclear energy therefore won't make the switch. The second is, according to Trevor Findlay in his book Nuclear Energy and Global Governance, the US has kept the materials needed from many countries in an attempt to limit nuclear weapons development. I want to know why the world is not doing everything it can to combat the effects of climate change. I hope to find further information about the specific ways in which the plants themselves were affected by the decline in the industry by looking into the reports from within the plants over the years. I think that further research into this topic will reveal the reasons why nuclear power should be made safer so that it can become a major source of clean energy.

The Warrior Mentality Scale: A novel measure of military service

Student Author(s): David Miller, Senior (Psychology)
Faculty Mentor(s): Kari Eddington (Psychology)

The Warrior Mentality Scale (WMS) is a proposed scale for use within military populations that seeks to identify alterations to behaviors, and patterns of thinking through extensive training on long-term mental health outcomes. Pilot data indicates good internal consistency of the WMS, in a population of N=29 military veterans. Consistent with hypothesized outcomes, the WMS also presented with a moderate consistency with scores on current, widely used measures of emotion regulation, and anger. The Difficulties in Emotion Regulation Scale (DERS), and Dimensions of Anger Reaction (DAR)are commonly used clinical measures with good predictive and test/ retest reliability which have been repeatedly validated. Scores on the WMS were most strongly consistent with the DAR but were also moderately consistent with the DERS. These findings indicate acceptable scale properties and support further research and development of the WMS and underlying theory of long-term effects of military training.

The Practicing Anthropologist: In the Field this Time with a Carrot and a Groundhog

Student Author(s): Kalyn Milot, Senior (Anthropology)
Faculty Mentor(s): Susan Andreatta (Anthropology)

Milot, Kalyn (The University of North Carolina at Greensboro) "The Practicing Anthropologist: In the Field this Time with a Carrot and a Groundhog" Co-curricular experiences have supplied me with skill sets that lead into professional development. My work in the UNCG Campus Gardens provided a hands-on way to develop skills in leadership, time management, and team supervision beyond what a classroom setting could offer. My campus gardening experience also gave me a distinctive perspective and special knowledge in climate change and wildlife management that went beyond the agro-food research learned in class, articles, or textbooks. Becoming a practicing anthropologist in the field of campus gardening has led to a unique kind of applied anthropological experience.

Paths to a Sustainable Fashion Future: Transition or Transformation?

Student Author(s): Brinlee Mitchell, Senior (Consumer Apparel & Retail Studies)
Faculty Mentor(s): Elena Karpova (Consumer Apparel & Retail Studies)

Researchers from different disciplines emphasize the importance of the two constructs, transition, and transformation, for charting paths to a sustainable future. In this project, the two constructs were applied to the fashion industry, which is considered one of the most polluting manufacturing sectors second only to petroleum production. Based on secondary data of best practices adopted by consumers, communities, and governments around the world to reduce the environmental impact of fashion, this research outlines possible scenarios and practical implications for the fashion industry's sustainable future. The results of our study will be useful for guiding future research projects, developing public policies, and practical industry solutions.

Examining How Gendered Trait Inferences Affect Perceived Smile Authenticity

Student Author(s): Shima Mohamed, Senior (Psychology)
Faculty Mentor(s): Brittany Cassidy (Psychology)

Smiling is a form of nonverbal communication that conveys important prosocial meaning regarding positivity, benevolence, and happiness. However, contextual information affects how authentic people perceive smiles to be. For example, group membership affects how both authentic smiles are perceived to be. Smiles of outgroup members are evaluated as less authentic relative to smiles of ingroup members. This work suggests that smiles may be perceived as more or less authentic based on what information is paired with a target individual. This implication is important because smiles promote prosocial behavior and social integration. Notably, women aspiring to high leadership positions are well-known as being given advice to "smile more". This advice has theoretical underpinnings in the role congruity theory. That is, women who aspire to leadership often receive prejudice for having the agentic traits associated with men. One possibility is that agentic women who "smile more" are perceived as also being communal. However, agentic women could also still be evaluated more

negatively if their smiles are simply perceived as less authentic than the smiles of communal women. I will discuss an experiment designed to test for these possibilities.

Playgrounds of Dance: An Exploration into Dance as a Social Tool

Student Author(s): Elena Nealson, Sophomore (Community and Therapeutic Recreation)
Faculty Mentor(s): Lalenja Harrington (Integrative Community Studies/Beyond Academics)

Dance has always been "going viral", catching the attention of large swaths of people, changing their points of view, creating ingroups and outgroups and shaping our social landscape. My research sought to answer a few questions concerning dance as a social tool and resource. I set out to learn how dance is used as a social tool, how dance affects our social environments, and how new innovations in media and social media have expanded the social use and creation of dance. I looked at the history of dance, to find how it has been used to create or degrade social cohesion, I interviewed current dancers and performance artists, and I researched current social implications of dance and dance-based performance art. My research uncovered a rich history of dance as a tool of both social inclusion and exclusion. My interviews demonstrated the current use of dance and dance-based performance art as both a positive and negative social force. My analysis of current forms of dance dissemination, such as tik tok and Hollywood, revealed the ways dance has changed and remained constant.

Beverly Hillbilly: Fat, Queer, and Pink in the Shadow of Appalachia

Student Author(s): Mary Nease, Senior (Consumer Apparel & Retail Studies)
Faculty Mentor(s): Haeun Bang (Consumer Apparel & Retail Studies)

All my life I've lacked a sense of belonging. As a fat bisexual woman with a tenuous grasp on gender growing up in the South, I've always felt like I'm too much or not enough. It's exhausting trying to meet unachievable double standards rather than being celebrated for who I am as I am. This collection seeks to honor my personal identity using western wear as a method of expression. Queer country music feels like home to me, echoing and validating my feelings of alienation stemming from my lived experience as a queer rural Southerner. My fondness for the genre led me to incorporate western wear into my body of work. Without intending to, I found myself making something subversive. I am certain that I am walking the first exclusively plus size collection in the annual student fashion show. I tailor western wear as a woman and express my fluid movement between the binary of masculine and feminine. My textiles are hand-dyed to suit my personal color palette because the industry cannot match my needs. I don't want to be a revolutionary, but I have to break the mold to express my existence in a space that would otherwise exclude me.

Interleukin-6 Dependent Changes in Axon Transport and Axon Machinery

Student Author(s): Caroline Nelson, Senior (Biology)
Faculty Mentor(s): Rebecca Sappington (Neurobiology and Anatomy)

Interleukin-6 (IL-6) plays a critical role in the processes of inflammation and aging. In the retina and optic nerve, IL-6 acts as a neuropoietic factor, and stimulates neuronal growth and

survival. It is hypothesized that the cytokine produces these effects, in part, through the regulation of interactions between the transcription factor STAT3 and the microtubule-associated protein stathmin. This study aims to determine whether aging impacts the efficacy of axonal transport and these IL-6-dependent protein-protein interactions in optic nerve of young and aged germline IL-6 knockout mice, when compared to wildtype controls. The effects of IL-6 ligand deficiency were assessed through protein localization and interaction assays targeting STAT3 and stathmin. Time-delayed delivery of Cholera Toxin Beta (CTB) was performed to examine anterograde axon transport to the superior colliculus, where the majority of retinal ganglion cell axons project. Preliminary results suggest that IL-6 deficiency reduces axonal transport; furthermore, differences in STAT3-stathmin interactions are expected in a genotype- and age-dependent manner.

Series on Healing

Student Author(s): Aryana Norris, Junior (Art)
Faculty Mentor(s): Lee Walton (Art)

What I value is healing during post trauma. I feel as though this is important to everyone in order to succeed in all aspects of life. With my art, I like to use an array of different materials because different mediums give the piece a different message. Although I use different mediums, one thing that they all have in common is that they are fluid or organic in form and that they all deal with the emotions that I am feeling during post trauma. It is almost therapeutic in a way. This matters to me because it is a way for me to express the things that I have been feeling without having to put it into words. My art is my form of release.

Optimized Extraction of Alkaloids from Kratom and Semi-Synthetic Derivatives

Student Author(s): Jennifer Obike, Senior (Biology, Chemistry)
Faculty Mentor(s): Nicholas Oberlies (Biology, Chemistry)

Mitragyna speciosa Korth (Rubiaceae) is a medicinal plant native to countries in South-East Asia. It is commonly known as kratom. Their leaves have been used to treat common illnesses and are popular for their energizing and pain-alleviating effects. This plant is also known to possess psychostimulant- and opiate-like properties, these effects of kratom have been attributed primarily to the major component in the plant, mitragynine, an indole alkaloid that is a partial agonist of the human μ-opioid receptors (MOR). Here, we worked in the isolation of several alkaloids present in the plant, particularly Mitragynine. The focus of this project was to optimize the isolation and purification of alkaloids from the plant. The crude extract was obtained via maceration and acid-base partitions. Fractionation and purification techniques, such as flash chromatography and HPLC, will be implemented to obtain the pure material of these alkaloids. The obtained alkaloids will be used as analytical standards and some of them will be used to generate mitragynine derivatives of medical relevance with the use of semi-synthesis.

Assessing aquatic invertebrate biodiversity: How rich are our campus wetlands?

Student Author(s): Megan Otey, Senior (Biology)
Faculty Mentor(s): Kristina Morales (Biology)

Wetlands are shallow water systems that are nutrient rich and highly diverse. Early 2017 the Wetlands Project restored two wetlands on the UNCG campus. One of the wetlands was constructed in the forested area of Peabody Park and connected to a campus creek while the other is in an open field. Each is a distinct habitat, potentially differing in their ability to support invertebrates. The goal of this study was to assess aquatic macroinvertebrate biodiversity and compare the two sites with two control group streams nearby. Our hypothesis is that the availability of resources will support a greater number of aquatic macroinvertebrate species in the wetland sites compared to the creek. Field sampling was conducted in May 2021 and aquatic macroinvertebrates were sampled using crayfish traps, nets, hand trowels, a light trap, and sieves. Samples were freeze dried, identified, and counted. The samples are being analyzed for species richness, with some samples being preserved for further studies. If the results indicate greater biodiversity in the wetlands sites, this implies that the reconstruction of the wetland increased biodiversity of the area. Aquatic invertebrates can be indicators of the overall health of the system and thus it is important to assess their biodiversity.

What factors determine the cost of pregnancy care and how much does insurance cover?

Student Author(s): Peyton Parra, Sophomore (Nursing) Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

Not only is health insurance important, but it is important for people to choose the right one. There are different health insurances that you can choose from but it's important for you to find a reliable one. I will use sources that help me find the typical cost of pregnancies, whether they were complicated or uncomplicated. I will also use sources to find out the major insurance companies. This is important so I can find out how people can get access to this insurance and what it will or will not pay for when it comes to pregnancy. I expect to find out what insurance will cover when it comes to having a baby and what someone may expect to pay out of pocket when it comes to having a baby. The purpose of this research project is to determine the factors that affect the cost of pregnancy care. This is important to me because in the future I would love to have children of my own and I feel like this would be useful to a lot of people who would like to do the same. I want to be aware of what my insurance will cover and what it won't cover. I want to help with the future of healthcare and understand why things cost the way they do but specifically when it comes to having a baby.

Effects of the Herbicide, Glyphosate, on DNA Methylation in Human Osteoblast Cells

Student Author(s): Uday Patel, Senior (Biology); Joshua Clark, Senior (Biology)
Faculty Mentor(s): Karen Katula (Biology)

Glyphosate is a major chemical component of a widely used herbicide known as Round-Up®. It is known to have significant human health effects. However, there is a gap in our

understanding of how glyphosate affects DNA methylation. Our hypothesis states that chronic glyphosate exposures alter DNA methylation in the human osteoblast cells hFOB 1.19. This could lead to changes in gene expression and osteoblast cell function. In this experiment, hFOB, 1.19 cells were exposed to 0, 0.0007, 0.007, 0.07 mg/mL of glyphosate for 2, 3, and 4 weeks. Genomic DNA was isolated from these cells. The relative levels of DNA methylation were determined using a 5' mC DNA Elisa kit. DNA concentration was confirmed using a fluorescent dye-binding assay and the percent DNA methylation was calculated from a standard curve. Percent methylation values were standardized to DNA concentration for each sample. Results show that at weeks 2 and 3 there were no significant differences between the percent methylation values of the control (0 mg) and glyphosate treated samples. At week 4, there was a significant increase in percent DNA methylation for all glyphosate treated samples compared to the control. These results suggest that chronic exposure to glyphosate herbicide alters DNA methylation in human osteoblast cells.

The Cultural Power of Chile Peppers

Student Author(s): Jennifer Perez, Sophomore (Social Work) Strong College
Faculty Mentor(s): Sarah Littlejohn (Residential Colleges)

Even though chile peppers are native to The Caribbean and Latin America, they have found their way all around the world. Individuals use them as decorative plants, medicine, spice, vegetables, and symbols, and since their beginning people have found a way to mix breeds and create new and hotter ones. I argue that the diversity of factors that constitute culture influence whether individuals use, consume, and teach next generations to eat chile peppers. My curiosity started by paying attention at how popular recipes from my home country Mexico often had chile peppers as their main protagonist and why. Using the book *The Chile Pepper in China: a Cultural Biography* by Brian Russell Dott I will be able to illustrate how chile peppers became a national symbol for some Chinese communities. My research can deepen individuals' knowledge about the influence of tradition, sharing dietary practices, rules of behavior, peer pressure and sets of beliefs on something as simple as what they eat. This can affect people's decision about their daily food practices, what they share with their community and teach their kids, foremost the why behind it.

Happiness: How it is Defined and the Factors that Allow us to Find Happiness Faster

Student Author(s): Jose Perla, Junior (Nursing) Ashby College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Not many individuals are able to say that they have found happiness and joy in the choices they have made in life. Although happiness is not always an easy concept, there are some exceptions. Some since a very young age knew where their happiness lays and decided to stick to it like a talent or hobby. However, this is more complicated for others and whenever one feels lost this becomes more like a journey looking for happiness. It is not that people have not tried different careers, hobbies, or passions. Humans are very diverse and what has worked for one person might not work for somebody else. Feeling lost is a problem for individuals that are supposed to be feeling something that they do not genuinely feel. I find this topic very

interesting because I am amazed by the diversity in human thinking. Using the book " Why Tech Is Winning the Battle to Control Your Brain--And How to Fight Back" by Wadhwa & Salkever. The article about an 80-year-old study at Harvard University "Good Genes are Nice but Joy is Better." I will find a definition of happiness considering different perspectives and different factors that may interfere. To help the reader understand this topic better this research will discuss happiness, human's diversity defining it, and the factors that increase this feeling.

Weaving Strength and Well-Being: A Novel Mental Health Interview Approach for Montagnard Elders and Youth

Student Author(s): Ariel Pocock, Post-Bac (Biology)
Faculty Mentor(s): Sharon Morrison (Public Health Education), Catherine Bush (Biology) & Sudha Shreeniwas (Human Development and Family Studies)

The Montagnards represent the indigenous tribes of the Central Highlands of Vietnam. The Montagnards were United States allies during the Vietnam War, and many immigrated to the US to escape persecution. Despite their presence in Greensboro for over 30 years, many are not well integrated into the community, as indicated by lower rates of education and income, high food insecurity, and poor mental health. Research suggests that a lack of understanding between Montagnard elders and youth may contribute to poorer mental health outcomes and isolation. The Montagnard Community Advisory Committee has identified elder care and mental health as immediate priorities. To address both priorities, this project will consist of a series of oral interviews between 10 elder/youth pairs followed by a mental health seminar. The goals are to (1) decrease levels of depression, anxiety, PTSD and suicidal ideation among participants by using specific interview prompts to foster connection and intergenerational empathy, and (2) to provide opportunities to share life challenges and reflect on community strengths. As the project is currently in the development phase, this presentation will cover the novel design of the mental health seminar, interview questions and evaluation tools.

Ruthenium Coordination Complexes for Photodynamic Therapy

Student Author(s): Dahlia S. Porter-Cole, Senior (Chemistry & Biochemistry); Runzi Li, Senior (Chemistry & Biochemistry)
Faculty Mentor(s): Jerry Walsh (Chemistry & Biochemistry)

For some cancers, photodynamic therapy (PDT) can be offered as a noninvasive supplement or alternative to chemotherapy and other traditional treatment methods. PDT elicits cancer cell death through light activation, dioxygen (O_2), and special chemical compounds called photosensitizers. Specific wavelengths of light excite the photosensitizer to produce reactive oxygen species (ROS), which are toxic to cells. To effectively penetrate tissue and minimize harmful side-effects of UV radiation during PDT, the ideal photosensitizer should display strong light absorption at low-energy, near-infrared wavelengths (> 600 nm) at a high molar extinction coefficient. Transition metal complexes typically have a wide range of available electronic charge transfer transitions, which is necessary for practical photoexcitation. Therefore, ruthenium(II), iridium(II), platinum(II), and other transition metal complexes are popularly studied for their promising potential as photosensitizers. In

this study, three ruthenium (II) complexes with varying methyl-substitution on the "phen" spectator ligand, $[(Me_xphen)_2Ru^{II}(IP3T)](PF_6)_2$, were synthesized and studied (phen = 1,10-phenanthroline; IP3T = α-terthienyl-imidazo[4,5-f][1,10]phenanthroline; x = 0, 1, or 2). Each Ru(II) complex was characterized by UV-visible absorption, mass spectrometry (MS), and nuclear magnetic resonance (NMR). Our synthetic methods as well as spectroscopic results will be discussed.

Why are linguistic features and PTSD symptoms related? An analysis of cognitive reappraisal and rumination

Student Author(s): Sophia Priest, Senior (Psychology)
Faculty Mentor(s): Blair Wisco (Psychology)

In research about narratives of trauma, some linguistic features are associated Posttraumatic Stress Disorder (PTSD) symptoms, but past studies do not assess the reasons behind these associations. This study examined the mechanisms of two commonly discovered findings in trauma narratives: that less cognitive processing language (CPL) and more self-referential language (SRL) are associated with more PTSD symptoms. I used Linguistic Inquiry and Word Count software (LIWC) to analyze data from 185 participants who each wrote a narrative about their most traumatic event. I hypothesized that cognitive reappraisal (reevaluating negative thoughts/beliefs) would account for the association between CPL and PTSD, and that rumination (thinking deeply on negative feelings) would explain the association between SRL and PTSD. I also analyzed other linguistic dimensions as predictors of PTSD (sensory and death language). Linear regressions revealed nonsignificant effects for all dimensions: CPL, $\beta=.44$, $t(157)=1.82$, $p>.05$, SRL, $\beta=.10$, $t(157)=1.21$, $p>.05$, sensory language, $\beta=-.00$, $t(157)=-.03$, $p>.05$, and death language, $\beta=-.02$, $t(157)=-.27$, $p>.05$. In contrast, rumination was significantly correlated with PTSD symptoms, $r(152)=.50$, $p<.001$. Results indicate that rumination may be a better predictor of PTSD than SRL, and that future research should examine whether other linguistic markers are more robust predictors of PTSD.

String Quartet no. 5 in C Minor Movement 1 "Rosa Parks" by Daniel Bernard Roumain

Student Author(s): Andrew Ralston, Sophomore (Music Education); Gracie Zielinski, Sophomore (Music); Kyra Totillo, Junior (Music); Hanna Fishastion (Music)
Faculty Mentor(s): Rebecca MacLeod (Music Education), Marjorie Bagley (Music)

"As a Hatian-American composer, I was raised by immigrant parents from Haiti, who experienced American life both before, and after, the Civil Rights Act of 1964. . . I created [this work] as a musical portrait of Rosa Parks' struggle, survival, and legacy. The music is a direct reflection of a dignified resistance. It's telling that this work may, in fact, be performed on stages that didn't allow the presence of so many, so often. I often refer to the stage as the last bastion of democracy, where all voices can and should be heard, where we are all equal, important, and necessary." DBR. String Quartet no. 5 Movement 1 composed by Daniel Bernard Roumain features a resilient and unified introduction with the shrill, metallic sound of sul ponticello (playing over the bridge). Four note patterns are played against three note patterns to express resistance and determination. Melodies in this movement are often offset

by a beat, never quite lining up until the climactic reentering of the introductory theme. The movement resolves with a painfully nostalgic descending melody in the first violin.

Abiotic and biotic factors affecting seasonal patterns of fish body growth at an urban stream in Piedmont region in North Carolina

Student Author(s): Lucia Ramirez-Joseph, Senior (Biology); Seoghyun Kim, Postdoctoral
Faculty Mentor(s): Akira Terui (Biology)

Understanding factors affecting somatic growth is important because it is tied to an individual's survival and ultimately influences population dynamics. We investigated how biotic and abiotic factors affect the growth rate of fish distributed in a small urban stream. We assessed fish growth using a mark-recapture method from November 2020 to February 2022. We tagged 1,297 individuals with PIT tags (bluehead chub, creek chub, green sunfish, and redbreast sunfish), and measured the body length and weight to estimate their growth over time. Results show that fish individuals had lower growth rates when individuals subsisted within a higher density of conspecific fish. We also found that body growth was positively affected by seasonal weather patterns; fish are likely to grow more during warm seasons. In conclusion, we found that higher densities of fish lead to lower growth rates and that these growth patterns may vary depending on season.

Paternal perchlorate exposure effects on male fertility and offspring development

Student Author(s): Beh Reh, Junior (Biology)
Faculty Mentor(s): Ramji Bhandari (Biology)

Perchlorate anion is an oxygenated chlorine compound commonly used in military artillery and equipment. It has been detected in drinking water, air, soil, and breast milk. Human exposure can occur in the theatre of war, and areas adjacent to military training grounds. In a preliminary study, we found that perchlorate induces teratogenic effects on medaka larvae and nonmonotonic transcriptomic profiles in the primordial germ cells, precursors of future eggs and sperm. The present study examined the effects of perchlorate exposure on paternal fertility and offspring viability. Adult male medaka were exposed to 0, 0.01mg/L, and 10mg/L perchlorate, for 21 days, and fertilization efficiency was examined. We also examined if perchlorate effects can be ameliorated by antioxidant co-exposure using 3mg/L of Vitamin C. Medaka testis morphology was histologically examined and sperm DNA and testis RNA were sequenced. Results suggest that perchlorate reduces fertility in male medaka due to direct exposure. Testicular transcriptome and sperm DNA methylation profiles are currently being analyzed, which will be presented in the meeting. The phenotypic result from this study provides insights into reproductive toxicity of perchlorate and molecular information from testis gene expression and sperm epigenome analysis suggests its potential to affect future generations.

What are the factors that contribute to teen pregnancies in American and how can these pregnancies affect the loves of these young girls? What are the ways we can help avoid these young teens from getting pregnant?

Student Author(s): Joslin Rios, Sophomore (Nursing) Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

Unfortunately, there are young teens in America who are getting pregnant at a young age, and some are not by choice. Many of these girls are not in the right situation to have babies. Girls are also getting pregnant because they don't have the proper education on intercourse. The goal of this research project is to be able to see what factors are causing this and ways that we can help these girls. The method that I will use to figuring this out is by looking at statistics to see what are the different factors that cause this and do some research into different stories and situations to see the factors that contributed to these young pregnancies. I expect to see a lot of sad and devasting stories and the negative impacts these pregnancies have had on these girls. My question for this project is what are the factors that contribute to teen pregnancies in America and how can these pregnancies affect the loves of these young girls? What are the ways we can help avoid these young teen pregnancies? I want to prevent these girls from being put in situations where they don't have a choice in their lifestyle.

Study of carbon nanodots in TNF-α-mediated monocyte inflammation

Student Author(s): Jaziah Rispress, Junior (Biology)
Faculty Mentor(s): Zhenquan Jia (Biology)

Cardiovascular disease (CVD) is the leading cause of death worldwide. Increased inflammation and cellular dysfunction have been considered as one of the potential pathophysiologic mechanisms for CVD. Tumor necrosis factor-alpha (TNF-α) is a known pro-inflammatory cytokine that triggers inflammation. Carbon nanodots (CNDs) are a new class of nanoparticles showing promise in biomedical fields such as bioimaging and drug delivery. Dysfunction of monocytes was found to be associated with CVD. However, the effects of CNDs on TNF-alpha mediated inflammation in monocytes are currently not known. My research examines the role CNDs in TNF-alpha-mediated the expression of pro-informatory genes in human THP-1 monocytes. Results show that CNDs can reduce the expression of pro-inflammatory genes, interleukin-8 (IL-8), and interleukin 6 (IL-6) in THP-1 monocytes. These results provide insight into the interplay between TNFα-induced inflammation and CNDs in THP-1 monocytes.

The Development of African American Children in Kinship Care

Student Author(s): Nathaniel Rivers, Senior (Social Work) Toni McKnabb, Senior (Social Work)
Faculty Mentor(s): Tyreasa Washington (Social Work)

Kinship care refers to the caregiving of children by relatives or others who have strong bonds with the children when birth parents are unable or unwilling to provide care. Many children who experience kinship care suffer from a host of negative outcomes related to social skill deficits, academic underachievement, and behavior problems (BP). Previous research found

that kinship care families' characteristics offset some of the risks to children's social competence (SC) and academic competence (AC), as well as BP. Thus, the African American Families and Kinship Care Lab is conducting a National Institute of Health (NIH) funded study that uses a two-phase mixed methods design to better understand the impact of kinship care families on children's social, academic, and behavior outcomes (ages 5-12). The first aim will use quantitative methods to identify specific family-level factors that mitigate risk to children's social and academic competence and behavioral problems (Quantitative Phase I; N=200). The second aim will use qualitative methods to explore and interpret the results obtained in phase I (Qualitative Phase 2; N=30). Results from the study will inform prevention and intervention services to help ensure positive outcomes for African American children in kinship care.

Video Games and The Problem of Evil: A "Xeno-Virtual-Ethnography" of the Videogame Valheim

Student Author(s): Sophia Rosenberg, Senior (Religious Studies)
Faculty Mentor(s): Gregory P. Grieve (Religious Studies)

Ethnography has long been recognized as an effective method to document cultures and the people within them. How can ethnography refigure itself for digital media and the online spaces that surround them, and the newfound cultures that are emerging as a result? Through a grounded, open-ended approach to ethnographic analysis and digital anthropological methods, this project explores using xeno-virtual ethnography as a way to record online cultures and their digital practices through the observation of two servers in the survival sandbox game *Valheim*. Xeno-virtual ethnographic methods combine (1) virtual ethnography, which takes place online and records digital cultural practices, and (2) xenoethnography, where a main researcher invites a secondary researcher to conduct an ethnography of their group. Besides a better understanding of these gaming cultures, my project rethinks the method of ethnography in relation to social power. The typical method of ethnographic research, as founded in European colonialism, followed the trope of an ethnographer from a dominant group documenting marginalized people that were often seen as inferior. However, due to a much-needed retrospective on the controversial origins of ethnography and the rise of new technologies, the method is taking on a new form.

Where This Flower Blooms

Student Author(s): Jhordan Rose, Sophomore (Art)
Faculty Mentor(s): Dan Hale (Art)

As young artists, we are the future of the art world but are also all early on in our artistic evolutions. Even so, the art we're making now shows a hint of the amazing work that we will be capable of later on in our journey. To exemplify this, I would like to show off the film I made based on one word, the prisma color drawing I created about the beauty of the natural darker woman's body, and the small loading screen animation I created. I believe showing these works would be a great insight into what I and many other young artists like myself are working towards. I hope to show a small glimpse into the future.

Impact of Nutrient Addition on Arthropod Communities in the Longleaf Pine Savanna Ecosystem

Student Author(s): Natalie Sabiston, Senior (Environmental and Sustainability Studies, Biology)
Faculty Mentor(s): Sally Koerne (Biology)

With global temperature changes, nutrient levels and availability are also expected to change. Productivity of plants is limited by nutrient availability; therefore, it is important to understand the implication of nutrient limitation on plant communities and the associated arthropod communities. Nitrogen (N), and other nutrients such as phosphorus (P) and potassium (K) encourage plant growth and are vital in many physiological processes. Investigating how arthropod communities respond to differing nutrient levels will greatly aid in restoring the LLP savannas. To test the hypothesis that arthropod abundance and biomass will be greater in all nutrient addition plots, and community composition will be significantly different when compared to the control plots, this experiment was completed within an established experiment, simulating nutrient deposition. The data collected regarding arthropod abundance and biomass are being compared using analysis of variance. To compare arthropod communities between treatments and control plots, permutational multivariate analysis of variance analyses are being used. Preliminarily, abundance is higher in the nutrient addition plots than in the control plots.

The Psychology of Sex Aggression: Inside the Criminal Mind

Student Author(s): Adeline Sallade, Junior (Psychology)
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

The psychological factors which go into an individual's sexual development must be identified in order to understand how the mind of a sex offender is created. The human brain contains the weapons necessary for people to commit heinous acts against each other. Research from primary sources and peer reviewed texts revealed that there are categories of offenses and the types of risk factors involved in them. In many cases of penetrative rape and sexual assault, it is possibly a result of a hostile masculine need for power and control over the feminine, or a case of cognitive dissonance wherein the crime may be committed without malintent. By reviewing sources such as The Psychology of Women and Gender (Else-Quest and Hyde), I aim to be able to compile both primary and secondary sources in order to evaluate the cognitive processes of sex offenses. This research is relevant to the evaluation of different psychological factors involved in sex crimes and the steps necessary to prevent them. This research tentatively concludes that different types of offenders require different kinds of treatment. The most effective methods for prevention are to help these individuals understand and value sexual boundaries in order to prevent violent offenses.

Examining Protective Cultural Values in the Uptake of a Community Health Worker Setting for Latinx Populations

Student Author(s): Paula Sanchez-Hernandez, Senior (Psychology); Bianca Avila, Post-Bac (Psychology)
Faculty Mentor(s): Gabriela Stein (Psychology)

Sociocultural challenges (racial/ethnic discrimination, acculturation stress) faced by the Latinx community contributes to significant risk of developing psychopathology (Bauldry & Szaflarski, 2017). Despite the rise in reported mental health struggles, reports of culturally salient factors such as mistrust, shame, and language mismatch have been identified as a significant barrier to treatment access (Vanderkruik & Dimidjian, 2018). The current study assesses the impacts of incorporating cultural components in mental health interventions administered by Latinx community health workers (CHWs) in mitigating barriers to treatment among Latinx populations. Thematic content analysis was used to analyze semi-structured interviews for salient themes. Overall, participants (M age = 41.29 years) in the intervention reported having a strong working relationship with their CHW (i.e., feeling supported and comfortable). Findings indicate that participants valued the incorporation of traditional familial values while also highlighting bicultural issues during the intervention session. Furthermore, ethnic and linguistic match with CHWs allowed for open conversations about shame and impacts of conforming to cultural norms (remaining guarded can negatively affect mental health). Additionally, having clear boundaries of confidentiality and communication allowed for trust. These results allow us to understand the impact and value of incorporating more culturally sensitive factors in various mental health settings.

How can indigenous holistic educational practices address the intersections of inequity/violence/trauma within school culture?

Student Author(s): Selene Santiago-Lopez, Sophomore (International & Global Studies), Grogan College
Faculty Mentor(s): John Sopper (Residential College)

here has been an increasing awareness of the issues present within the U.S. education system which include the School-to-Prison-Pipeline, high school dropouts, inequity, and many more. This has resulted in the need for innovative methods to counter these issues, such as through holistic educational practices. For these reasons, the purpose of this research is intended to highlight the ways in which students of color are disproportionately affected internally and externally within the education system through the intersection of inequity/violence/trauma. What's more, it'll introduce possible benefits when applying indigenous holistic practices. This will be conducted firstly by describing and defining holistic healing in both Western and indigenous frameworks; while also defining terms such as inequity, violence, and trauma. Then followed by investigating the implications of school culture and its effects on students, which will proceed with an outline of the opportunities/strategies for implementing these practices. To display a well-rounded outlook of the intersections that occur between students and educational spaces, both academic and personal perspectives will be applied via testimonials, academic sources, and scientific research. This research will provide insight into the intersection between the individual/structural system, as well as methods of mediating the

issues found within the educational system.

Youth: A Collection of Bilingual Children's Stories/ La juventud: una colección de bilingües historias para niños
Student Author(s): Krista Savage-White, Sophomore (Languages, Literatures and Cultures)
Faculty Mentor(s): Mariche Bayonas (Languages, Literatures and Cultures)

With a growing population of non-White and non-English speakers in the United States, there is a huge demand for books that reflect the identities, experiences, and imagination of Children of Color. The project proposal utilizes statistics, analysis of evidence, and personal aspirations to communicate support for more bilingual stories on the market and the need to pursue this project. The proposal addresses changing demographics in the United States, the lack of diversity in literature, intergenerational Spanish proficiency among Hispanic Americans, and linguistic differences of Spanish across the hispanosphere. Highlighting the need for more diverse literature, especially bilingual literature, and practicing cultural sensitivity is a steppingstone to taking action and making the literary world representative of kids from a variety of backgrounds.

Race and Identity: Finding the North Star Podcast
Student Author(s): Krista Savage-White, Sophomore (Languages, Literatures and Cultures)
Faculty Mentor(s): Hewan Girma (African American Studies Program)

Inspired by the star that was a symbol of freedom for slaves, it revolves around the exploration of one young woman's American identity. While on that journey, Krista speaks on topics from a historical and contemporary point of view in a serious, yet lighthearted way. Over the first eight episodes, the focus is on U.S.-centric topics, ranging from the Black Lives Matter movement and armchair activism to colorism and the history of Black Wall Street.
The script for each episode is based on hours of rigorous research, exploring various academic and popular sources. A challenge was making the material comprehensible, humorous, and of appropriate length for the average non-academic audience. While the research and production of the podcast was an emotional rollercoaster at times, this history needs to be shared. Through this podcast, Krista hopes to encourage people to critically think about Black affairs while finding contentment with her African American identity. The research, writing, and production of this podcast was possible thanks to funding from UNCG's URSCO office.

Using Interactive Narratives to Reduce Abortion Stigma
Student Author(s): Emma M Schueren, Senior (Public Health Education)
Faculty Mentor(s): Tracy Nichols (Public Health Education)

Women who seek abortion services face a myriad of barriers, stigma being one of the most prominent. Stigma can be structural barriers such as laws and regulations, or as intimate as community beliefs and intrapersonal reactions. Abortion stigma can cause emotional, financial, and psychological distress. The aim of this project is to develop a web-based interactive narrative to educate individuals on the role of stigma on the lived experiences of women seeking abortions. The content of this interactive narrative will be based on a literature

review on stigma theory and abortion stigma. In the literature review, within stigma theory and abortion stigma, there will be a focus on structural stigma and interpersonal stigma. These two types of stigma will provide the framework for the interactive narrative, including the first person accounts that will be used to create the interactive narrative. This presentation will cover the thematic elements of the literature review on stigma theory and abortion stigma, as well as the preliminary storyboard for the interactive narrative.

Another Day, Another Denarius: Roman Coinage and Human Behavior at Pompeii

Student Author(s): Colby Shelton, Junior (Classical Studies)
Faculty Mentor(s): Robyn Le Blanc (Classical Studies)

The House of the Menander, first constructed in 300 B.C. and eventually abandoned during the volcanic eruption of A.D. 79, is located in the heart of the ancient Roman city of Pompeii and is one of the best-preserved buildings in the city. Throughout the house, there were many coins found with an estimated worth of over 1,432 sesterces (about the yearly pay of an auxiliary soldier), hearkening back to the idea of it being a wealthy home. Two large coin deposits (called “hoards") were found beside a number of skeletons: a bronze hoard found in a corridor and one silver hoard in a leather bag beside a bed. This is evidence for the behavior of what people were doing with their money during the eruption; both deposits seem to be in bags for easy transport. The analysis of these two-coin hoards shows the importance Romans put on coined money and how their instincts during a life and death situation led them to seek out their valuables, in this case their coins, which were easily portable forms of personal wealth; it in turn helps us understand the behavior of Roman people under extreme duress in association with coinage.

Solving a Molecular Puzzle: Structure Elucidation of Chlorinated Cyclopentene Derivatives from a Marine Fungus Percionia sp. (Strain G1144)

Student Author(s): Robert Shepherd, Senior (Chemistry)
Faculty Mentor(s): Nicholas Oberlies (Chemistry)

Marine fungi are defined as fungal species that grow and/or form symbiotic relationships with other organisms in marine environments. In the last 50 years, over 1000 novel natural products have been discovered from marine fungi. With nearly 70% of the Earth’s oceans remaining unexplored, it is believed that marine fungi will provide an excellent source for a variety of structurally diverse and potentially bioactive natural products. For this project a marine fungus, *Perciona* sp., was isolated from *Spartina* (cord grass) stems collected from Holden Beach, NC. Extraction of the fungus yielded three new chlorinated cyclopentene derivatives (1-3) along with a known compound, rhytidhyester D (4). These compounds were isolated and purified using a variety of chromatographic techniques. The elucidation of their planar structures was performed using mass spectrometry (MS) and multi-dimensional nuclear magnetic resonance spectroscopy (NMR). The relative and absolute configurations were determined using high-resolution MS, NMR spectroscopy, Mosher’s ester method, and various computational NMR calculations. All compounds were tested against *Plasmodium falciparum*, *Naegleria fowleri*, quorum sensing inhibition, and antibacterial assays, but all

were inactive. Thus, their specific bioactivity remains unknown.

Discovering Diversity in Music

Student Author(s): Raven Sizemore, Sophomore (Music Education)
Faculty Mentor(s): Randy Kohlenberg (Music Performance)

The purpose of this project has been to identify three women composers who represent different cultures and backgrounds: Sheri-Marcia Damon (African American), Lorena Guillen (Argentinian), and Jana Mashonee (Native American). The three composers each have ties to North Carolina either by birth or current residence, and all three have developed totally different careers. Furthermore, the significance these composers have exhibited for women in the music profession will be discussed. The presentation includes a biographical sketch that details the background of each composer, the scope of their musical works, and their influence on the profession. An excerpt from a work by each of the selected composers will be presented. A biographical sketch of each composer will be followed by a brief description of each selected work. How their identities and backgrounds have influenced each composition will be discussed. In addition, the background and occasion for each excerpt will be included, as well as how each composer's works have been disseminated and performed. The presentation in the format of a lecture/recital and a poster presentation will include audio. These musicians presented are considered to be models for aspiring women musicians.

Menagerie Du Macabre

Student Author(s): Ashley Smith, Junior (Art)
Faculty Mentor(s): Lee Walton (Art); Nikki Blair (Art)

In my practice I examine the human experience and its astounding vulnerability. There is one thing in life that every creature must face-the inevitability of death. Through my art I strive to convey the duality of beauty and the macabre as well as expose the scars that appear under the veneer of beauty. As a sculptor and ceramicist, I use my art to explain the human condition of death and psychology. 1 in 4 adults will struggle with mental illness while over 50% would experience one trauma in their lifetime and my art exposes those struggles to bring forth a conversation. I dream of helping more people overcome the stigma and fear to facilitate their own personal healing by perusing my Master of Fine Arts degree and becoming an art therapist-a career that would merge my love of the arts, my interest in psychology and the human condition.

Rhythmic Exercise with Music in Adults with Cognitive Decline and Caregivers

Student Author(s): Logan Sprinkle (Kinesiology) & Angelina Xiong (Psychology)
Faculty Mentor(s): KyoungShin Park (Kinesiology)

The global dementia population is rising at an unprecedented rate. Given that there is currently no cure for dementia and that the rising dementia cases jeopardize the health of family caregivers (FCs), it is an efficient health care strategy to have both older adults with dementia (OADs) and FCs exercise together. Exercise with preferred music at synchronous tempos is also a novel approach because humans like to move in synchrony with music and

with others, and because both music and exercise can delay or prevent cognitive and functional decline and improve mental health. Our study aims to determine the efficacy of a music-based dyadic exercise program in OADs and their FCs. OAD-FC dyads will be randomized to one of two groups: waitlist control vs. exercise for 16 weeks (30 min/day, 3-5 days/week). Because in-person exercise is difficult to implement due to the pandemic, we remotely provide the exercise program via live and recorded videos. The remote exercise program allows participants to perform rhythmic motions of aerobic, strength, and balance training (on or with chairs if needed) at home with the aid of music. Preliminary data indicate that the exercise program is easy to follow in dyads while evoking positive affective responses.

Design and optimization of a Velocity Map Imaging electrode stack for separating isomers from a novel Stark decelerator device

Student Author(s): William Styers, Senior (Chemistry)
Faculty Mentor(s): Liam Duffy (Chemistry)

Velocity Map Ion Imaging (VMI)has been an effective tool in the study of molecular reaction dynamics, particularly in photodissociation experiments, allowing information of a given fragment's velocity to be determined from its impact position on a microchannel plate detector. Though VMI is typically used to probe velocity information, the mapping of an ion velocity to a specific position on a detector can be useful for separating populations of ions with known velocities from a mixture of populations. This separation allows for the reduction of noise from gas remaining in a vacuum system, and the study of a specific target population, in our case, neutral isomers manipulated by a Stark device. In our lab, a planar Stark microchip has been created to separate polar isomers within a planar molecular beam based on their mass to dipole moment ratios (m/mu). At a given device voltage and switching frequency, only isomers of a particular m/mu will be decelerated. A new 1D VMI electrode stack following the chip has been designed to focus guided and/or decelerated isomers to a line based on their velocity and separate them from any gas existing within the vacuum system that could contribute to noise. A conventional 2D VMI stack has also been designed to allow a similar separation. We use SIMION software combined with custom lua optimization code to set the ideal voltage of each electrode in the stack and predict where the target population will appear on the detector. We will present in silico simulations of the electrode stacks on target populations of interest.

Evaluation of Mass Spectrometric Method for Identifying Protein-RNA Interactions

Student Author(s): Sydney Thompson, Junior (Chemistry); Hongzhou Wang, Post-Bac (Chemistry & Biochemistry)
Faculty Mentor(s): Norman Chiu (Chemistry)

Glioblastoma (GBM) is one of the most aggressive brain tumors, with less than 13% of GBM patients surviving five years after diagnosis. [1] Our research team has developed a number of analytical methods that could improve the use of mass spectrometry to analyze specific RNA biomarkers that have been linked to GBM. Many RNA-dependent cellular activities involve the interactions between specific RNA and protein molecules. [2] The primary goal of this study is

to establish and evaluate a mass spectrometric method for identifying which GBM protein molecules would strongly interact with selected RNA biomarkers. To identify the GBM protein molecules, the standard mass spectrometric method will be used. Bovine serum albumin is being used as our protein model for determining the specificity and sensitivity of our mass spectrometric measurements. The primary protocol being evaluated is the guanidination of the protein followed by a ZipTip purification. The protocol shows promising results but requires further refinement. By further refining and developing the protocol, research will progress to assist in identifying the interactions between GBM protein molecules and RNA biomarkers.

And They Might Be Living Still

Student Author(s): Sydney Thompson, Junior (Chemistry)
Faculty Mentor(s): Jessie Van Rheenen (Creative Writing MFA)

Fantasy elements in the literary genre are an important tool to describe the full range of the human experience. Storytelling is how we learn about our world and each other, with stories to explain why spring came and why the sky erupts into thunder and lightning. In these stories, there is also a human element, a mirror held up to our own psyches that reflects the best and the worst humanity has to offer to each other and the world. Fairytales specifically are the origin of how we use fantasy to address the problems we face. These tales also reflected a hope for a different future. The current generation faces climate change, the economic fallout of the Great Recession and problems that seem as hopeless as the difference between a prince and a pauper. In these fairytales of the 21st century, a freshman has an encounter with a spirit of the dying wild after a party; a girl in the throes of depression sees a phoenix outside her window and is reborn; an economics major evaluates the worth of eternal life. *And They Might Be Living Still* is a collection of seven interconnected short stories describing these encounters with the collegiate and fantastic as an exploration of hope.

Feminist Witchcraft: Starhawk's Reclaiming Collective and the Synthesis of the Political Witch

Student Author(s): Cynth Torres, Senior (Religious Studies)
Faculty Mentor(s): Dana Logan (Religious Studies)

This research project works to explore feminist neo-pagan Starhawk and the work of her Reclaiming Collective in the midst of the late 20thcentury San Francisco/Bay Area. Through examining the way in which feminist praxis and direct action was implemented in the foundation of star hawk's works, I aim to not only to present the history of a feminist neo-pagan movement within the U.S., but to also to reveal the ways in which neo-paganism is utilized as a means of political activism. Drawing from both of my disciplines in Religious Studies and Women's Gender & Sexuality Studies, as well as research into memoirs, ethnographies, and archival data, a major goal in my project is to argue that witchcraft holds potential to complicate our notions of how we understand witchcraft in our modern context.

ABSTRACTS

Impact of burn frequency on arthropod communities in North Carolina longleaf pine savannas

Student Author(s): Page Turner, Senior (Biology)
Faculty Mentor(s): Sally Koerner (Biology)

One of the oldest and most diverse ecosystems in North America is quickly becoming part of natural history due to habitat fragmentation, logging, and fire suppression. Few studies have looked into the arthropod community composition of the NC longleaf pine savanna and the impact of prescribed burns and disturbance from logging. Three 1000 m2 sites were selected in the NC Sandhills region to compare the effects of burn frequency, disturbance, and plant community diversity on arthropod diversity in the NC longleaf pine savanna. D-vac, sweep net, and hand collection were used to sample arthropods. The highest abundance of arthropods was seen in the disturbed site, which was burned every two years and had a year to recover from its last burn in 2020. The lowest diversity was recorded at the undisturbed site, which was burned eight weeks prior to the collection, indicating that burned blocks in the savanna may take up to one year to recover from fire. There was no significant difference between order evenness, diversity of arthropods, or total number of plant species across the three sites. These results suggest that disturbance from shelterwood cutting and prescribed burns in the NC longleaf pine savanna enables the diversity of the arthropod and plant communities to persist.

Debunking social media's beauty standards on Black women inspires others to develop self-confidence within society

Student Author(s): Zoe-Patrique Umelo, Sophomore (Human Development and Family Studies), Strong College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Social media platforms have been a place where people can express themselves in various aspects of life. These aspects could range from personal life or creating a whole brand new one. It's shown within the black community through skin color, body type, hair type, and personality. This platform feeds into these negative stereotypes and influences other black women to fall into their trap. This topic resonates with me because I struggled with my self-confidence and image as a young black woman myself. I felt like I wasn't good enough to be considered "beautiful," and that's wrong. Social media has prompted many of these stereotypes, and it needs to be revised. Throughout my research, I will utilize primary sources and perspectives of other black women to aid in my research. Using my sources, starting with Virgie Tovar's book, *The Self-Love Revolution: Radical Body Positivity for Girls of color (1982)* and US National Library of Medicine: *#BlackGirlMagic: Impact of the social media movement on Black women's self-esteem*.
I want to inform my audience of the dangers of feeding into negative stereotypes and challenge how they promote positivity on their social media platforms.

What is Critical Race Theory, why is it being banned in schools, and should it be taught in schools?

Student Author(s): Alexa Villarreal, Sophomore (Public Health Education), Strong College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Critical Race Theory focuses on racial awareness by talking about how racism is embedded in our laws, policies, and institutions. The teaching of CRT in schools helps teach students real history instead of white narrative versions. This topic holds is important because it's very rare to see schools teach curricula involving CRT due to its controversy. CRT can be beneficial in the school education system if taught and incorporated into the curriculum correctly. Having CRT in school teaches students real history instead of false narratives that are historically incorrect. For my primary sources, I will incorporate hearings regarding CRT being banned in schools and talking about house bills. Using secondary sources like books, peer-reviewed articles, and reports will all be beneficial for providing information on my research topic. A secondary source that I certainly will be using is Adrienne D. Dixson and Celia Rousseau Andersons' article "Where are We? Critical Race Theory in Education 20 Years Later". My research will discuss what CRT is, its significance in education, and address common questions and concerns.

Discovery of a Conserved Protease Across Diverse Natural Product Biosynthetic Pathways.

Student Author(s): Maisha Waafa, Junior (Biology)
Faculty Mentor(s): Jonathan Chekan (Department of Chemistry and Biochemistry)

Natural products play a tremendous role in our life. These compounds are produced by all domains of life and have a wide range of activities including anticancer and antibacterial. Reflecting this, nearly half of all FDA approved drugs are derived from natural products in some way. While there are many different classes of natural products, our research mainly focuses on ribosomally synthesized and post-translationally modified peptides (RiPPs). RiPPs are a rapidly growing class of natural products. They are first produced as peptides by the ribosome and are then modified by biosynthetic enzymes, turning them into complex natural products. Over 40 classes of RiPPs are known, but there are likely many waiting to be discovered. Using bioinformatic techniques, we sought to identify gene clusters that could lead to new classes of RiPP natural products with new enzymatic modifications. This approach led to the identification of a conserved proteases found across new RiPP gene clusters. To confirm our bioinformatic predictions, we used binding assays to demonstrate that the predicted peptide substrate tightly binds to the target biosynthetic enzyme. Our initial results indicate that we have identified a valuable new approach for identifying undiscovered RiPP natural products. In addition to binding assays, our research will use protein crystallography and mutagenesis approaches to further characterize this binding interaction.

The Shoemaker

Student Author(s): Hannah Ward, Senior (English)
Faculty Mentor(s): Jessie Van Rheenen (Creative Writing)

A retelling of the classic Cinderella story, *The Shoemaker* is a novella which pulls elements from Cinderella stories around the world and combines them with modern concepts of feminism and questioning social structures. *The Shoemaker* follows Amelia, a Cinderella-like character whose life has always been ordinary. She cares for her ailing father alone and throws herself into her work as a small-town shoemaker in the hopes she'll be able to soon afford to travel and get her father the medical attention he needs. Amelia doesn't believe anything in her life will ever change, until a mysterious stranger walks into her shop and offers her a deal she can't refuse. The terms are clear: Amelia must attend three balls being held in the royal court of Glisaria. But when Amelia's simple life as a shoemaker gets overturned, will Amelia become Queen? Or will she lose more than just her shoes? The story defies fairytale conventions in order to critique these components of the tales we tell younger generations and remind readers they can be the authors of their own happily ever after.

Climate Change and How the Past Influences the Future

Student Author(s): Tatyana Watson-Glen, Senior (Anthropology)
Faculty Mentor(s): Gwen Robbins Schug (Anthropology)

Climate change is a significant threat to global public health for societies already confronted with rising social, political, and economic inequality. Archaeology informs us about the challenges of and potential solutions to climate change in the past, providing baseline data for policymakers, physicians, scientists, and the global public to make informed plans and policies. Bioarcheologists and paleopathologists study human health in the past using evidence from human skeletons and mummies. This research provides a basis for understanding the health impacts of past climate and environmental change within an evolutionary and biocultural lens. This research project summarizes bioarcheological case studies and provides insights on how variation in human historical and socio-cultural circumstances shaped epidemiological patterns when past societies faced climate changes. By exploring how past societies understood climate and environmental challenges we can create informed solutions. An anthropological perspective includes an appreciation of humans as biocultural beings whose historical and socio-cultural circumstances influence the strategies, we have used to cope with climate change in the past and the long-term health outcomes of those decisions.

Towards the Total Synthesis of Ambuic Acid and Analogues

Student Author(s): Philip West, Senior (Chemistry)
Faculty Mentor(s): Mitch Croatt (Chemistry)

Molecules with the ability to treat or prevent otherwise drug resistant bacteria, such as methicillin resistant *Staphylococcus aureus* (MRSA), are understandably valuable targets for synthetic and medicinal chemists as possible drug candidates. Ambuic acid is a molecule isolated from fungi that is shown to have potent activity in the treatment of MRSA through the disruption of the communication between bacteria and is the only known molecule to have

such activity. The research presented herein is my work towards artificially producing ambuic acid and slight variations of ambuic acid, so that the treatment of MRSA through its use can be studied in relation to any molecular modification made, without any dependence on a biological source. The end goal of this work is to make a new variation of ambuic acid that is potent enough to undergo clinical trials.

Exploration of association between affective loneliness and physical isolation to alcohol consumption in adolescents

Student Author(s): Dana Whitehead, Senior (Psychology); Cristina Nicole Angell, Post-Bac (Psychology); Amanda Richardson, Senior (Psychology); Malaysia Kenan, (Psychology)
Faculty Mentor(s): Michaeline Jensen (Psychology)

To attempt to control the COVID-19 pandemic, strict safety procedures have been imposed that include self-isolation and lockdown measures. Stressful situations including isolation and loneliness have the potential to increase alcohol consumption, especially for college students (Sallie, 2020). The present study aims to assess the association between physical isolation, the affective experience of isolation and alcohol consumption. We hypothesize that those individuals who were more physically isolated and had higher levels of the affective experience of isolation and alcohol consumption. Participants were recruited via UNCG's SONA system in the Fall of 2020 and answered survey question concerning the effects of Covid-19 (Morris, 2020) and alcohol use (Johnston, 2013). In two separate models, we will first regress alcohol use on a sum score of items related to physical isolation from the Covid-19 study and we will then regress alcohol use on a sum score of items related to the affective experience of isolation. In both models we will control for SES, gender, and age. Results may inform how isolation resulting from the Covid-19 pandemic is associated with college student drinking.

Ideas May Be Cheap, But They Are Also Prestigious

Student Author(s): Allyson Wiegand, Junior (Psychology)
Faculty Mentor(s): Shaylene E Nancekivell (Psychology)

Previous research has shown a strong labor-valuation effect wherein laborers are more likely to be viewed as owners of a product than someone who contributes ideas to them. This begs the question: Why bother to contribute ideas if you likely may not get to own the products of these contributions? One possibility is that our contributions are motivated by prestige. Namely, it seems like that people likely view idea-givers as higher status than laborers. In our project, we are investigating this potential asymmetry in people's ownership and status attributions. We hypothesize that people will ascribe higher status to the person who gave the idea, but ownership to the person who did the labor to execute the idea. We also hypothesize that people would rather be the idea giver than the laborer because of the desire to hold that prestige. Our project is currently underway, and we plan to present the results of three studies. We hope this project will offer insight into the ways in which idea-givers and laborers are differentially valued in American society.

Exploration of the Antimicrobial Properties of Turnera diffusa and Identification of Bioactive compounds

Student Author(s): Empress Williams, Junior (Chemistry)
Faculty Mentor(s): Nadja B. Cech (Chemistry and Biochemistry) & Chantal Pelzer (Chemistry and Biochemistry)

New antimicrobial leads are in high demand as a result of multidrug resistant infections increasing universally. Plant natural products are an essential component in medicinal drug discovery. Traditionally, botanicals were widely used as a remedy for treatment. *Turnera diffusa*, also known as damiana, is a flowering plant native to Mexico, South and Central America, and the southern United States. *Turnera diffusa* was historically used by Native Americans as a hallucinogen, expectorant, and general wellness tonic. Currently, it is used most prominently for its stimulant properties. Preliminary research supports antimicrobial properties of *Turnera diffusa*. *Turnera diffusa* leaves extract and fractions were dissolved in dimethyl sulfoxide at concentrations of 10 µg/mL and 100 µg/mL and tested against Methicillin-Resistant *Staphylococcus aureus* (MRSA) to observe bacterial inhibition. Our study focuses on the identification of compounds responsible for antimicrobial activity against MRSA. Ultra-high-performance liquid chromatography coupled to high resolution mass spectrometry was used for quantitative analysis. Promising leads will be presented. Follow-up studies for this project are on-going.

Women and Waves: The Evolution of Damsels in Distress and Feminist Movements

Student Author(s): Natalie Willis, Senior (Anthropology), Ashby College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Over the past hundred years, feminist attitudes and policy surrounding have gone through a great deal of changes; and this is inevitably reflected in the media created and consumed over that period of time. Long-standing characters become cultural archetypes, that is to say, characters that are part of pop-culture long enough become tied to what it means to part of their demographic. The way and reasons stories and people evolve over time is one of the most telling and effective ways to see how a culture's values have changed. The evolution of real-world feminist attitudes over the past half a century are reflected by woman characters in media, especially in damsel-in-distress characters like Lois Lane and Daphne Blake. I would like use my research to help others contextualize the different movements of feminism in a similar way; I hope it proves as much an effective teaching tool for the people I share it with as it has for me thus far.

What did social Media do to D.I.D.?

Student Author(s): Dreamer Wilson, Freshman (Social Work), Grogan College
Faculty Mentor(s): John Sopper (Residential Colleges)

Social media plays a large role in our communities, and it has affected many of the communities that reside on and off of social media. This project dives into the ways it affects the specific Dissociative Identity Disorder community and the backlash. Lots of pop culture

uses it as a either villainized or romanticized disorder and gives it a bad name. Many people suffering from it have received the backlash in ways that are not limited to but include, lack of health care options, added trauma, and harassment in their communities. Many of the things that we can do to avoid this is to open ourselves to learning more about things we don't know about from reliable sources and also supporting those struggling. By talking to others and getting to know their views on social media and this specific disorder we will be able to understand more about their correlation. By doing so not only can we educate the population about a very serious and life altering disorder we can help the people suffering from it find the confidence to get professional help.

The Politicization of Critical Race Theory has Negatively Impacted the Way We Teach History in K-12 Education

Student Author(s): Olivia Wilson, Sophomore (Theater), Ashby College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

When politics enters a conversation, misinformed opinions can be created. A term tossed into many political arguments is Critical Race Theory, or "an academic approach that examines how race and racism function in American institutions." (Sprunt, *The Brewing Political Battle Over Critical Race Theory*.) Conversations about Critical Race Theory that happen at the Congressional level can lead to the creation of legislation that negatively impacts students in K-12 Education who want to know the truth about their own country. I am taking on this topic because I don't have the knowledge, I need to be an effective educator if I don't understand how politics have changed the way we talk about US history. The sources that I find particularly useful will be books, and articles that are from either recent years or from the early 1980's or 90's in order to get a better understanding of how history education has evolved over the last few decades. I believe my research will show me the truth as to how the politicization of Critical Race Theory, and other topics has negatively changed the way students study history.

The Importance of Deaf Education

Student Author(s): Sharon Winslow, Sophomore (Teacher Education and Higher Education), Strong College
Faculty Mentor(s): Sara Littlejohn (Residential Colleges)

Schools for the deaf are highly unvalued. Society often times will lean towards the Alexander Graham Bell mindset that Deaf students should be placed into a mainstream school, so they are in the "Least Restrictive Environment". Students that have a moderate to severe hearing loss are placed into schools where all of their peers and faculty are hearing. This causes students to become isolated and feel as they do not belong. The reason that this this happens is primarily due to the Individuals with Disabilities Act. While it was created to help students with disabilities there has been little research put behind why deaf and hard-of-hearing students might not belong in primarily hearing schools. In *Isolation and Aspiration: Deaf Adults Reflect on the Educational Legacy of Special Schooling* it elaborates on schools for the Deaf beneficially for students with hearing loss. This interests me because as a student I have been failed by the school system and I see where we are failing and want to be able to improve

it for all students, but primarily those who have hearing loss because they are at a major disadvantage and are not supported to do all they are capable of. This research will open the possibility of deaf and hard-of-hearing students being in the schools that are best suited for them.

Patterns of Genetic Diversity of the long-tailed ground squirrel (Urocitellus undulatus) in Mongolia

Student Author(s): Julia Worcester, Senior (Biology); Amanda Reyes, Post-Bac (Biology)
Faculty Mentor(s): Bryan McLean (Biology)

The evolutionary history many species found in Central Asia remains poorly known, due to limited sampling and genetic investigations. This lack of genetic data also means there is a high potential for the presence of 'cryptic species' which cannot be easily distinguished through morphological characteristics alone. Central Asia is a vast region increasingly impacted by global change drivers such as climate change and overgrazing, and also contains many mammal species that are known disease reservoirs. To better understand drivers of species genetic diversity, we studied the long-tailed ground squirrel (*Urocitellus undulatus*), a taxon that inhabits steepe and grassland habitats and which is also a known reservoir for plague. We sequenced the highly variable mitochondrial control region for 71 U. undulatus specimens, used these sequences to create a phylogenetic tree, and added it to our previous data sequences to resolve phylogenetic uncertainties within this species. We found genetic diversity to be partitioned among different mountain ranges in Mongolia and our data helped resolve the relationships among these groups. This lays an important groundwork for understanding connectivity among the mammalian hosts in host-parasite interactions and potentially pathogen dynamics on the landscape.

Can reading make you a better person?

Student Author(s): Katherine Wyrick, Junior (English) Ashby College
Faculty Mentor(s): Sarah Littlejohn (Residential Colleges)

Reading can increase an individual's empathetic skills that they can then use in their day-to-day life.
Reading can help teach individual's critical empathetic skills that can be transferred and used in their daily lives. As an avid reader I hope to encourage those around me to increase their daily reading, understanding the wide array of benefits. While reading has been known to increase skills such as comprehension and an individual's vocabulary, I am presenting the idea that reading can go beyond basic skills that can be used in the classroom. I believe that reading can increase character traits such as empathy and help make readers "better people." However, the amount and type, specifically the genre, of reading an individual does will affect the amount of empathy that they learn. Sources such as *Fiction and Morality*, a peer-reviewed journal, provides ample research regarding this subject. This source, and others, provide a look into the exact tests and survey's done, as well as their results, which provide evidence supporting the idea that reading can increase an individual's empathy. This research will discuss the connections that reading has to empathy and how reading can affect more than an individual's scholarly life, which will hopefully encourage them to add reading to their daily

schedule.

Synthetic Methods for Non-Symmetric Phenazines

Student Author(s): Kala Youngblood, Senior (Chemistry)
Faculty Mentor(s): Kimberly Petersen (Chemistry), Sarah Reisman (Caltech Department of Chemistry and Chemical Engineering)

Phenazines are a family of natural products that are implicated as key secondary metabolites in the fitness of antibiotic-resistant bacteria such as *Pseudomonas, Streptomyces*, and *Pantoea agglomerans*. Unnatural phenazines have generated interest as redox-active antibiotics against these strains. However, these studies are hindered by low yielding extractions and limited synthetic access to the core tricyclic framework. Furthermore, existing methods are largely limited to the synthesis of symmetric dimers. Here, we report progress toward the development of a Pd-catalyzed cross-coupling reaction to access unsymmetric phenazines. Additionally, structure diversifications through metal catalyzed C—H functionalization reactions are discussed. It is envisioned that these results could be applied to the first completed total syntheses of biologically important phenazines such as Endophenazine A and Endophenazine B.

Cultural Reproduction

Student Author(s): Cristal Zeballos, Senior (Art)
Faculty Mentor(s): Nikki Blair (Art)

Being of Bolivian ethnicity, and sharing U.S. nationality, I have found myself engrossed in the exploration of both cultures and their expression through documentation and critique. As I navigate my cultural identity, I hold fast to the aesthetic and traditional narratives both unique and transitory to Bolivian culture. Paired with social practice, I have created a dedicated body of culturally conscious work, centered in my indigenous identity and the demonstrative effect of touristic acculturation seen in the syncretic nature of Bolivian iconography and the market aesthetic. Displaying the treatment of indigenous culture and animal/native consumption as it has been and is practiced. My body of work and installation: *Cultural Reproduction*, highlights visual reproduction and interaction with cultural icons, animals, and products in ceramic hand-building, slip-casting, and multimedia. First installed in the Greensboro downtown area, Cultural Reproduction invites viewers to engage with the interactive assemblage pieces. This installation allowed for a mix of illustrative and interactive installations that engage and settle my western audience in a new perspective and experience with a recognizable religion and consumer behavior. With multi-sensory methods of display and interaction, the installation grows with each introduction, requiring an imprint from each viewer for its anointment. Creating dedicated spaces for admiration and opportunities for self-reflection, I hope to create a more authentic and conscious interaction with culture.

URSCO *and* NC DOCKS

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NC DOCKS
digital online collection of knowledge and scholarship

Through a partnership with the University Libraries, students involved in the Thomas Undergraduate Research and Creativity Expo have the option of contributing scholarly works to NC DOCKS, UNCG's open access institutional repository.

NC DOCKS (the North Carolina Digital Online Collection of Knowledge and Scholarship; http://libres.uncg.edu/ir/uncg/) is a full-text database that brings together and showcases a wide variety of scholarship from UNCG faculty members and students, including thousands of articles, audio recordings, theses, dissertations, and other formats. All materials are indexed by Google and are freely available to scholars and researchers worldwide.

NC DOCKS can help you share your works with a wide audience, both on-campus and off. Articles that are posted in repositories like NC DOCKS tend to be read and cited more than those that are not. NC DOCKS also provides a convenient, library-managed system that can bring your works together in one place.

To learn more about participating in NC DOCKS, contact Lee Phillips, URSCO Director.

BOOK INFORMATION

Cover Design by Ethan Brain
BFA in Studio Art, New Media & Design concentration
Graduation: May 2022

Ethan Brain (b. 2000) is a visual and performance artist based out of Raleigh, North Carolina. By revealing the hidden truths that divide and connect society, his art reflects on the power of community and the strengths of the working class. Modern society is defined by complex political and social structures that create deep divisions within a nation. It is essential to highlight these complexities in order to educate communities and encourage collective action against oppressive forces. Through video, motion graphics, and performance art Ethan Brain creates imagery that combines industrial elements with bodily forms: a solitary man's relationship to architecture, biomechanical bodies, a beating heart fueled by nuclear power. These references and relationships stress the importance of human impact on systems, forming unique visual worlds that immerse and challenge a viewer's perspective.

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