14th Annual Carolyn & Norwood Thomas

Undergraduate Research and Creativity Expo

Program with Abstracts

UNCG

Undergraduate Research Week
April 20 - 24, 2020

14th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo

2020

UNC GREENSBORO

Undergraduate
Research, Scholarship
and Creativity Office

a unit within the
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April 20, 2020

Dear Students, Colleagues, and Guests,

I would like to welcome you to the *14th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo* and the 1st ever Virtual Undergraduate Research and Creativity Expo at UNCG. Prior to the realization of the impact COVID-19 would have on the spring semester at UNCG, we were thrilled to accept 266 presentations by more than 335 students, working with 146 mentors, and representing 38 academic departments/programs. As we moved the expo to a virtual platform, we are excited that 183 presentations were submitted.

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. Scholarship is achieved by using the tools of an academic discipline 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. Before travel suspensions went into place, we awarded ***travel assistance*** for more than 60 undergraduate opportunities to present the results of their inquiry at local, regional and national meetings. We have also provided support for 67 ***Undergraduate Research and Creativity Awards (URCA)***, of which 13 were part of the ***Globally Engaged URCA*** program and 4 were part of the ***Community Based URCA*** program. Finally, 7 students participated in the ***Artists in Residence*** program, in partnership with the *Lloyd International Honors College* and the *College of Visual and Performing Arts*.

Today is a day to celebrate your scholarly accomplishments. I would like to thank all students and their faculty 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, as well as Provost Dana Dunn, and 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, Maizie Plumley, Ali Ramirez Garibay, Marisa Gonzalez and Damon Roberts for their efforts to ensure the success of today's program.

Sincerely,

Lee Phillips, Ph.D.
Director, URSCO

UNC GREENSBORO
Undergraduate Research, Scholarship *and* Creativity Office

14TH ANNUAL 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.

2020 Thomas Undergraduate Research Mentor Award

Dr. Tyreasa Washington is the recipient of the **2020 Thomas Undergraduate Research Mentor Award *for tenured faculty***. Dr. Washington joined the Department of Social Work at the University of North Carolina at Greensboro as an Assistant Professor in 2011. She was promoted to Associate Professor and appointed Faculty Affiliate to the UNCG Gerontology Program in 2017.

Dr. Washington is a Licensed Clinical Social Worker (LCSW) who has worked in child welfare and mental health settings. She is a distinguished scholar who examines the impact of family-level factors on African American children's social, academic, and behavioral outcomes, especially those who reside in kinship care (e.g., grandparents raising grandchildren).

An extension of Dr. Washington's work on African American kinship care families in the United States is the exploration of the historic and contemporary use of kinship care among African American and Black families in the USA, Ghana, and South Africa. She has presented her research and led discussions at the Aya Centre for Intercultural Awareness and Development and the University of Ghana in Accra, Ghana and at the University of Kwazulu-Natal in Durban, South Africa. Her research agenda also includes the examination of fathers' roles on children's positive outcomes.

Dr. Washington has received various research and teaching awards for her scholarship including a Council on Social Work Education Minority Fellowship Alumna, a National Institute of Health (NIH) Loan Repayment Program recipient, as well as, a Teaching Excellence and Research Mentor Awards recipient. Currently, Dr. Washington is the Principal Investigator of an Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) funded study, entitled: "Development of African American Children in Kinship Care."

Former undergraduate student researcher, Christian Zik Nsonwu, said of his relationship with Dr. Washington, "During all of my successes and failures, she has

2020 Thomas Undergraduate Research Mentor Award

always been there to support me. I can say for an absolute fact that I would not be where I am today without her support and mentorship."

Dr. Washington served as a McNair Faculty Research Mentor to Kenya Downing and Tamika Smith. Kenya stated, "It was not until I met this influential individual that I realized how much exposure, representation, teaching, research, and mentoring matter." Tamika recalled that, "Dr. Washington has supported me in all aspects, both domestically and internationally. She exemplifies the traits of a compassionate and determined mentor who believes in her mentees and will go above and beyond to support them. Dr. Washington is one of the few professors that I encountered who made a conscious effort to individually connect with students beyond academics."

Shelton Young explained, "Dr. Washington is not only a colleague in the Social Work profession, but she once served as my professor and undergraduate research mentor during my undergraduate experience. She provided me and countless others with an understanding of the importance of using research to inform social work practice and practice to inform research."

The Undergraduate Research, Scholarship and Creativity Office at the University of North Carolina at Greensboro established this award to recognize faculty who engage students in projects that contribute to the expansion of knowledge and understanding in their discipline, while demonstrating excellence and innovation. Dr. Tyreasa Washington demonstrates role modeling as a professional, with personal integrity, high ethical standards, and achievable standards for personal excellence. We are privileged to recognize her with the 2020 Thomas Undergraduate Research Mentor Award.

2020 Thomas Undergraduate Research Mentor Award

Dr. Blair Wisco is the recipient of the **2020 Thomas Undergraduate Research Mentor Award *for Early Career Faculty***. Dr. Wisco joined the faculty at UNCG in 2013 as an Assistant Professor of Psychology in the Clinical Psychology Program. Since then, she has mentored many undergraduates—nearly 25 in her PSY 433: Research Experience in Psychology course alone. The results of her mentorship speak for themselves. Three of her students have been awarded UNCG Undergraduate Research and Creativity Awards funding, four have worked with her on honors theses or independent research projects, and 10 have presented posters at major regional and national conferences. In one distinguished case, Dr. Wisco and a student collaboratively wrote and published an article in Cognition and Emotion (Normansell & Wisco, 2017), an important peer-reviewed journal in the behavioral sciences. Furthermore, her students have done well after leaving UNCG. Seven are in competitive, nationally prominent graduate programs.

In her teaching and research statement, Dr. Wisco remarked, "I am passionate about undergraduate research mentoring" and that she has consistently involved undergraduates in her research since joining UNCG. Her students are exposed to all stages of the research process, from the original conception of an idea to eventual dissemination of findings. Dr. Wisco's receipt of an R15 grant from the National Institutes of Health, an award that aims to increase opportunities for student participation in research, reflects the high quality of her work and the unique training opportunity that her lab provides. One student wrote of Dr. Wisco, "She considers the individual interests of research assistants in her lab and supports them. Time is taken to ask students what experiences they hope to gain from working in the lab, what they wish to learn. Dr. Wisco makes those opportunities available."

Another student wrote, "Dr. Wisco encourages her lab members to read and think critically about current literature, learn new skills, and develop their own research ideas" and that she has been "one of my biggest supporters as a budding scholar." Students agree that their time with Dr. Wisco benefited them greatly and helped them become more confident and skillful researchers. One student noted that Dr. Wisco is a "life-long mentor and amazing ally."

2020 Thomas Undergraduate Research Mentor Award

The Undergraduate Research, Scholarship and Creativity Office at UNCG established this award to recognize faculty members who engage students in projects that contribute to the expansion of knowledge and understanding in their discipline, while demonstrating excellence and innovation in doing so. Dr. Blair Wisco has managed to do this in exemplary fashion, and we are honored to present her with the 2020 Thomas Undergraduate Research Mentor Award.

ABSTRACTS

The Benefits and Challenges to Team Teaching in an Early Childhood Interdisciplinary Program

Student Author(s): Aliyah Janeen Aal-Anubia, Senior (Human Development and Family Studies)
Faculty Mentor(s): Heather Coleman (Specialized Education Services)

At UNCG there is a Birth to Kindergarten (BK) undergraduate program. The program is interdisciplinary with the departments of Human Development and Family Studies (HDFS) and Specialized Education Services (SES). Thus, many classes in the program are team-taught between an instructor from HDFS and SES, or instructors and graduate assistants, and some classes are team-taught with a family member that has a child with a disability. As part of on-going program development, the BK faculty gained students' and instructors' perspectives on how effective the team-teaching process is, the benefits, and the challenges. The research team conducted surveys of students, and interviewed instructors (faculty, adjunct, graduate assistants, and parent instructors) to gain their perspectives. The team will share and publish the information they gather as an example of an effective interdisciplinary program that practices team-teaching.

Switching Hypoxia Tolerance Strategies in the Brainstem of Bullfrogs, Lithobates Catesbeianus

Student Author(s): Sasha Adams, Junior (Biology)
Faculty Mentor(s): Joseph Santin (Biology)

Unlike humans, many vertebrate animals have the remarkable ability to survive prolonged bouts of oxygen deprivation. The neural circuit that produces breathing in the adult American bullfrog, *Lithobates catesbeianus*, is a network that arrests activity during anoxia. We've found that this network becomes 16 times more tolerant to hypoxia after frogs emerge from a cold-acclimation. This transition may reflect a reduction in noradrenergic signaling and/or a shift in energy use/metabolism. We first sought to identify if noradrenergic signaling is the sole cause of the arrest in control networks. We expected that norepinephrine would occlude the arrest during hypoxia, however, it did not, implying the arrest does not involve noradrenergic signaling. To test our hypothesis that metabolic deficits may contribute, we applied inhibitors of glycolysis or mitochondrial respiration. Each inhibitor recapitulated the actions of hypoxia, demonstrating that deficits in ATP synthesis produce an arrest. Cellular energy sensors,

such as K_{ATP} channels and AMP-dependent protein kinase, are known to reduce neuronal activity when ATP falls; however, activation of these mechanisms pharmacologically failed to arrest activity. A better understanding of how this network shifts from an arrest strategy to functional tolerance has the potential to uncover new principles for neuronal energetics relative to human diseases.

Female Film Directors Are More Likely to Create Stories with Strong Female Characters - Positively Influencing How Young Woman See The World

Student Author(s): Emma Albrecht, Sophomore (Media Studies)
Faculty Mentor(s): Sara Littlejohn (Ashby & Strong College)

Movies are a large part of today's culture and they influence how people view the world. Currently, female directors are vastly underrepresented in the film industry and are often overlooked in favor of their male counterparts. This means that the films that are currently being created are showing the world from only one point of view. This is important because it can drastically affect how people, especially young women, view the world. This is why I argue that the world needs more female film directors because the work that they create portrays strong female narratives that can positively influence how young women view themselves and the world. Using sources such as the book *Celluloid Ceiling: Women Film Directors Breaking Through* I will prove that there is a need for more female directors. The stories they tell are more likely to have a strong female character as the protagonist than male directed movies. It is important to me and I will prove why it should be important to you that young women see female characters on screen being portrayed as strong, independent, and capable of holding positions of power because that shows them that they are capable of doing that too.

Factors Driving Hispanics in the USA to Avoid Professional Medical Care

Student Author(s): Diana Angeles, Sophomore (Pre-Health Studies)
Faculty Mentor(s): John Sopper (Grogan College)

Early detection of diseases and illnesses is critical to the survival of patients and affordability of health care. Hispanics, the largest ethnic minority in the United States, tend to access medical/preventive care at lower rates than other groups and in a less

timely manner. (O'Hara & Caswell, 2012, pg. 9). This pattern results in Hispanics being at higher risk for undiagnosed chronic diseases, limiting their awareness of treatment plans available. The focus of this project is to identify the factors that contribute to the lower incidence of accessing medical care by Hispanics in the USA. More specifically examining the extent to which a cultural stigma around medical care is a contributing factor. The research strategies of this project include a literature review of journal articles, analysis of census findings & other government and agency databases. There is an expectation to find a range of factors impeding Hispanics from not only seeking professional health care when needed, but also utilizing preventive care. Understanding the factors that contribute to the disparities of healthcare for Hispanics will create a basis for constructing a new way of treating and informing Hispanic patients, thereby improving overall health outcomes.

Balance Confidence During a 12-Week Attentional Focus Balance Training Intervention for Older Adults with Fall Risk

Student Author(s): Zoe Austin, Junior (Kinesiology)
Faculty Mentor(s): Louisa Raisbeck (Kinesiology)

In older adults, the relationship between balance confidence (BC) and poor postural control is well established. Current fall prevention interventions are moderately effective at improving BC and postural control; however, they focus primarily on biomechanical aspects related to postural control and neglect cognitive factors, such as attentional focus (AF). Thus, the purpose of this study was to examine if AF instructions during balance training predict change in BC for older adults with fall risk. Older adults (N=52), who reported falling during the previous 12-months, were assigned to an EF or internal focus (IF) group. Participants completed a 12-week wobble board balance training intervention twice per week for 20 minutes with AF instructions. At baseline (Week 0), midpoint (Week 6), and post-intervention (Week 12), participants completed the Activities-specific Balance Confidence Scale (ABC-6). A linear growth model was estimated using hierarchical linear modeling to assess the effect of condition on individual growth trajectories of BC during the 12-week intervention. Condition did not significantly predict baseline BC or the BC growth curve $p > .05$. These results suggest that a balance training intervention using AF instructions may not influence BC in older adults.

ABSTRACTS

Solitary Confinement is a Failed Practice

Student Author(s): Ocean Bailey Ramirez, Junior (Sociology)
Faculty Mentor(s): Sara Littlejohn (Ashby College & Strong College)

Solitary confinement is a popular form of punishment within prisons. When inmates deviate from the rules of the prison, prisons tend to look towards isolation as the ultimate method to correct inmate divergence. If an inmate attempted suicide, depending on the amount of offenses, they're sent to isolation for a lengthy period rather than initiating proper healthcare. I argue that we shouldn't use solitary confinement as a form of deterrence within prisons because it has negative effects on inmates that cause the emergence of multiple psychological disorders, that result in added stress to mental conditions that an inmate possibly has, which can result in physical harm on themselves or towards others. This topic is important to me because it exposes the true treatment of criminals within prisons and what people suppress about their treatment. Sources that would be useful regarding this particular topic would be prisoner blogs, documentaries about the personal accounts of inmates, and article interviews from the perspective of psychologists such as "The Hidden Damage of Solitary Confinement" by Ramin Skibba. Isolation as a punishment is a practice that should not continue within prisons but rather replaced by alternative methods that improve inmates mental and physical health

Are Your Needs Met? An Analysis of Basic Necessities of Guildford County Older Adults in Nepali/Bhutanese and Congolese Refugee Communities

Student Author(s): Alisha Baity, Senior (Social Work), Ireti Adegbesan, Post-Bac (Human Development and Family Studies)
Faculty Mentor(s): Sudha Shreeniwas (Human Development and Family Studies)

Many refugees in the US are living in poverty and fall into the gaps in services provided by the welfare state safety net, such as Food Stamps, SSI benefits, and affordable housing, despite being eligible for these benefits. These needs and gaps may be greater for older adult refugees due to their age and other factors. We conducted a needs assessment of older adults in the Congolese and Nepali/Bhutanese refugee communities in the Guilford County area. The study was conducted using semi-structured interviews, to aid in understanding the needs of older adult refugees. This presentation will highlight the stories of refugee older adults in the area and how their basic needs for

housing, food, and clothing aren't being met. We will identify gaps in services and include key community recommendations pertaining to the two refugee communities.

Artificial Emotional Intelligence: Perfectly Imperfect Performance in Pierce Gradone's "Automaton"

Student Author(s): Taylor Barlow, Junior (Music)
Faculty Mentor(s): Andrew Hudson (Music)

Computers have evolved to become a prominent part of everyday life, making it easier to complete most tasks with fewer errors. Pierce Gradone's "Automaton" for solo bass clarinet recognizes the role technology began to play in music during the 1940's and 1950's and continues to play today. Performers can sometimes be viewed as an "imperfect shadow" when compared to a computer's capability to execute "flawless" performance. Many musicians chase after perfection in fear of becoming obsolete. However, what does it truly mean to be "flawless?" A computer is incapable of playing from the heart in the way humans are, often making our supposedly "flawed" performances more personal. "Automaton" deploys many "heartless" machine-like qualities through the use of extended techniques. This presentation focuses on enabling performers to walk the line of machine-like perfection and organic expression by exploring Gradone's usage of extended techniques, and how to engage them from either musical perspective. The piece starts with a machine-like passage of notes characterized by key clicks. As "Automaton" progresses, these machines crumble and a human voice emerges, leaving the technology either obsolete or wholly organic, and us to wonder whether we are hearing a truly human voice or a flawless computer reproduction.

The Montagnard Population Count Project (MPCP): Descriptive Findings

Student Author(s): Emanuel Barrera, Senior (Public Health Education)
Faculty Mentor(s): Sharon Morrison (Public Health Education), Sudha Shreeniwas (Human Development and Family Studies)

Montagnards ("Mountain-dweller") are indigenous people from Vietnam's highlands who fought alongside U.S. military troops and faced retribution from the Vietnam government. They began resettling in 1986 to North Carolina (NC), with the majority now living in Greensboro, NC. We have no exact population numbers and this lack of enumeration means Montagnards remain an underserved and underrepresented Asian American group. The Montagnard Population Count Project (MPCP) is a community-

academic collaboration effort to count Montagnards, and describe their health status, strengths, and challenges. Our guiding questions are 1) How many Montagnards live in the Greensboro area? 2) What is the age and sex profile? 3) What are the main health concerns? and 4) What does the community perceive as their greatest strengths and challenges? Our team used a culturally modified U.S. Census-based survey to collect data in Greensboro neighborhoods with Montagnards. Findings from 61 households indicate 144 males (52.6%) and 130 (47.4%) females, with ages ranging from 1 to 77. Health concerns included elder care needs, lack of insurance, unsafe housing and language barriers in healthcare. Findings underscore the importance of Montagnard inclusion in local, regional and national databases on Asian Americans.

Gendered Translation: Exploration of the Target Texts of Sign Language Interpreters

Student Author(s): Brianna Bear, Junior (PiD Interpreter Preparation), Andrea Shealy, Sophomore (Specialized Education Services), Abigail Copen, Junior (Specialized Education Services)
Faculty Mentor(s): Campbell McDermid (Professions in Deafness)

American Sign Language (ASL) is a visual-spatial language that differs from spoken language, such as English. One way is in the use and characteristics of pronouns (Meier, 1990). Pronouns in ASL, for example, are created by pointing to objects or locations in space (written in English here as POINT), and do not have a gender assigned to them as they do in English (he, she, him, her). So, interpreters must decide which gender to use. Limited research has been done on this topic (Quinto-Pozos, Alley, Casanova de Canales & Treviño, 2015), and so a study was created to address this gap. As part of the method, a small cohort of interpreters were asked to translate four stories from ASL into English concerning four different occupations (engineer, teacher, truck driver, secretary). These translations were videotaped. The researchers compared the number of references in the ASL stories (POINT) to the number included by the interpreters and looked at the gender the interpreters assigned the references. Preliminary data indicate that most interpreters assign a male gendered pronoun (he) for occupations statistically occupied by men and a female gendered pronoun (she) for occupations statistically occupied by women (Bureau of Labor Statistics, 2018).

ABSTRACTS

Symposia in the Periphery: Koressos on Kea and Sympotic Ideologies

Student Author(s): Michael Bell, Senior (Classical Studies)
Faculty Mentor(s): Joanne Murphy (Classical Studies)

The *symposion* (pl. *symposia*) was a uniquely Greek form of drinking party in which its participants, usually of the same economic status, drank water-mixed wine and engaged in an assortment of leisure activities. The institution is often attested in Greek literature of the Archaic to Hellenistic periods (8th to 1st century BCE).
In this paper I will argue that *symposia* were not merely settings for alcohol consumption among social peers. In fact, they also presented a venue for the proliferation and concentration of power among upper-class Greeks through mutual obligation and the development of political and economic networks. I will also trace the development of the city-state of Koressos on the island of Kea by investigating the proliferation of *symposion* ideologies and practices through material evidence collected by the Kea Archaeological Research Survey.
I will apply GIS data of surface-collected fragments of ceramic vessels used exclusively for *symposia* in order to characterize the spread of sympotic activities to Kea from the Greek mainland. I will also draw upon anthropological correlates related to hospitality practices to explain how the development of Koressos might have been facilitated by the participation of its elites in *symposia*.

How the Modern Patriarchy is Sustained by the Misuse of Religious Texts

Student Author(s): Rylee Bennett, Senior (Media Studies, Spanish)
Faculty Mentor(s): Sara Littlejohn (English)

Throughout history, religion has been used as a basis for teaching morals, ethics, and hierarchy within many societies. However, I argue that a lot of the texts quoted are being misused or taken without full application. Taking a more specific look at the Jehovah's Witness religious organization, one can see many examples of biblical texts being misused or applied without taking into account the full context. I am personally interested in this topic as a LGBTQ+, feminist, cis-gender woman and as a former Jehovah's Witnesses who grew up within the patriarchal system of the organization. Using sources directly from the Watchtower and Tract Society of Pennsylvania (the official publisher name for Jehovah's Witnesses) and Sheila Jefferys' *Man's Dominion : Religion and the Eclipse of Women's Rights in World Politics* the analysis of religious

texts and applied reasoning clearly shows a male oriented misperception. A solid conclusion of the misuse of religious texts will be drawn off of many primary and secondary sources as well as first-hand accounts experienced by former Jehovah's Witnesses. Readers will get a clear understanding of how texts are misused and misinterpreted to suppress women and uphold the male dominated hierarchy

The Power of the Human Psyche and Misinformation on the Anti Vaccination Movement in the United States

Student Author(s): Joseph Berry, Sophomore (Biology)
Faculty Mentor(s): Sara Littlejohn (English)

With every coming cold and flu season, reports flood in about the impact of not vaccinating as well as previously eradicated diseases and viruses starting to take a foothold in American society. Many including myself wonder why as scientific knowledge continues to advance why do individuals continue to leave themselves and others unprotected against ailments such as the flu, chicken-pox, and measles? Why put yourself in peril? The anti-vaccination movement in the United States has several elements of the human psyche that build the framework for thoughts and decision making such as fear, safety in numbers, and the idolization of false information that have led to the increase in momentum of the movement in recent years. Psychological and medicinal journals such as Drs. Daniel Jolley and Karen M. Douglas 's journal "Prevention is better than cure: Addressing anti-vaccine conspiracy theories" unravels the psychology behind the anti-vaccination movement and why it has been steadily expanding for years. The Human psyche is a complex entangled web and I will be unraveling this for the inner machinations of the anti-vaccination movement

Spatial Analysis of Burial Populations at Yarakachi, Moquegua, Peru

Student Author(s): David Blackman, Post-Bac (Archaeology)
Faculty Mentor(s): Donna Nash (Anthropology)

In 2009 while breaking ground for a new bus terminal in the city of Moquegua, a previously unknown cemetery was discovered in the area of Yarakachi. Burials from this site date from the Late Intermediate Period through the Late Horizon. Analysis of ceramics found in these tombs show that the cemetery was used by the Gentilar,

Tumilaca, Chiribaya, San Miguel, Porabaya, and Inka cultures for several centuries. GIS was used to examine the location of tombs with material cultural affiliated with these different styles. In addition, analysis of the types of grave goods was examined to assess the presence of social differences amongst the burial populations. These preliminary assays will direct future research to understand the interactions between groups during the use of the cemetery and to chart any changes through time from the LIP to Late Horizon in terms of burial goods or tomb architecture.

The Effects of Teachers' Prejudice Against Minority Children in the United States in Grades K-5

Student Author(s): Samaya Blango, Senior (Sociology),
Faculty Mentor(s): Sarah Littlejohn (Strong College), Jennifer Whitaker (Strong College)

My project focuses on minority children grades K-5 and how teachers in the educational system can affect their time in school along with other outside factors such as choices made out of school that can affect their future. I believe there is racism against minority children in school, whether it is intentional or not, and it sticks with them as they grow up. This topic is important and interesting to me because these children grow up and contribute to the world,we live in.
The words said to a child will be held onto for a long time because it is coming from someone that they are supposed to trust. For my sources I have been reviewing over different books and articles that focus on children and how they cope with prejudice. A specific article that I am focusing on is the article "The Implicit Prejudiced Attitudes of Teachers" by Linda Bergh. I suspect that the bias held against minority children negatively affects them and it leaves a long-lasting impact. These biases feed into things like the school to prison pipeline and feeding into the idea that minority children are seen as a nuisance in school.

Why is Patient Abuse so Common in Nursing Homes?

Student Author(s): Jacob Boger, Sophomore (Pre-Health Studies/Science)
Faculty Mentor(s): John Sopper (Grogan College)

Patient mistreatment happens everywhere in the medical field. However, in nursing homes it is much more common than in any other medical facility. “Although there hasn’t been very in-depth research into the topic, some research suggests that it is as widespread as child abuse is” (Hawes 2003). Elders living in long-term care facilities are particularly at risk for abuse and neglect. It is estimated that about 40% of us will enter a nursing home at some point in our lives, we wouldn’t want this abuse happening to us, so what is being done to stop it? In order to prevent abuse, it must first be recognized. This can be difficult. Therefore, this research study undertakes a review of scholarly studies and journal articles, advocacy group websites, and government databases to determine 1) the scope of the problem in long-term care facilities, 2) what is known about its causes and who is committing the abuse, and 3) what is being done to address the issue. Collecting this information in one place will allow this researcher to make recommendations that healthcare professionals can use to improve responses to the issue.

Progress Towards a Micro-Structured Stark Quadrupole Guide

Student Author(s): John Bracewell, Senior (Chemistry)
Faculty Mentor(s): Liam Duffy (Chemistry)

Polar gas molecules in electrostatic fields experience rotational energy level splitting due to the Stark effect. While some MJ states go up in energy in the presence of the field, others go down in energy. The ones that go up in energy in the field, feel a force in the direction of lower field and hence are referred to as Low Field Seeking (LFS) states, while those that go down in energy are High Fields Seeking (HFS). Researchers have successfully manipulated the trajectories of both LFS and HFS states using quadrupole fields that are similar to those found in quadrupole mass spectrometers. In 2004, Rempe and coworkers demonstrated such a macroscopic device to transversely trap and guide polar molecules from a helium buffer gas cryogenic molecular beam source. In in this poster we outline our efforts to design, model and construct a micro-structured quadrupole guide device for conventional molecular beams. Our trajectory simulations give the appropriate voltages and frequencies to apply. Despite miniaturization, the design still requires voltages larger than the normal solid-state electronics typically handle. The poster will focus on custom electronics we have designed, built and tested which makes use of standard electronics (MOSFETs).

ABSTRACTS

The Dynamics of Immune Responses to Viruses in Honey Bees, Apis Mellifera

Student Author(s): Asia Brannon, Senior (Biology)
Faculty Mentor(s): Olav Rueppell (Biology)

Several studies indicate that viruses play a major role in honey bee colony losses. However, the mechanistic details of virus infections in honey bees have received surprisingly little attention. Through this research, we hope to better understand immune gene expression and viral transmission by investigating how quickly the immune response occurs when bees come in contact with viruses, as well as how the virus transmits throughout the body. We hypothesize that there is an immediate immune response to viruses in multiple genetic pathways, specifically the RNAi- and Toll-6-pathway. Consequently, we predict that the expression of genes in these pathways will be measurably upregulated after virus exposure. We studied the effects of experimentally introduced Israel Acute Paralysis Virus (IAPV) on immune gene expression at eight different time points between 2 hours and 48 hours post-inoculation. The data was compared at all time points between treatment and control groups to determine when immune genes start to respond to the IAPV infection. The study is ongoing and results will be presented at the conference.

A Dimensional Characterization of Associations Between Schizotypy and Episodic Memory Updating

Student Author(s): Ayana Brower, Junior (Psychology)
Faculty Mentor(s): Chris Wahlheim (Psychology)

Schizophrenia has many well-established cognitive deficits, including in episodic memory. Individuals high in subclinical schizotypy symptoms serve as a model for these deficits that does not introduce confounds like medication or active symptoms. Episodic memory updating has not been extensively examined in either the clinical or sub-clinical population. Updating is crucial to adapting to changes in the environment and predicting outcomes. The present study employs a dual-list cued recall design with change detection and recollection measures. It will correlate these results with a multidimensional representation of schizotypy as negative, positive, and disorganized. The inclusion of the third dimension, disorganized, contributes to an especial paucity of relevant research. This study is

partly exploratory. Some expectations based on limited past research include greater interlist intrusions in the negative schizotypy group due to deficits in context processing and a set-size effect in the positive group due to increased spreading activation and decreased executive control.

Windows and Mirrors: An African-American Series

Student Author(s): Daysha Bullock, Sophomore (Art)
Faculty Mentor(s): John Sopper (Grogan College)

What it means to grow up as an African-American in this country is ever-changing, but it still holds many daunting parallels to the past. Many Americans who live outside of a minority community lack the empathy needed to understand and better support those who live as minorities. The central aim of this project is to produce an exhibit that serves as both a window into and a mirror of past African-American lives. The exhibit is designed to explore the individual experiences of both African-American males and females of the past in an attempt to have Americans beyond this community better understand African-American triumphs and hardships. The exhibit is a series of both digital and hand-drawn elements that come together to create a complete 48" by 36" graphic work of portraiture. The information brought forth in this exhibit stems from documented accounts of African-American experiences of the past. This exhibit physically utilizes phrases from historical accounts, along with imagery that best encompasses the individual experience presented in the historical documents. This exhibit not only serves as a way for Americans beyond this community to face African-American truth, but also serves as a vehicle for expression and representation of the marginalized.

Potential Utilization of Citrus Waste as a Source for Natural Food Preservatives

Student Author(s): Zoie Bunch, Senior (Biochemistry, Spanish)
Faculty Mentor(s): Nadja Cech (Chemistry & Biochemistry)

An array of spoilage and pathogenic bacteria can contaminate food products, resulting in foodborne diseases as well as product degradation. The processing of citrus fruits results in large quantities of by-products which are generally discarded into the

environment, posing the issue of waste disposal and increasing production costs. In this research project, the aim is to investigate the potential antimicrobial activity of orange peel extracts in order to progress toward the utilization of citrus waste as a waste reducing and cost lessening alternative to artificial additives. The peels from a commonly produced citrus fruit, the navel orange (*Citrus sinensis*), were extracted in methanol. The extract was partitioned using liquid-liquid extraction and the resulting layers were assessed for antimicrobial activity against *Salmonella enterica* and *Staphylococcus aureus*. Initial assessment shows similar levels of bacterial growth inhibition of both bacteria by a positive orange essential oil control and by the hexane layer. Future endeavors include further assessment of the antimicrobial activity of the extracts using bioassay guided fractionation and identifying and purifying antimicrobial compounds using mass spectrometry and column chromatography techniques.

Increased Acceptance of Marijuana has Led to More Young Adults Seeking Out this Drug for Pain Management Rather than Traditional Prescribed Medication

Student Author(s): David Burnett, Sophomore (Public Health Education)
Faculty Mentor(s): Sara Littlejohn (English)

How we manage pain has been an ongoing issue that continues to evolve as we discover more alternatives to traditional medicine. Currently we have a variety of ways to treat pain. This is done with prescribed medications such as Opioids. I argue that within the last 10 years the increasing use of marijuana among young adults indicates that the way we handle chronic pain is changing from the traditional prescribed medication method because of our readily available access, acceptance, and change in our laws for new alternative drugs. As a Public Health major, I find it fascinating that we continue to look for new alternatives to deal with pain. By using sources such as books like A Nation in Pain: Healing Our Biggest Health Problem, primary sources, and examining the shift between prescribed and alternative medicine I will conclude that marijuana has become a new way for young adults to manage their pain. This research will focus on how young adults are seeking out alternative drugs like marijuana and this is causing for us to relook at our laws against it.

ABSTRACTS

Down the Rabbit Hole of Mary Blair

Student Author(s): Michelle Calderon, Junior (Arts Administration), Victoria Scott, Senior (Sociology), Grace Clifford, Senior (Classical Civilization, Art History), Alexis Faggart, (New Media, Design)
Faculty Mentor(s): Heather Holian (Arts)

From her whimsical, swirling brush strokes depicting an iconic French castle and countryside to her colorful, abstract, almost childlike depictions of a certain lost boy, Mary Blair is one of the most well-known female artists of Walt Disney Animation Studios. She was one of the first women given the position of Art Director for an entire feature length film. Her art launched Disney into the Silver Age and she influenced the design of Disney films such as Cinderella, Alice in Wonderland and Peter Pan for a little over a decade. The focus of this project is the life of Mary Blair between the years 1948 and 1960. Because of her fame at the Disney studio, there is more information on her than most; however, there could always be more. By doing research, gathering information on Blair and creating a comprehensible timeline, our goal is to expand and better the existing knowledge of her life and work. We also hope to bring new and exciting information to light.

History of Anesthesiology

Student Author(s): Lady Carlin-Rojas, Sophomore (English)
Faculty Mentor(s): John Sopper (Religious Studies)

Pain, and efforts to reduce and avoid pain are as old as human life itself. And fear of pain is one of the major reasons people hesitate to get medical treatment, even treatment that can save lives. Recognizing the central role that controlling pain plays in achieving good health outcomes underscores the significance of anesthesiology. But anesthesiology as a distinct specialty in medicine has not always existed. Through an examination of academic and scholarly journals, textbooks, professional websites, and an interview with a current healthcare provider, this study traces the emergence and historical development of anesthesiology as a distinct medical specialty It also discusses the education and steps needed to enter this expanding medical practice. By understanding the history, development, and current practice of anesthesiology, this study provides an important orientation for those interested in in entering this field

ABSTRACTS

Characterization of Transgenic Tobacco Expressing Archaeal Thioredoxin Reductase B

Student Author(s): Quashawn Chadwick, Post-Bac (Biochemistry)
Faculty Mentor(s): Ayalew Osena (Biology)

Changes in global climates in the last century have put unprecedented stress on the growth and development of agricultural products. According to Schlenker and Roberts (2009) higher temperatures and longer, more frequent heat waves are pushing agricultural goods, such as corn (Zea mays), cotton (Gossyptium hirstum), and soybeans (Glycine max) beyond their evolutionarily adapted limits and they are predicted to decrease in yield by 30-40% under the slowest rate of global heating by the end of the 21 century.
The goal of this experiment is to improve crop resilience to environmental stressors i.e. heat. Pyrococcus furiosus Trx B will be expressed in transgenic tobacco (Nicotiana benthamiana) under the control of constitutive 35S promoters using Agrobacterium-mediated transformation. The transgenic lines are expected to be more resilient comparatively. We will use QPRC to measure the amount of trxB mrna in the transgenic plant and compare this to the empty vector controls as well as the nontransgenic wild type. We will use western blotting to assay the presence of translated Thrioredoxin reductase amino acid sequences and we will characterize the tobacco responses to heat stress qualitatively.

The Role of Sibling Intimacy in the Relationship between Mother-Adolescent Conflict and Adolescent Externalizing Problems

Student Author(s): Brittany Charles, Senior (Psychology)
Faculty Mentor(s): Susan Keane (Psychology)

Research shows a link between mother-adolescent conflict and adolescent externalizing problems. This study examined whether sibling intimacy buffers this relation. As adolescents often rely on siblings for support, a close sibling relationship may be protective in the face of high mother-adolescent conflict. Participants included 126 adolescents from the RIGHT Track Project. At age 15 adolescents completed a measure of sibling intimacy and mothers completed a measure of mother-adolescent conflict. At age 17 teachers completed a measure of externalizing behavior. Analyses revealed a significant main effect of mother-adolescent conflict predicting externalizing problems

(β=.203, p=.008). This was qualified by a significant interaction, indicating that sibling intimacy moderated the link between mother-adolescent conflict and externalizing behavior. Mother-adolescent conflict was significantly linked to higher externalizing symptoms at mean and low levels of sibling intimacy (β=.212, p=.003; β =.461, p=.000), but not at high levels (β=-.037, p=.693). Fostering high quality sibling interaction should be a focus of intervention efforts. Future research should examine more specific characteristics of the sibling dyad (e.g., age difference, gender match).

How does Stress Affect College Students' in the United States Performance?

Student Author(s): Ayana Cholula, Sophomore (English)
Faculty Mentor(s): John Sopper (Grogan College)

College students all across the United States report that they are suffering from stress levels that are affecting their academic, social, and emotional lives in numerous aspects (American Institution of Stress, 2019). Are these stress levels the results of growing pressure of going to college and succeeding academically, while also engaging in social life, finding a sense of belonging, being physically healthy, and more? What is contributing to an increase in self-reported stress? And what is the effect of these self-reported stress levels on students academically, physically, and socially? What are colleges and universities, specifically Student Affairs Professionals, doing to aid students in combatting their self-reported stress? To answer these questions, this study utilizes data collected from a review of scholarly journal articles. It also collects data through interviews with Student Affairs professionals on how universities assist in combatting stress, reviews of government databases/websites on stress, and on-campus advocacy organizations that assist students with mental health issues. The results of this study illuminates the causes and effects of stress, and what is currently being done to address it on college campuses. The findings of this study are important to improve the ability of student's and Student Affairs Professional's to better advocate for student well-being.

Understanding Unique Styles of the Composing Flutist

Student Author(s): Elizabeth Church, Senior (Music), Holly Boucher, Senior (Music)
Faculty Mentor(s): Erika Boysen (Music)

While there are different strategies for performing flutists to fully understand the unique compositional styles of different composing flutists, conversing with the composers and engaging in performances by the composers gives a greater understanding to performing in the style that is specific to them. Holly Boucher and Elizabeth Church propose to present a live performance that is representative of the different composers and flutists that they met or learned more about at the National Flute Association Convention. Holly and Elizabeth plan to do this through solo and duet performances that illustrate the different composer's and flutist's compositions styles, techniques, and personalities. Elizabeth will be performing the First Beat from Three Beats for Beatbox Flute. Holly will be performing a section from Forme by Blaz Pucihar. Lastly, Elizabeth and Holly will perform Mimic, a duet by flutist and composer Nicole Chamberlain. In conclusion, engaging with flute composers through conversation, reading music with them, and listening to performances of their compositions, allows flutists to perform their works in a way that is more specific and unique to the composer.

Landscape and Backround Flair of Mary Blair

Student Author(s): Grace Clifford, Senior (Arts, Classical Studies)
Faculty Mentor(s): Heather Holian (Arts)

The flair of colors in the scenery of *Peter Pan* (1953) and twirling swirls in the architecture and background of *Cinderella* (1950) invoke the name of Mary Blair to Disney artists and the lovers of Disney art. Mary Blair is one of the better-known female artists of Disney. She was one of the first females to be given the position of Art Director for an entire feature length film. Her art launched Disney into the Silver Age styling and she influenced the design of Disney for a little over a decade. She is most known for her work on *Cinderella*, *Peter Pan*, *Alice in Wonderland* and the Disneyland ride *It's a Small World*. This paper will argue that although her original concept art changes considerably and is not the image the audience sees on the final screen; her heavy influence is still visible in the landscape and background of the movies she worked on. This paper will examine the landscape of two of her specific works: *Cinderella* and *Peter Pan*. By providing a closer look into these specific films, art and landscapes, the goal is to illuminate how Mary Blair's work shines through, despite the finished film looking so different.

Theory Behind Student Leadership in Undergraduate Program

Student Author(s): Sarah Cobb, Sophomore (Teacher Education and Higher Education)
Faculty Mentor(s): John Sopper (Grogan College)

Are leaders born or made? During undergraduate college experience, students are encouraged to engage with leadership opportunities. At the University of North Carolina Greensboro, there is an office that focuses on Leadership. They have leadership workshops that students can partake in. By this notion, this supports the theory that leaders can be made. How is this possible? Through this study, the methods of how to make a successful leader through workshops and classes. Data will be collected by looking at the requirements of being a leader and seeing the statistics of students in leadership positions. This research will also look into what career and positions do alumni have. Leadership is one of the key traits that employers look for in employees. Hopefully, this research will help first years in college understand what they should invest their time to further themselves in their major and hopefully their career

The New World is (Blood)/Red

Student Author(s): Isaiah Collins, Junior (Music)
Faculty Mentor(s): Andrew Hudson (Music)

I wrote The New World is (Blood)/Red for Solo Clarinet as a portrait to Native American suffering as a result of European colonization of the New World. Being a Native American, I was able to incorporate first-hand experience of collective Native American suffering into this piece. This piece is written in two sections. The first section is based off of Zuni Sunrise, a traditional Native American flute song, that I've reworked to symbolize the relative peace and tranquility that Native Americans enjoyed before Columbus. The second section is based off of the Native American pow-wow and wartime song sound world and is intended to symbolize the suffering that my people have endured up until now. This peace is written with the intent to bring the Native American sound world into the contemporary music world with the hope that my people's traditions and musical understanding can continue to inspire new musicians in the same way that it has for me

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Social Media and Political Mobilization: The ABC Day Care Fire in Hermosillo, Mexico

Student Author(s): Alicia Connelly, Senior (Anthropology)
Faculty Mentor(s): Arthur Murphy (Anthropology)

On June 5, 2009, a fire in the ABC daycare center in Hermosillo, Sonora, left 49 children dead and 40 hospitalized. This paper examines the crucial role social media, including Facebook and Twitter, played in initiating and executing political mobilization, organizing events, articulating feelings, placing blame, and discussing strategies to achieve justice. Several identifiable groups have emerged on social media. Through content analysis, this paper identifies the factors that distinguish the groups. These results build on our past social network analysis of how parents of injured vs. deceased parents created new webs of relations after the fire.

How did the Hidden Racial Inequality for Students in Special Education First Begin, and What Can Educators do to Combat it?

Student Author(s): Riley Conway, Sophomore (Specialized Education Services)
Faculty Mentor(s): John Sopper (Religious Studies)

There has been a reoccurring issue in special education systems wrongfully placing students of color into their special education classrooms, because of a difference in culture and experience. How did it first begin, and how can educators combat the hidden racial stigma in the special education system? This research study will look at literature reviews of special education history and methods to determine how the racial gap first began, as well as taking real world experience from an educator who works in the special education department. Results will be expected to provide insight into how to ensure all special education classrooms are testing and placing their students fairly, and with regard to the diverse cultures and backgrounds, succeed in providing the students with a fair education.

Remembering When We Saw It: Is Context Memory Strategic and Learnable, or Automatic?

Student Author(s): Myranda Cook, Senior (Psychology)
Faculty Mentor(s): Peter Delaney (Psychology)

This project has proposed that storing mental context happens automatically and depends on numerous mitigating factors of material presented. In each condition participants watch a series of 50 faces, and are subsequently tested on 55 faces. They are tasked with identifying the novelty of a face and identifying where the face may have fallen in the previous series of faces. There are four conditions to test the impact of different factors on the encoding of stimuli. Experiment 1 presents faces for a longer time (8 seconds) to see if people just need more time to engage in strategic processes to store mental context, in comparison to a control group who view the stimuli for 5 seconds. (A possibility is that faces just take longer for people to strategically encode mental context.) Experiment 2 examines the intentional v unintentional learning of facial stimuli. The control group is told that there will be a subsequent test whereas the experimental group is not told that there will be a subsequent test. The implications of results are extremely generalizable when one thinks of topics such as eyewitness testimony and facial identification.

More or Less Dead

Student Author(s): Anna Cooksey, Senior (English)
Faculty Mentor(s): Jennifer Whitaker (English)

Criminologist Steve Eggers coined the term “less-dead” to refer to marginalized victims of serial killers—sex workers, children, the elderly, addicts, and queer-identifying or gender non-conforming people. Victims are either ignored completely or exploited heavily by the national media, often accompanied by problematic rhetoric that insinuates their own fault in their deaths. This project will attempt to explore some of North Carolina’s most underrepresented victims of violent crime and their stories through a compilation of poetry, interviews, and witness accounts. The goal of this project is to (a) recenter the narrative of the crimes around the experience of the victim at the expense (or exclusion) of the perpetrator and (b) analyze the public and law enforcement response to the crime. Ultimately, my goal is to create a piece of work that honors and represents the victims and engenders productive dialogue about the way the public interprets these cases. As this project is a creative work, I understand the nuance and limits that accompany creative expression. I do not wish to speak for the victims that suffered cruel and unnecessary fates at the hands of horrible people. I seek only to amplify their voice as it exists already.

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A Map of South Eastern Holistic Veterinarians in ArcMaps

Student Author(s): Isabell Cooper, Junior (Environmental & Sustainability Studies)
Faculty Mentor(s): Mary Hall-Brown (Geography)

Holistic Veterinarians are a small percentage of Veterinarians throughout the Southeast United States. They offer such services as acupuncture, chiropractic care, medicinal herbs, and many others to pet owners wanting to pursue more holistic methods of treatment. By looking through the website directories of several veterinarian organizations, a map of Southeastern Holistic Veterinarians was created (i.e. American Holistic Veterinary Association (AHVMA), American Academy of Veterinary Acupuncture (AAVA), the American Chiropractic Veterinary Association (ACVA), etc). Each holistic veterinarians address data was acquired from office and organizational websites, and geolocational data (latitude and longitude) acquired from Google Earth. Using ArcGIS, a mapping program from the Environmental Systems Research Institute (ERSI), a geodatabase was created that included the veterinarian's name, office phone number, type of vet office (small, large, exotic, etc.), type of holistic services offered (most often including chiropractic and acupuncture), and the office geographic coordinates. Analyses comparing the geodata set and the 2010 U.S. Census data revealed that holistic veterinarians are most often located in highly populated cities, which have universities and higher average incomes.

Fruit and Vegetable Consumption in Pregnancy: Associations between Skin Carotenoid Levels and Self-reported Intake among Pregnant Women

Student Author(s): Jenna Copley, Senior (Nutrition)
Faculty Mentor(s): Lenka H. Shriver (Nutrition)

A healthy diet during pregnancy, including fruit and vegetable (FV) consumption, is associated with positive infant and maternal health outcomes. While FV intake assessment is difficult, recent innovative RS-based skin carotenoid technology represents a promising option. This study examined FV intake of pregnant women utilizing the RS-based technique using the "Veggie Meter" and a self-reported All-Day FV Screener. Data was collected from pregnant women in their third trimester (n=128) enrolled in an UNCG-based longitudinal "iGrow" study. Participants completed 3 Veggie Meter index finger scans and reported frequency and portion size of FV consumed over the past month. Participants consumed 3.44± 2.68 FV cup equivalents/day. The total

FV Screener and the RS scores were not associated. Positive correlations were identified between the RS scores and FV Screener subscore for “Lettuce” (r=0.217; p=0.014) and "Other Vegetables"(r= 0.187; p=0.034). The RS scores were negatively correlated with Fruit Juice score (r=-0.213; p=0.016). While the screener is convenient, our findings show that FV consumption might be overreported and/or fail to reflect the variety of FV consumed. Further research is needed to establish the specificity of RS-based technique related to FV consumption.

Evaluating the in vivo Antioxidant Properties of Phytochemical Extracts from an Ancient Grain Teff (Eragrostis tef)

Student Author(s): Christopher Cotter, Post-Bac (Biology)
Faculty Mentor(s): Ayalew Osena (Biology), Zhenquan Jia (Biology)

Teff (Eragrostis tef) is a small grain cereal natively grown in East Africa, primarily Ethiopia, where it is a major staple crop. Teff is also grown in the United States, Australia, and South Africa primarily as a forage crop; however, it is gaining popularity since it is gluten-free, has a low glycemic index, and is rich in nutrients such as minerals, amino acids, and water-soluble vitamins. Additionally, teff is considered to have a high antioxidant capacity. Studies based on cell-free biochemical assays using small free radicals have suggested the presence of antioxidant activity in teff. However, this has never been validated in a physiologically relevant model of cell culture. This study evaluated the antioxidant activity of phytochemical extracts from teff in THP-1 human cell lines. The current findings and future directions of this project will be presented.

Fungal Compounds from the Underground Railroad Tree Inhibit Methicillin Resistant Staphylococcus aureus (MRSA)

Student Author(s): William Crandall, Senior (Chemistry)
Faculty Mentor(s): Nadja Cech (Chemistry & Biochemistry)

Antimicrobial resistant (AMR) infections are an increasingly important epidemic. Estimates from the Center for Disease Control (CDC) predict, in the year 2050, 10 million deaths per year will be caused by AMR infections or complications thereof1. This estimate is greater than yearly deaths caused by all types of cancer. One of these AMR pathogens is Staphylococcus aureus and more specifically the genetically mutated and

more clinically relevant strain, methicillin-resistant Staphylococcus aureus known as MRSA. Natural products have been a leading source of drugs and of antibiotics and are still largely unexplored. Of all the anti-infective small molecule drugs on the market, 70% are derived from natural products2. Fungi were isolated from the outermost bark of a 300 plus year old tulip poplar tree, which was present during the time of the underground railroad in the Guilford Forest in Greensboro, NC. Two fungi found in the tree have shown capability of inhibiting the growth of MRSA. Xylaria sp., one of the fungi isolated from the tree yielded greater biological activity. Small molecules produced by Xylaria sp. were isolated and structurally elucidated to using liquid chromatography coupled to high resolution mass spectrometry and nuclear magnetic resonance.

New Reaction Design: Deoxygenation of Allylic Alcohols

Student Author(s): Charles Crawford, Junior (Chemistry)
Faculty Mentor(s): Mitchell Croatt (Chemistry)

In the course of exploring various palladium-catalyzed transformations, a previously undiscovered one-step deoxygenation was uncovered. The research presented herein is the study of that allylic deoxygenation. In the past, deoxygenation reactions either included “activation” of a substrate in a precursory step, were performed on substrates that have different systems around the alcohol or required harsh conditions. Each of the reactions presented here require a mixture of reagents: an additive, an acid, a reductant, the palladium catalyst, and, of course, the substrate, along with a solvent. This complex mixture allows for small changes to all the variables, leading to a better understanding of the reaction itself, and each modification pushes the project in a particular direction. The deoxygenation has been successfully carried out to good yields (40% or more) and is being optimized further. Preliminary reactions suggest that this transformation will work with a wide variety of substrates, allowing it to be applied in a great scope to make more products accessible.

Automatic Detection of Rhetorical Devices in Science Policy Articles

Student Author(s): Larry Crotts, Junior (Computer Science)
Faculty Mentor(s): Nancy Green (Computer Science)

Science policy articles frequently include rhetorical devices authors utilize to influence the reader's opinion, whether it be for or against the topic at hand. Manually analyzing rhetoric in these articles is characteristically slow and cumbersome. We are devising algorithms that parse science policy articles to automatically detect rhetorical devices within them. To serve as a benchmark, we have hand-annotated the rhetorical devices in a representative article on the environmental effects of increased ocean acidification [Johnson and White, 2014]. First, using a natural language processing toolkit API (NLTK) and Python, we performed a lexical and syntactic analysis of the text. We then implemented an algorithm using the grammatical features to detect several types of rhetorical devices, including parison, antithesis, and positive/negative polarity. The results of the algorithm will be compared to the hand-annotated benchmark to determine the accuracy of the algorithm. Our current and future work is focused on improving the accuracy of the algorithm and extending it to detect other types of rhetorical devices.

Composition and Orbits of Stars and Gas in a Tidally Disrupted Starburst Galaxy

Student Author(s): Kamara Culbreath, Sophomore (Physics and Astronomy)
Faculty Mentor(s): Alicia Aarnio (Physics and Astronomy)

Due to the high rate of star formation in M82 and its interaction with its neighboring galaxy(M81), we believe that the motion of the stars and gas, the orbits, will associate with the motion of stars and gas of a neighbor. Which we suspect that there is going to be a unique type of chemical composition in M82 based on the high rate of star formation. We will take spectra using the 3.5m telescope at Apache Point Observatory to form a stronger understanding of the impact of tidal interaction on the motions of stars and gas in M82. From the finding, this will allow us to form a model of the motion of the galaxy based on the stars and the gases in M82. Thus, we will measure the radial velocities shown for lines that form at a distinctly different location in the galaxy. Also, comparing our data to a different location in the M82 galaxy from looking at the strengths of spectral lines of various elements. Furthermore, build a python pipeline script for the data collected to process and analyze the information/data that the observatory collected. Our goal is to process our data from Apache Point Observatory and publish it for compilation with other observations in the astronomical literature to construct a fuller understanding of the properties of M82.

ABSTRACTS

Characterization of Transgenic Tobacco Constitutively Expressing Galdieria Sulphuraria Superoxide Dismutase (GSSOD)

Student Author(s): Winta Daniel, Post-Bac (Biology)
Faculty Mentor(s): Ayalew Osena (Biology)

Known as the model plant species for the expression of transgenes, tobacco finds itself to be easily grown, providing an abundance of tissue, and for having a well-established cell culture system. This experiment examined whether or not the transgenic tobacco expressing GsSOD would be more tolerant to heat stress. The T2 transgenic lines with the HVHSP promoter wasn't effective with the GsSOD gene and the procedure was instead replicated, but with the 35 S promoter. In addition, the GsSOD T0 plants were exposed to techniques such as DNA purification, restriction digest, PCR, and gel electrophoresis. Results indicated very low concentrations and were possibly affected by the lack of the tissue sample and RNA contamination. The results were contrary to our expectations but have important implications for abiotic stressors on plants.

Young Writers' Camp - Community Voices

Student Author(s): Kalyn Danner, Senior (Teacher Education & Higher Education), Aaliyah Coleman, Senior (Teacher Education & Higher Education)
Faculty Mentor(s): Beverly Faircloth (Teacher Education & Higher Education)

Presently in typical classrooms, students that are English Language Learners are viewed many a time in ways that exhibit a deficit mindset. Because of this, these students must be permitted to create and maintain spaces that will showcase both their identities and abilities as successful and capable learners and writers. This research examines how English Language Learners were able to explore and express their identity and ability through writing in a youth summer writing camp. Multiple educational methods were used to understand how students created space for themselves and expressed their identity through their writing. Results showed that English Language Learner students were able to showcase themselves as: (1) authors of their individual stories; (2) teachers about their native country, culture, and customs; (3) creators and makers of projects of differing mediums; and (4) enthusiastic, persistent, and buoyant learners and individuals. This research serves to assist and inform educators and education students with strategies that can guide English Language Learner students' identity

development as writers and how to utilize those strategies to support students' writing in the classroom.

Photochemical Approach in Catalysis to Harness the Oxidizing Power of Molecular Oxygen

Student Author(s): Katherine Dezarn, Sophomore (Chemistry)
Faculty Mentor(s): Shabnam Hematian (Chemistry)

Cytochrome P450 enzymes are an important class of heme-containing proteins that are involved in many metabolic pathways and act as monoxygenases to initiate a diverse range of recalcitrant reactions such as the metabolism of drugs, biodegradation of xenobiotics or biosynthesis of hormones. These enzymes are capable of performing highly selective oxidative chemistry exquisitely using molecular dioxygen as their terminal oxidant, whereas high-energy oxidants are typically required to perform similar transformations by their synthetic analogues in the laboratories. Here the photolysis of our novel μ-oxo heme/copper complexes, $[(\text{porphyrinate})Fe^{III}–O–Cu^{II}(L)]^{+}$, are explored to develop a photocatalyst for light-driven aerobic oxidation of various substrates including hydrocarbons. The synthesis and characterization of the heterometallic μ-oxo-heme/copper complexes will be discussed. The susceptibility of μ-oxo species to photo-cleavage to generate postulated active intermediates (i.e., Cpd I and II) and subsequent reactivity in both anaerobic and aerobic conditions will also be presented.

Chemical Coordination Complexes for Photodynamic Therapy (PDT)

Student Author(s): Andrew Dodson, Senior (Chemistry), Marisa Sloan, Senior (Chemistry & Biochemistry), Craig Modjewski, Senior (Chemistry & Biochemistry), Kevin Doheny (Chemistry & Biochemistry)
Faculty Mentor(s): Jerry Walsh (Chemistry)

The CHE 481 Synthetic Techniques lab class prepared a series of polypyridyl ruthenium coordination complexes to support the PDT research of Prof. Sherri McFarland. The compounds were designed to be effective light absorbers in the red region of the electromagnetic spectrum. Upon absorption of a photon of light, the excited states of these compounds are capable of generating reactive species that can destroy tissue. The potential application involves injecting these compounds into a tumor site and then

photolyzing the region to destroy the tumor. The synthesis involved a two step process where first a ruthenium chloride starting material was combined with two bidentate ligands to establish a framework for the ruthenium complex. Next a ligand that can mediate electron transfer was attached to the remaining sites around the ruthenium metal center. The resultant products were characterized by visible spectroscopy, NMR, and cyclic voltammetry. Two of the compounds had never been reported in the chemical literature.

Comparative Study of the ABTS Redox Indicator in Various Solvents

Student Author(s): Kevin Doheny, Senior (Chemistry)
Faculty Mentor(s): Shabnam Hematian (Chemistry)

ABTS [2,2′-azinobis(3-ethylbenzothiazoline-6-sulfonate)] is one of the most commonly used redox indicators in industry and scientific research. It is widely applied in the food and healthcare industries as well as agricultural, environmental and biological research. The colorless ABTS can react with free radicals or other oxidants through one electron oxidation to form a stable green-colored radical ion (ABTS•+). ABTS and its radical cation form are soluble in water and a few polar organic solvents, which enables the measurement of both hydrophilic and lipophilic compounds in a variety of environments such as aqueous, organic, and mixed solvents. However, the exact nature of this system and its redox behavior in different media have not been fully understood. Our goal is to understand the exact speciation and redox behavior of ABTS/ABTS•+ system in various environments. To this end, we have studied the effect of salt concentration and the nature of buffering agents/electrolytes in aqueous media. Our initial findings have shown that the redox potential of the ABTS/ABTS•+ system changes depending on the nature of the electrolyte. We also have prepared a more hydrophobic ABTS salt that can dissolve in less polar organic solvents, including chloroform, acetone and acetonitrile. The preparation and redox behavior of this form of ABTS in different organic solvents will also be discussed.

New Novel Method of Heterogeneous Catalysts: Self-assembled Monolayers (SAMs)

Student Author(s): Enrique Dominguez Carcamo, Junior (Biochemistry)
Faculty Mentor(s): Kimberly Petersen (Chemistry)

Self-assembly is a highly effective and versatile strategy for surface functionalization, Self-assembled monolayers (SAMs) are usually formed on semiconductor, metal surfaces. The uses of SAMs are vast in the technological department. In the Petersen group, we're attempting to introduce a chiral catalyst into a self-assembled monolayer, which will be formed on a gold surface. We will use heterogeneous conditions and use the self-assembled monolayer to mediate a reaction previously done in the Petersen group. We expect the introduction of the SAM will have several practical and mechanistic advantages over previous works. Ideally, we expect to be able to recover the catalyst through filtration, which will decrease cost and time spent on building new catalysts.

The Association Between Environmental and Behavioral Factors and Vitamin D Concentrations In Adolescents

Student Author(s): Lauren Dorn, Senior (Kinesiology)
Faculty Mentor(s): Laurie Wideman (Kinesiology)

Poor vitamin D status is associated with the risk of developing chronic diseases. However, the influence of environment and behavioral variables on vitamin D status in adolescents is currently unknown. Therefore, the purpose of the this study was to examine the relations between vitamin D concentration (VitD) throughout adolescence, and the effect of oral contraceptive (OC) use, neighborhood environment, seasonality, and physical activity on VitD. Participants included adolescents from the RIGHT Track Project (N=105) that provided blood samples at ages 16, 17, and 19+. Questionnaires were used to measure other study variables. Results indicated VitD at age 16 was related to VitD at age 17 ($r = .67$, $p < .001$) and 19 ($r = .79$, $p < .001$). After controlling for race, sex, and socioeconomic status, there was a significant main effect of neighborhood quality predicting VitD ($\beta = -3.43$, $p = .038$). However, there were no significant main or interaction effects between VitD and neighborhood safety, physical activity, or seasonality. In addition, OC use did not affect VitD in females, although the heterogeneity in OC formulation may confound these results. Additional research is required to investigate the impact of specific environmental and behavioral factors on VitD in young adults.

ABSTRACTS

At the Beginning of the Twenty-First Century, Why are More College Graduates Becoming Entrepreneurs Instead of Working Underneath a Large Company?

Student Author(s): Chanel Dorsey, Sophomore (Business Administration)
Faculty Mentor(s): John Sopper (Grogan College)

In the twentieth century industrial economy, those with a business major usually decided to venture into fields such as accounting, HR administration or management positions within large, bureaucratic and prestigious companies. With the twenty-first century economy shifting into a more knowledge and service approach, many college business majors are opting to become entrepreneurs. This research study will show why recently more students have been drawn into becoming entrepreneurs. This study will use a review of recent scholarly literature on the changing economy and interviews and surveys from graduates from various majors and backgrounds to gather evidence as to why recent graduate have chosen entrepreneurship and the start-up venture instead of working underneath a major company. (add implication) With this study, incoming students, business leaders and future entrepreneurs will gain an understanding of how becoming an entrepreneur has become more popular within the twenty first century compared to working in large companies.

Mahonia Aquifolium as a New Drug Lead for MRSA

Student Author(s): Amanda Douglas, Junior (Nutrition)
Faculty Mentor(s): Nadja Cech (Chemistry)

Mahonia aquifolium, commonly known as oregon grape, originates in the mountain regions of the Pacific Northwest U.S. It is traditionally used for maladies including eye infections, acne, skin conditions, and urinary tract infections (UTI). The medicinal component, berberine of the oregon grape plant, has shown to have antibacterial properties, but no new properties have been identified since. MRSA, methicillin-resistant Staphylococcus aureus, can be found either on the skin or within the nose and is spread either from person to person contact or by fomite from direct contact. MRSA strain is resistant to commonly prescribed antibiotics such as amoxicillin and penicillin, therefore making it difficult for healthcare professionals to treat.
According to the United States' Center of Disease Control (CDC), there have been 119,000 Staph aureus related infections and almost 20,000 deaths in 2017. By using

bioassay-guided fractionation that includes extraction, partition, bioassay, and column chromatography techniques, the investigation will assess the bioactivity of oregon grape and identify the antimicrobial compounds responsible for the tested bioactivity. According to the initial MRSA inhibition bioassay, ethyl acetate extract had the highest bio-inhibition and the focus will be on isolating the bioactive constituents from this extract.

A Day in the Life of a Professional Ballet Dancer: What is it Like?

Student Author(s): Hannah Duell, Sophomore (Dance)
Faculty Mentor(s): John Sopper (Grogan College)

Thinking about the future can be very stressful for some, especially when the career path one has dreamed of is either out of reach or not as glorious as it seems. Therefore, focusing on dance majors, this research is geared towards finding out the most rewarding and the most challenging aspects of being a professional ballet dancer. This topic may seem very unimportant or unexpected. However, this career is very important to the one conducting the research. The methods used to conduct this research into the rewards and challenges of working in the ballet world are interviews, and textual evidence from scholarly books, online articles, and peer reviewed journals. There are always good and bad aspects within every career, however, if one loves the career enough, the bad aspects will never hold them back from fulfilling their destiny. Hopefully, this research will encourage young dancers to follow their heart's desire and help them understand what this career is truly like.

Cross-dataset Analysis of Archaeological Remains at Olduvai Gorge

Student Author(s): Nicholas Econopouly, Senior (Computer Science)
Faculty Mentor(s): Charles Egeland (Anthropology)

Olduvai Gorge, Tanzania is a uniquely preserved glimpse into the Early Pleistocene (a period between about 2.6-1.0 million years ago), where researchers can approach answers to common questions about early human evolution. Accumulations of animal bones and stone tools must be carefully excavated and entered into a detailed database, with specimens being both inspected individually on-site, and analyzed later, collectively, using statistics.

We set out with the broad goal of addressing bottlenecks in the process of collecting and analyzing faunal data and the possible corollary of standardizing parts of the workflow. On-site experience with excavation and data entry at the 2019 UNCG Paleoanthropological Field School at Olduvai Gorge, Tanzania allowed us to identify a common procedure that needed improvement: generating frequency distributions of one or multiple variables, grouped by level or excavation unit, across multiple datasets, and arranged in a table. These tables can then be easily visualized as charts using spreadsheet software. To this end we built a custom program to quickly merge datasets in multiple formats (including open formats like CSV and ODS). We applied our findings to compare weathering levels between an ancient fossil assemblage in Olduvai Gorge and a modern collection from a nearby taphonomy study.

Effects of Relationally Salient Labels on Children's Social Competence Behaviors

Student Author(s): Nicole Fanatico, Senior (Psychology)
Faculty Mentor(s): Stuart Marcovitch (Psychology)

Increasing social competence to help children make and maintain relationships is an important developmental competency. Previous research has explored executive function (EF) and social information processing (SIP) as contributors to social competence behaviors. Reflective thinking, an ability supported by EF and used in SIP, is an effective way to help children respond competently to social provocation. Reflection can be increased with the use of labels that help to direct attention to a given stimulus, in this case a socially provocative situation. The current study will introduce labels of relation (e.g., friend, disliked peer) to an adapted version of the Challenging Situations task (CST) paradigm. Four- to 7-year-old children will be assessed using this measure for social competence. The children will also be assessed for hot and cold EF abilities with the Delay of Gratification task and the Flanker task, respectively. It is predicted that the labels of relation will help children to facilitate SIP, increase the influence of EF (specifically hot EF) on their behavior, and to provide socially competent responses to social provocation. The benefit of the labeling manipulation will differ depending on the age and sex of the children. It is predicted that social relationships are more salient to older children, who also generally display higher EF. It is also predicted that boys and girls will differentially handle various types of conflict, depending on the social counterpart.

Voices Off Set: Reflections on the Unsung Heroes Project

Student Author(s): Atigre Farmer, Senior (Media Studies, Spanish), October Kamara, Senior (History), Muhammad Karim, Senior (Media Studies), Summer Kinney, Senior (History)
Faculty Mentor(s): Matthew Barr (Media Studies), Jennida Chase (Media Studies), Torren Gatson (History), Hassan Pitts (Media Studies),

The Unsung Heroes of the Civil Rights Movement project set out to collect and record oral histories of lesser known people who stood beside their more famous counterparts. Capturing these narratives is urgently needed, while the participants are still with us. Without action, their stories may be lost to the passage of time.
Two student teams consisting of history and media study students recorded oral/video histories in the form of video. The students assisted in a larger ongoing project, their work dovetailing into the national project that will span six decades of history, from 1960 to 1980. Through this experience, students were trained in oral history techniques and research skills applicable in an academic context and beyond. This round table discussion will highlight their experiences and showcase what they learned from this opportunity.

The Mermaid of Bellcove Bay

Student Author(s): Alex Faulkner, Junior (Acting)
Faculty Mentor(s): Denise Gabriel (Theatre)

In my presentation I will be talking about the development of my three-part play, The Mermaid of Bellcove Bay, which was inspired by my studies and personal experiences while in Provincetown during the Tennessee Williams Theatre Festival. While in Provincetown I experienced the subtle clashing of two communities: the local queer community and the ever-growing tourist population. This project came into fruition after I witnessed a family of upper-middle-class, assumed cis-heterosexual tourists gawk at a local drag-queen who was promoting her nightly drag show. This project is a personal fantasy-fear fugue that hides underlying queer-centric critiques of our society's moral values and practices. As I continue to develop this piece, I hope to discover a depth of knowledge about queer history that has been hidden and erased from our society. My purpose in creating this piece is to educate audiences, tell stories of those

who are silenced, and to challenge the modern norm we practice in our storytelling as artists.

Speak Up: Teaching Self-Advocacy Skills at the Speaking Center to Students with Disabilities

Student Author(s): Brianna Ferraro, Junior (Specialized Education Services, Elementary Education)
Faculty Mentor(s): Debra Holzberg (Specialized Education Services)

The use of academic accommodations is positively correlated with increased grade point average, higher persistence rates, and shorter time to degree completion. However, data indicate students underutilize accommodations for a number of reasons including a lack of confidence related to advocating for accommodations. Therefore, it is imperative to facilitate access to communication skills related to self-advocacy. Speaking centers (SC) are equipped with the expertise to instruct students to effectively advocate. Additionally, research indicates the efficacy of peer supports in teaching new skills - making the SC an ideal venue for teaching self-advocacy skills. The current study utilized a multiple probe across participants design to evaluate the effect of explicit instruction in self-advocacy, conducted in a university speaking center, on the ability of college students with hidden disabilities to request accommodations. Results indicated a functional relation between the use of the self-advocacy skills and students' ability to request accommodations from their instructors.

Prosthetic Physical and Mental Rehabilitation

Student Author(s): Megan Ferraro, Sophomore (Kinesiology)
Faculty Mentor(s): John Sopper (Grogan College)

One of the most important tools available to modern day physical therapists in the efforts to rehabilitate their patients is prosthetic devices. Prosthetic devices have evolved and greatly improved. However integrating these devices into a complete plan of care and rehabilitation is more complicated than initially understood. Even after patients are fitted for their device there are many more measures to be taken afterwards such as refitting of the prosthetics. The effects on a patient's mental health throughout their lifetime also has to be considered. This study conducts an interview with a physical

therapist, and it examines peer reviewed scholarly literature, Physical Therapy professional association websites, and patient advocacy organizations to determine the different factors. This has to be considered and monitored in order to assure that patients who receive a new prosthetic device are able to enjoy its full benefits and potential. Findings from the study provide physical therapists and their patients with a more complete understanding of what is involved in "rehabilitation".

Dissonance Between Film Critics & Audiences

Student Author(s): Zackary Fisher, Sophomore (Media Studies)
Faculty Mentor(s): John Sopper (Grogan College)

In the modern age of film production and release, the relationship between critics and audiences has become more and more defined. With this definition, there has also come dissonance; it has become evident that there is a disconnect between what a film critic deems as "good", versus what an audience deems good. This research project is intended to determine what caused this rift between the two primary consumers of film media, as well as solve whether this critic/audience dissonance is either harmful, helpful, or benign to the industry as a whole. Through interviews with members of the film criticism community, discussions with general audience members, and a brief investigation into the history of film criticism as a whole, this project hopes to discover general views towards the film criticism field and how they address movies, as well as any potential problems or issues that are posed to filmmakers as they try to satisfy all markets, critics and audiences alike.

Why So Few Disabled Doctors: The Misconceptions and Discrimination of Physically Disabled Individuals

Student Author(s): Jorden Frazier, Sophomore (Biology)
Faculty Mentor(s): John Sopper (Grogan College)

There are around 61 million adults (26% of population) living with a disability. 13.7% of these adults have a physical disability limiting their mobility. However, very few people with disabilities are currently working in the medical field. About 2% of physicians have a disability, and only 0.5% of graduating medical students are disabled (CDC, 2019; Dhruv Khullar, 2017; Cheri Blauwet, 2018; Dhruv Khullar, 2017). Although the ADA

strives to provide fair opportunities for disabled students hoping to become physicians, discrimination is still prevalent. The problem is that many medical schools choose not to accommodate disabled students, thus limiting the possibility of any significant increase in the number of disabled physicians. Consequently, disabled patients are less likely to receive undisputed empathetic healthcare. This research study examines the peer reviewed scholarly literature, disability advocacy organization web sites and conducts an interview with a disabled physician to determine what are the obstacles and possible solutions for increasing the number of disabled individuals who become healthcare providers.

What Parasocial Relationships Mean to Us and Why They're Formed

Student Author(s): Scotty French, Sophomore (Psychology, Sociology)
Faculty Mentor(s): Sara Littlejohn (Ashby College & Strong College)

The term "parasocial interaction" was coined by social scientists looking at the phenomena audiences forming a 'relationship' with media personae. These relationships become a means of individuals interpreting their own experiences and coping with them. I argue the reason behind this is due to a lack of social support and representation in viewer's lives. They seek that connection through other means and the mass media offers it. In some ways, I believe this relationship is beneficial; perhaps mediated support is better than none. This can be negative, however, if children start comparing themselves to influencers and develop body image issues or mimic negative behaviors. By using sources that delve into the processes behind this concept like the article that introduced the idea; Mass Communication and Para-social Interaction: Observations on Intimacy at a Distance, other papers within psychology and books by scholars in related fields, I will conclude this relationship dynamic is bred out of a need for social support. This research will explore a comprehensive understanding of what these relationships mean to us and why they're formed. What interests me specifically is seeing how individuals actively seek support through any means, even if that support is mediated.

Art Awareness

Student Author(s): Ethan Funk, Sophomore (Drama)
Faculty Mentor(s): John Sopper (Grogan College)

What are the consequences of leaving mental illness untreated (specifically for minors)? And how can artists bring more awareness to this problem? This is a two-part research and creativity project. Part one of the piece involved a review of current scholarly literature that examines the reasons why parents sometimes do not hear what their mentally ill children are saying, and that documents the potential consequences. In addition, first-hand stories were examined and allowed to inform the development of the piece. Phase Two was the creation of an awareness that is informed by the Phase One research. This is a piece about issues related to mental illness among minors and the difficulties families encounter when trying to come to grips with a child's mental illness. Specifically, the piece explores the interaction between children with mental illnesses and their parents, and the lack of help that some children experience because their parents don't take mental illness seriously. Also, it presents what happens what mental illnesses can turn into when not properly dealt with and left unchecked.

Examining the Association between Marital Instability and Anxiety: A Meta-Analytic Review

Student Author(s): Aran Garnett-Deakin, Senior (Human Development and Family Studies), Rachel Fuqua, Post-Bac (Human Development and Family Studies)
Faculty Mentor(s): Heather Helms (Human Development and Family Studies)

The purpose of the current study was to examine the association between marital instability (i.e., divorce or separation) and anxiety. Meta-analytic techniques were used to combine, analyze, and summarize previously reported empirical findings that examined the associations between marital instability and anxiety between the years 2000-2019. 41 total previously reported effects were examined using meta-analytic techniques. Previous research has shown that individuals who experience marital instability are 2.5 times more likely to develop an anxiety disorder than those who remain continuously married (Chatav & Whisman, 2007). Additionally, anxiety is associated with worse marital functioning and increased risk for marital instability (Mojtabai et al., 2017). The current study utilized the Vulnerability-Stress-Adaptation Model and Marital Discord Model of Depression to hypothesize about the associations between marital instability and anxiety. Aligned with hypotheses, a significant positive association between marital instability and anxiety was found, such that marital instability was associated with higher anxiety. This association was significant among cross-sectional but not longitudinal effects. The association was significant regardless of

the gender of the spouse with anxiety. Additionally, the association remained significant when depression and/or substance use were analytically controlled. Implications of this research, including the potential to inform future research, policy, and treatment efforts, were discussed.

The Importance of Saint Augustine for African Christianity

Student Author(s): Grace George, Senior (African American Studies Program)
Faculty Mentor(s): Omar Ali (African American Studies Program), Rebecca Much (Classical Studies)

Saint Augustine is considered a founding father of Christianity; he taught the scriptures and the importance of following Christ. Augustine taught in Thagaste, Milan, and Carthage. He gained influence from his friend, Ambrose of Milan and his mother, Monica who was a devoted Christian. Once Saint Augustine received his calling from Jesus, he started to spread Christianity throughout the Mediterranean and Africa. He wrote books to help his students have a better understanding. Augustine is importance because his blackness is defined through the spreading of Christianity in Africa. The main argument within my research was: even though Western Christianity is mostly practiced in society today, I want to argue that Augustine's importance should be recognized in Africa because he helped the spread of Christianity thus allowing the religion to become prominent. This research is important for knowledge because Saint Augustine was an African founding father of Christianity his blackness is important for many discussions because of his influence.

Longitudinal Case Study of Neurocognitive Decline Following Pediatric Cerebellar Medulloblastoma

Student Author(s): Abigail Giles, Senior (Psychology)
Faculty Mentor(s): Tiffany Cummings (Psychology)

Objective: We expanded upon an early case study suggesting long-term, sequential neurocognitive evaluation and academic interventions following pediatric cerebellar medulloblastoma. This five-year-old patient (now forty) has indeed undergone lifespan assessment and clearly benefitted from appropriate interventions to date.

Method: This left-handed, white, male is status post (s/p) gross total resection and whole brain radiation. In adulthood, he developed radiation necrosis with hemorrhage and refractory seizures (s/p right temporal lobectomy). More recently, radiation induced bilateral parietal meningiomas were identified (s/p gamma knife).
Results: We analyzed cognitive, medical/oncological, imaging and interventional data at developmentally meaningful time points and found consistent declines in intellectual skills and cognitive function spanning attention/concentration, processing speed, visual perceptual/organization and visually based learning/memory; however, we noted stabilization and even improvement in important areas. Areas of age-appropriate functioning were noted in expressive vocabulary, verbal abstract reasoning, delayed verbal memory, and problem-solving, among others.
Conclusions: Although some studies have addressed long-term outcomes in pediatric medulloblastoma, we provide a unique perspective to the literature by documenting serial neurocognitive findings in addition to interventions across the lifespan. Our findings suggest that appropriate academic interventions/neurocognitive rehabilitation strategies are in fact meaningful at the individual level and propose that a focus on strengths can improve outcomes. We propose that this previously recommended model of assessment/intervention truly become the available standard of care in all pediatric oncologic populations.

Is Wikipedia a Valid Scholarly Resource?

Student Author(s): Jacob Goin, Sophomore (Library & Information Studies)
Faculty Mentor(s): Sara Littlejohn (Ashby College & Strong College)

Wikipedia has long been discredited as an untrustworthy source by teachers and students alike. This is due to the collaborative nature of the website, where anyone can add what they want to the site and edit information. However, I argue that Wikipedia should be considered as a scholarly resource because the collaborative nature of the website parallels the way that we as humans have collected information and knowledge over time. I am interested in this topic because, other than hearing that Wikipedia is not trustworthy because of the nature of the website itself, I have not heard any compelling evidence as to why it has the reputation that it has. Moreover, being an information science major, I am very interested in researching the ways that information is spread and the philosophical idea of epistemology. By using sources such as the book Wikipedia U: knowledge, authority, and liberal education in the digital age and articles from the

journal Information, Communication & Society I will provide compelling information that will decide whether or not Wikipedia is a source that can be trusted for doing academic research. This research will be vital to supporting the case for Wikipedia and changing the minds of students and teachers nationwide.

Sculpting with Robots in Italy

Student Author(s): Karena Graves, Post-Bac (Art)
Faculty Mentor(s): Patricia Wasserboehr (Art)

The Digital Stone Project (DSP) is an international collaboration with the company Garfagna Innovazione in Gramolazzo, Italy, that brings artists, educators, architects, and students to the Tuscany region for technical training on CNC machines, 3d software programs, stone-carving demonstrations, Autodesk-sponsored workshops, and lectures on cutting edge technology. The DSP provides a state-of-the-art digital facility equipped with computers, software, 3d printers, and 7-axis robotic carving arms. The DSP also provides an in depth tour of the process of mining and cultivation of marble. The program was founded in 2005 by Jon Isherwood who is at the forefront of digital sculpture and is highly respected in the field of fine art for his groundbreaking work that combines technology with traditional materials and techniques. Karena Graves designed a prototype for a unique sculpture using newly acquired skills in 3D modeling software by furthering their research into architecture, the human body, and shoe structure in symbolic ways to inform their sculpture compositions. At the culmination of the workshop, Karena's sculpture was included with all DSP participants in an international exhibition in the Tuscany region of Italy.

Disney Women Artists of Today: Shaping the Visual Art Direction

Student Author(s): Joanna Haboon, Senior (Arts Administration), Claire Depaoli, Senior (Arts Administration), Simon Wharton, Senior (Art), Jaziah Johnson (Art)
Faculty Mentor(s): Heather Holian (Arts)

The women artists of the Walt Disney Animation Studio have a history of significantly contributing to the visuals and narrative of films since the studio's beginnings. Yet, they have been uncredited and overlooked for decades. Using online sources, interviews, and

visual sources, this project's goal is to recognize the careers of two contemporary Disney female artists, Claire Keane and Neysa Bové.
Claire Keane is an illustrator and visual development artist. She comes from a family of artists, including her father who also worked at the Disney Studios. We will explore her work on the films Enchanted (2007), Tangled (2010), and Frozen (2013), as well as her career after leaving the studio.
Neysa Bové is a Spanish artist who has worked for the studio since January 2015 as a Visual Development Costume Designer. Her sister largely influenced her path to working at the Disney company. She has contributed to several films such as Moana (2016) and Frozen II (2019). We will examine her contributions while at the Disney Studio, as well as her other works over the course of her career.

How is Industrial/Organizational Psychology Building a Culture that Values and Promotes Women?
Student Author(s): Marisa Harden, Sophomore (Psychology)
Faculty Mentor(s): John Sopper (Grogan College)

Today, women hold a higher prestige now than in the past, but it is still a constant struggle to be recognized and appreciated from others professionally. Women can have almost the exact same achievements as a man, but the man could get appointed to a superior position over the women or be paid more. Some studies claim to find that the different qualities of men such as being more task-oriented help them perform better in higher positions, whereas women's traditional qualities of being more nurturing can prevent them from being as effective as men in managing others. According to these studies, the different qualities of men and women explain the difference in promotion and pay. This study questions these findings. Using peer reviewed articles and studies that other experimenters have conducted, it examines how current research in the field of Industrial/Organizational Psychology understands the reasons behind the different treatment of men and women in the workplace. And it explores the contribution of psychological research to building a culture that values and promotes women in the workplace.

Astrology: Why do we like it so much?
Student Author(s): Aleeah Harris, Sophomore (English)

Faculty Mentor(s): Sara Littlejohn (Ashby College & Strong College), Jennifer Whitaker (History)

I argue that the reason why Generation Z and Milliennials like to look at their zodiac sign is to see how others describe them from another point of view.
We often see many things about zodiac signs and there are many people in this world who look like to look at them and don't know why. I found this research to be quite interesting because many people like to look at the characteristics of their zodiac sign without even wondering why they like to look at it somethings, and I believe I have found my answer. The reason why people like to look at their zodiac sign is because we want to see how other people view us. In this research project, I plan to show the reasons as to why we like reading about ourselves and how we apply these things to everyday life. In the article, Dissertation Abstracts International: Section B: The Sciences and Engineering written by Dyane Sax, he talks about why we think that reading about signs play an important role in our lives. Because of this, my research will explain why astrology interests us.

Mental Health Stigma on the Lower Class System

Student Author(s): Raniella Hernandez, Sophomore (Public Health Education)
Faculty Mentor(s): John Sopper (Grogan College)

According to the Center for Disease Control and Prevention (CDC) most Americans will be diagnosed with a mental illness or disorder at some point of their lifetime. Looking at the research studies from the website, Public Med Central, maintained by the US Library of Medicine and the US Institutes of Health indicates that most of the population that is considered low and middle income have to a higher burden of mental illness, with variables such as education, food insecurity, housing, social class, socioeconomic status, and financial stress exhibiting a strong association with mental illness. Mental illness used to be taken more seriously as an issue needing professional medical treatment, but it has become more normalized. Many more individuals with mental health issues are not seeking professional help. Instead they are dealing with it themselves. Some studies have argued that the decline in seeking professional care is caused by social stigma against mental illness. This research study investigates the effects of the fear of being judged on suffers willingness to seek help for their mental health issues. By helping the general population better understand the negative effects

of stigma, findings from this research can contribute to improving mental health outcomes.

Family's Impact on the Development of African American Children in Kinship Care

Student Author(s): Kiara Hickman, Junior (Social Work), Danyelle Smith, 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) and their risk of BP. Thus, we are conducting a two-phase mixed methods study is 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 inform better prevention and intervention services to interrupt the negative trajectories of these areas that are typically experienced by children in kinship care.

Synthesis and Characterization of Strained Ruthenium Complexes as Dual-Action Photochemotherapy (PCT) Agents

Student Author(s): Rachel Hodges, Senior (Chemistry)
Faculty Mentor(s): Mitchell Croatt (Chemistry), Sherri McFarland (Chemistry and Biochemistry)

New cancer treatment strategies are urgently needed for both hard-to-treat cancers and those that have failed standard therapy. Photodynamic therapy (PDT) is a promising alternative that could improve patient outcomes. While underutilized as a mainstream

cancer therapy, it has many advantages over current therapies (e.g., chemotherapy). PDT utilizes a nontoxic photosensitizer (PS), a light-activated compound, to kill tumors. This process involves the generation of reactive oxygen species solely where the PS, light, and oxygen overlap. This makes PDT intrinsically selective, unlike chemotherapy. However, PDT is less effective against tumors that are not well oxygenated. Therefore, researchers are investigating light-triggered mechanisms that do not rely on oxygen in a related strategy called photochemotherapy (PCT). PCT induces tumor death through an oxygen-independent pathway. We are interested in designing new PSs that can act via both PDT and PCT mechanisms, known as dual action PCT agents. These agents will be ruthenium complexes with a strained ligand and an imidazo-phenanthroline ligand. This project focuses on the synthesis and characterization of strained ruthenium complexes. Tumor cell assay data will be provided by another researcher to investigate their viability as dual action PCT agents.

Screening Endolichenic Fungi for Antimicrobial Metabolites

Student Author(s): Sabiba Hossain, Senior (Biochemistry)
Faculty Mentor(s): Nadja Cech (Chemistry)

Endolichenic fungi are a diverse group of fungi that live asymptomatically in the thallus of lichens, and are a potential source of bioactive natural products. Over the past decade there has been a noticeable increase in publications on endolichenic fungal metabolites that fall into a variety of chemical structure classes and are potent against a diverse array of biological targets. The goal of this study was to investigate endolichenic fungi isolated from North Carolinian lichens for bioactive metabolites using an untargeted metabolomics profiling approach with liquid-chromatography-mass spectrometry (LC-MS). Fungi cultures were isolated from multiple lichen samples and grown on rice media. Cultured endolichenic fungi were extracted and the LC-MS data was collected for each fungus. As part of this study, the bioactivity against methicillin-resistant Staphylococcus aureus (MRSA) was evaluated for an extract from each isolate. One extract was identified as Aspergillus glaucus and showed inhibition against MRSA with an MIC of 50 μg/mL. Efforts to further purify the compounds responsible for this activity are ongoing.

Teachers and Negative Attitudes

Student Author(s): Kawla Htee, Sophomore (English)
Faculty Mentor(s): John Sopper (Grogan College)

Students' academic performances are affected by teachers' attitudes, especially negative attitudes expressed in a classroom setting. Is there a correlation between the process of becoming a teacher and teacher's attitudes towards students? What aspects of teacher education and training might contribute to teachers having attitudes towards students that harm students' academic performance? This study will mainly focus on requirements to becoming a High School teacher in North Carolina. The study uses a survey of students to understand how teacher's attitudes are a problem from the students' perspective. Using research from peer-reviewed journal articles and books, as well as an examination of University teacher education requirements and an interview with a University faculty member involved in teacher education, this study also explores how teachers' negative attitudes are either learned or left unchallenged during the process of teacher education. The results of this research project are important in helping to improve teacher education and ultimately, the students' experience of learning.

The Role of the WNT5A Isoforms in Bone Dynamics

Student Author(s): Ihotu Ijaola, Senior (Biology), Stephanie Woods, Senior (Biology)
Faculty Mentor(s): Karen Katula (Biology)

Bone is a living, hard connective tissue, that is continually being broken down and reformed due to the activity of two cell types osteoblasts and osteoclasts. The balance between these cells determines the health of bone tissue cells. In this study we focused on the role of WNT5A isoforms in controlling the development of the osteoblast and osteoclast. WNT5A is a secreted protein that binds to cell surface receptors and initiates a signaling pathway. hFOB1.19 (pre-osteoblast) and Raw 264.7(preosteoclast) cells were treated with WNT5A isoforms L(A) and S(B). Differentiation of these cells types into were assessed by measuring specific markers (osteoclast-RANK receptor; Osteoblast RUNX2, osteocalcin, osterix and LRP/6 receptor). Marker transcript levels were measured by quantitative PCR. We found that both isoforms enhanced expression of cell-specific markers. This indicates that WNT5A isoforms play a role in regulating the major bone remodeling cells. Hence WNT5A isoforms may serve as a target for modifying bone tissue dynamics and bone-related diseases plus conditions.

ABSTRACTS

Fear of Job Loss and Hypertension Prevalence among Latinos Living in the United States

Student Author(s): Oluwaseyi Isijola, Senior (Public Health Education)
Faculty Mentor(s): Sandra Echeverria (Public Health Education)

There is a robust body of evidence indicating that stressful life experiences alter biologic mechanisms that increase susceptibility to cardiovascular (CV) risk factors. Latinos are disproportionately employed in low wage occupations that can trigger stressors and the development of CV risk factors such as hypertension. The purpose of this study is to examine the association between fear of job loss and hypertension among Latino working adults and examined if the association between fear of job loss and hypertension remains after accounting for socioeconomic position (SEP) and behavioral factors. We utilized the 2015 National Health Interview Survey (NHIS) a nationally representative sample (n=3,229) of U.S. households that included working Latino adults 18+ years of age or older My role in the study was to conduct a literature review on existing manuscripts, assist with data interpretation and prepare a manuscript for publication. Findings indicated that work-related conditions like fear of job loss were associated with increased prevalence of hypertension. Public health strategies are needed to create supportive work environments to reduce risk of hypertension.

The Questionable Fear that is Still Circulating around Vaccines Needs to be Discussed in Order to Understand why it is Still Present

Student Author(s): Jasmine Jackson, Sophomore (Accounting & Finance)
Faculty Mentor(s): Sara Littlejohn (Ashby College & Strong College)

The tension around vaccinations has been present ever since their conception. However, with living in the twenty-first century, is that fear still necessary? With the fast production of technology through the decades, the medical field has successfully eradicated many infectious diseases that have plagued humanity. Even though all of this information is accessible, this still hasn't happened. The question is why? the media has a lot to do with it. although the medical field has prospered significantly due to technological advancements, the same progressions have also made it easier for false information to be able to spread quickly. Using sources starting with Seth Mnookin's book The Panic Virus: The True Story Behind the Vaccine-Autism Controversy and an article from Gale in Context, "Fresh dispute about MMR 'fraud': pathology records are at

the centre of a new disagreement over disgraced medic Andrew Wakefield," I reveal to my audience of the unjust fears surrounding vaccines and why they continue to exist. I am interested in this topic because I want to learn why people are choosing not to get vaccinated.

Myanmar's Religious and Ethnic Conflict: A Case Study

Student Author(s): Lindsay Jamerson, Senior (Peace and Conflict Studies)
Faculty Mentor(s): Jeremy Rinker (Peace and Conflict Studies)

This case study analyzes the Rohingya ethnic cleansing and investigates the current conflict while explaining more complex questions involving the crisis; this is done by describing and addressing its escalation. The framework used to support this analysis is Christopher Mitchell's SPITCEROW. By using this framework as a guide to analysis, it is conclusive that the Rohingya are being systematically abused as a result of historical oppression and European imperialism. Additionally, multiple intervention strategies are introduced.

Plant Invasion Effects on Inset Abundance in Mixed Grass Prairies in Wyoming

Student Author(s): Katielyn Johnston, Senior (Biology)
Faculty Mentor(s): Sally Koerner (Biology)

Invasive weeds are a global problem in grasslands because they often harm the native animal communities. Here, I examined how invasive grasses, *Bromus tectorum* and *B. arvensis*, impact insect biodiversity in Thunder Basin Grassland in Wyoming. Insects were collected with a modified leaf blower from plots with varying levels of invasion (0, 25, 50, 75, and 100% invaded). Then, I sorted the insects from debris, put them into separate containers, and weighed each individual. I hypothesized that as the percentage of invasive weeds increases the abundance of insects will decrease. Biomass is the weight of the insects that have been collected and weighed. To see the difference in biomass across the plots ranging from 0% to 100% invasion I will add up all the insect's weight in the plots of that percentage and take an average to compare to the other plots. Preliminary data suggests my hypothesis is supported because the plots with 0% invasion have more biomass than the 25% plots. This study is necessary to determine if invasive weeds in grasslands have a negative impact on insect biomass.

Growth and development of *Arabidopsis thaliana* wild-type genotypes in gravitational stress conditions

Student Author(s): Alena Jones, Senior (Chemistry)
Faculty Mentor(s): John Z. Kiss (Biology)

Plant development is affected by numerous stressors, but some genotypes are more resistant than others. In spaceflight, on the Moon or Mars, plants experience stress from reduced gravitational acceleration. Plants are crucial for astronauts as they account for food, oxygen, and psychological benefits. The goal of this study is to identify which of the 100 *Arabidopsis thaliana* wild-type genotypes are resistant to gravitational stress. A 2D-clinostat, rotating at 1.25 rpm, was used to simulate gravitational stress. Plates with surface-sterilized seeds were placed on the clinostat for seven days while a control group was kept vertical. Plate images were analyzed with Fiji software to measure shoot length, main root length, number of secondary roots, total root length, and number of root hairs/total root length. T-tests were used to compare clinorotated and vertical seedlings from each genotype. Preliminary data from 37 genotypes suggest that majority of clinorotated seedlings have reduced shoot and root growth when compared to vertically grown. One genotype, CIBC-5, has potential for gravitational stress resistance based on shoot and root growth. Several genotypes will be used for further studies based on other parameters. The next goal is to identify which genes are involved in developing resistance to gravitation stress.

Understanding the Link Between the Juvenile Justice System and Mental Health

Student Author(s): Hannah Jones, Sophomore (Social Work)
Faculty Mentor(s): Sara Littlejohn (Ashby College & Strong College), Jennifer Whitaker (English)

In order to delve deeper into the correlation into teenage mental health as it relates to juvenile corrections and the justice system, I have been researching peer-reviewed journals like "Effect of Mental Health Treatment, Juvenile Justice Involvement, and Child Welfare Effectiveness on Severity of Mental Health Problems." To properly develop a more concise and healthy future for the youth, and to learn how to better treat the currently affected youth of mental health disorders (as been seen as up to 75% in juvenile corrections facilities), it is important to evaluate the characteristics, patterns

and the social implications that we see the youth take on while attempting to cope with their disorders and diseases, often of which are passed down through genetics and/or induced childhood trauma. This is a very important topic to research and understand in order to progress the outcome of individuals that wind up in the juvenile justice system. I will continue to collect sources of relevance, though predominantly secondary, in order to aid in this discussion on how to move forward rather than backwards when discussing the development of programs and treatments for the population affected.

Relating Strategic Memory Skills to Math Calculation Performance in Kindergarten

Student Author(s): Keichelle Joyce, Senior (Elementary Education, Special Education), Olivia Cook, Post-Bac (Human Development & Family Studies)
Faculty Mentor(s): Jennifer Coffman (Human Development & Family Studies)

Literature investigating the development of children's deliberate memory has suggested that the use of mnemonic strategies is important for children's success in school (Ornstein, Coffman, & Grammer, 2009). Previous work has also highlighted how early strategic-like behaviors emerge in young children. Although studies have been unable to link early strategic behavior to recall ability for children younger than 6 years old (Baker-Ward, Ornstein, & Holden, 1984), researchers suggest that these early strategy-like behaviors are precursors to appropriate techniques for remembering later in elementary school (Ornstein, Haden, & San Souci, 2008). In order to better characterize children's emergent strategic memory skills as they relate to recall ability – as well as to other indicators of academic skills – we assessed strategy use and recall in an Object Memory Task (Baker-Ward, Ornstein, & Holden, 1984) upon entry to Kindergarten and children's math calculation skills (Schrank, McGrew, & Mather, 2014) at the end of the school year. Preliminary analyses highlight associations between Kindergartners' verbal remembering strategies to their recall performance ($r=.33$, $p<.01$) as well as behavioral remembering strategies with their later math calculation skills ($r=.31$, $p<.01$). These and other results will be discussed in order to better understand the role of children's strategy use for children's recall ability and math skills.

Synthesis of Building Blocks for Incorporation into Chiral Ligands

Student Author(s): Salem Jumana, Junior (Chemistry)
Faculty Mentor(s): Terence Nile (Chemistry)

Many important biologically important molecules, such as drugs, can exist in two forms that are identical except that they are mirror images of each other. This is like our right and left hands. This distinction can be important in the body where these two forms, enantiomers, can interact in very different ways with biological molecules such as enzymes etc. Our focus is on the area of asymmetric catalysis where small amounts of chiral catalysts are used to produce large quantities of chiral product. These chiral catalysts are usually made up of two parts: a metal atom and its attachment, the ligand. My research has involved the synthesis of chiral building blocks that I will incorporate into novel chiral ligands. These building blocks have ben based on valine, an amino acid that is available from nature in a chiral form. Molecules whose synthesis will be presented include: PhCH2(H)NCH(Pri)CH2N(H)CH2Ph, H2NCH(Pri)CH2NMe2, Me2NCH(Pri)CH2NH2 and (PhCH2)2NCH(Pri)CH2CH2OH.

Effects of carbon nanodots on tumor necrosis factor-alpha-induced pro-inflammatory cytokine interleukin 8 in vitro and in vivo.

Student Author(s): Zi Yae Kang, Post-Bac (Biochemistry)
Faculty Mentor(s): Zhenquan Jia (Biology)

Cardiovascular diseases (CVDs) are the number one cause of death globally. One of the most common types of CVD is atherosclerosis. Expression of inflammatory cytokine interleukin (IL)-8 plays an important role in triggering endothelial damage and hence significantly contributes to the initiation and progression of atherosclerosis. Carbon nanodots (CNDs) are a new class of carbon nanomaterials. This nanoparticle has attracted considerable attention due to its small size, green synthesized approach, and unique photoluminescent characteristics, which give it great potential in drug delivery. However, the effects of CNDs on the expression of IL-8 remains unknown. This study investigated the effects of CNDs on cell viability and tumor necrosis factor-alpha (TNF-α)-induced expression of IL-8 in human microvascular endothelial cells (HMEC-1) and C57BL/6 mice. Results demonstrated that CNDs at concentrations of 0, 0.03, 0.1, 0.3 mg/mL did not have a negative effect on cell viability in HMEC-1. Interestingly, the treatment of CNDs caused a significant decrease in TNF-α induced expression of IL-8,

suggesting that CNDs have an anti-inflammatory effect in human endothelial cells. These results help to understand the toxicity and anti-inflammatory effect of CNDs, which would shine a light on the potential biomedical uses of CNDs in the treatment of atherosclerosis.

Media Made Witchcraft

Student Author(s): Giovanna Kast, Junior (Communication Studies)
Faculty Mentor(s): Sara Littlejohn (Ashby College & Strong College), Jennifer Whitaker (English), Alan Benson (English)

In the late 1990s, the entertainment industry found an untapped love for media depictions of the occult, specifically witchcraft, such as ABC's Sabrina The Teenage Witch (1996). As mass media has become more widely available to the general public so too has the normalization of magic as well as the rise in self-proclaimed "witches." The movement for new age and paganistic practices can be attributed to its popularization through media and has become a great comfort and spiritual solace for many individuals. Articles from the Journal for the Scientific Study of Religion, and the books like From Angels to Aliens: Teenagers, the Media, and the Supernatural, as well as popular media platforms, describe and represent this correlation which I will go into through this paper. Through mass media, the infatuation of witchcraft and occult practices has become ingrained and celebrated within western society.

Embryonic Development in Fish is Hindered by Exposure to Environmentally Relevant Concentrations of Glyphosate

Student Author(s): Deborah Killian, Senior (Biology)
Faculty Mentor(s): Ramji Bhandari (Biology), Xuegeng Wang (Biology)

Glyphosate-based herbicide (GBH) use is increasing yearly. Although GBH's target the enzymatic pathway in plants, the effects on endocrine systems of vertebrate organisms are widely unknown. The present study examined the effects of glyphosate exposure on embryo development and expression of thyroid genes in Japanese Medaka fish (*Oryzias Latipes*). The Hd-rR medaka embryos were exposed to Roundup containing 0.05, 0.5, 5, 10, and 20 mg/L glyphosate (glyphosate acid equivalent) from 8 hours post-fertilization through 14 days post-fertilization. Roundup exposure resulted in delayed

hatching and increased developmental deformities, growth, and embryo mortality. The lowest concentration (0.05 mg/L) and the highest concentration (20 mg/L) of glyphosate in Roundup induced similar phenotypes in embryos and juveniles. Gene expression analysis revealed a significant decrease in acetylcholine esterase (ache) and thyroid hormone receptor alpha (thra) mRNA levels in juveniles exposed to 0.05 mg/L and 20 mg/L glyphosate. The present results demonstrate that Roundup exposure affects early development of medaka in a non-monotonic dose response manner and that environmentally relevant concentrations of Roundup can cause endocrine disruption in fish embryos and juveniles.

Cultural Epigenetics - How does Anthropology illustrate humanity's history of natural selection?

Student Author(s): Alexis King, Freshman (International & Global Studies, and Languages, Literature & Cultures)
Faculty Mentor(s): Cristina Moreira (Biology)

Most Americans are familiar with the concept of natural selection; nature has created a system in which environments select for or against traits in an organism to be passed on to the next generations. When the environment changes, organisms adapt in response to these changes over the course of generations to a point where a new creature is produced. Some of these were due to human interaction, weather changes or other external influences on the population, but in conclusion they will all influence the expression of the remaining DNA as generations live on and die off. Many of us are aware of the subtle changes that distinguish us from each other as human beings, but unaware of the story behind and reasoning for our subtle idiosyncrasies. Eugenics and genocides prove a poor understanding of this concept because they assume one elite race. My project inquires upon the extent to which humanity has been subject to these influences, and what the evolutionary reasoning behind our current condition is.

Super Recognizer

Student Author(s): Cayla Kitts, Senior (Psychology), Myranda Cook, Junior (Psychology)
Faculty Mentor(s): Peter Delaney (Psychology)

While most neurotypical individuals exhibit proficiency in recognizing faces, there are inconsistencies between the levels of their abilities. Super Recognizers are individuals on the higher end of this spectrum who can recall thousands of faces after only seeing them once before. To expand on our prior research of Context Memory being learnable or automatic, we examined if facial recognition is a trainable skill that can be improved. To facilitate increased recognition, we also tested automatic mental context encoding during recall. By tracking the progress of a sole participant, we can begin to outline the methodological approaches that improve face recognition. This type of training can be applied to many domains like artificial intelligence, law enforcement, and medicine.

War on the Homefront: Responses to the Influenza Pandemic of 1918 at Three North Carolina Colleges

Student Author(s): Abigail Knight, Junior (Nursing)
Faculty Mentor(s): Erin Lawrimore (University Libraries)

In 1918, an influenza pandemic began to spread across the globe. Across the United States, fears mounted as the death toll rose and it was up to many towns and colleges to figure out a way to protect their families and students. Unlike other diseases, the Spanish Flu struck the young and vigorous, making college students particularly susceptible. This research project explores the impact of the Spanish Flu on three North Carolina colleges: State Normal and Industrial College (now UNCG), North Carolina State College of Agriculture and Engineering (now NC State University), and the University of North Carolina (now UNC Chapel Hill). In particular, it explores the public health response to the pandemic at each university and how the outbreak affected campus and students who attended it. It aims to draw connections between each university in how the faculty, students, and families linked to these universities responded and the precedents that the campuses set for future epidemics during this pandemic when responding to the deadly outbreak of 1918. Also examined is the role that gender played in the response across the campuses and the language used in official university communications.

Does RNA modification interrupt the conventional base pairing?

Student Author(s): Madison Kodra, Sophomore (Chemistry)
Faculty Mentor(s): Norman Chiu (Chemistry), Lixin Fu (Computer Science)

Ribonucleic acids (RNA) is one of the key components within the living cells and play a number of different roles, thus RNA is sub-divided into several types of RNA, such as message RNA, transfer RNA and so on. For carrying out the proper RNA functions, intramolecular and/or intermolecular interactions between two different RNA molecules are required. These interactions involve the formation of base pairing, namely adenosine (A) is paired with uridine (U) and guanosine (G) is paired with cytosine (C). In other words, the proper base pairing are essential to the RNA functions within the living cells. On the other hand, RNA is reported to be heavily modified. Currently, 172 different RNA modifications have been identified. The goal of this project is to theoretically determine which specific RNA modifications would interrupt the base pairing. The results of this project will provide an important information for RNA research work.

Evaluating the Validity of a New Measure of Anhedonic Depression: Daily Experiences of Wanting and Liking (DEWL)

Student Author(s): Aanchal Lal, Junior (Psychology), Rachel Suresky, Post-Bac
Faculty Mentor(s): Blair Wisco (Psychology)

The Daily Experiences of Wanting and Liking (DEWL) is a new measure that assesses the ability, efficiency, potentials and functioning of depressive anhedonia. Depressive anhedonia is a loss of interest in activities formerly enjoyed. DEWL measure was created to provide an assessment of depressive anhedonia. Utilizing a different sample, and modified version of the DEWL measure, we sought to explore the internal consistency, test-retest reliability, and relationship between DEWL scores and depression and anxiety symptoms.

Using results from 2015, we examined the internal validity and test-retest reliability of the DEWL measure over a 7-month period. The study recruited 160 college students who completed surveys including the DEWL, Beck Depression Inventory (BDI-II), and Mood and Anxiety Symptoms Questionnaire (MASQ). We predicted that DEWL scores would positively correlate with depression symptoms, while correlating less strongly with anxiety.

Our findings indicate that the DEWL measure has both strong internal consistency and moderate test-retest reliability. Findings also indicate convergent and discriminant validity showing that the questions in the scale appropriately relate to other items that

are similar (BDI and AD) and doesn't relate as much to items that are not similar (AA). These findings conclude DEWL as a promising new measure of anhedonic depression.

Truth and Storytelling

Student Author(s): Kaliyah Landrum, Freshman (Arts)
Faculty Mentor(s): Emily Edwards (Arts)

My name is Kaliyah Landrum, and I am a Studio Arts major at UNCG. For my project, I am working on illustrations for a book, written by Dr. Emily Edwards, titled "Truth and Storytelling". My work matters because it will help readers to get a better understanding of what is being explained throughout the book, in a creative visual format. This allows the book to cater to readers with different types of learning styles, as well as add something fun for readers to see. My work is relevant to me because it allows me to gain more experience as an artist, and helps to add something special to my résumé, for when I am looking for a career after school. I am extremely grateful for this opportunity and I am excited to hear what people think about my work.

Modern Society, and Its Influences on Rural Life

Student Author(s): Gary Lin, Sophomore (Media Studies)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

Rural life has always been influenced by the societies of their era. I am interested in finding how rural life, and culture has changed in the 21st century. Rural communities provide food, services, and specialty goods that fuel society just as they had before if not more now. I argue that modern Rural life in NC continues that influence trend in every facet of life from culture, climate to economic practices. Innovation, and new inventions have brought about sweeping rural change. Rural industries like farming, mining, and textiles that previously employed entire rural communities have seen dwindling need for labor forcing many to move or seek new employment fields. Due to these changes to rural life, and culture has had to adapt to the changing time. By using sources such as the book The Next Rural Economics: Constructing Rural Place in Global economics I will conclude that rural communities are still very much a part of modern society just as years prior. This research will discuss how the economic practices, and lifestyles of a

21st century modern urban society have positively or negatively affected modern rural societies.

Julia Domna: A Woman in Her Own Right?

Student Author(s): Abbey Linnell, Sophomore (Classical Studies)
Faculty Mentor(s): Robyn Le Blanc (Classical Studies)

This paper considers how the Roman emperor Septimius Severus (ruled 193-211 CE) used images of his wife Julia Domna on coinage to help legitimize his reign. Because his rise occurred during a civil war, he wanted to project stability and unity in his art. He minted coins with specific imagery, iconography, and messages to cement both his image as a legitimate ruler and to emphasize the stability of the imperial family. I am particularly interested in whether he promoted Julia Domna's Near Eastern background to help legitimize his reign in the Near East. Since Domna was from a priestly family in Syria, her family's connections may have helped his image there. From 193-202 BCE coins minted by the Roman government in two cities of Syria, (Laodicea ad Mare and Domna's hometown of Emisa), illustrate ideals such as prosperity, stability, and abundance through depictions of his wife and her associations with goddesses who represent certain positive ideals. These include both Roman goddesses like Ceres and Venus, and Near Eastern goddesses like Isis and Cybele. For example, the agricultural goddess Ceres reflected abundance, and Venus Victrix (Victorious) symbolized both military conquest and fertility. The coins sometimes used Near Eastern specific imagery in Syria, like Julia Domna's Syrian hairstyle and a crescent moon symbol. The use of objects to represent gods and goddesses on coinage is a Near Eastern tradition, similar to baetyls. There are exceptions, but overall the coinage stresses messages that appeal to the entire empire.

Religion's Effects LGBTQ+ Emerging Adults

Student Author(s): Jocelyn Little, Senior (Psychology)
Faculty Mentor(s): Gabriela Livas-Stein (Psychology)

Religion is often an integral part of the human experience, and research has examined the effects of religious involvement on mental health outcomes (Davis III & Kiang, 2016; Ellison, 1995; Patrick, 2003). In clinical psychology, looking at the benefits/risks of

religion through an intersectional lens is specifically under researched (Irizarry & Perry, 2018). This project looks at how religious communities affect African American LGBTQ emerging adults, in regards to symptoms of depression and anxiety.
This is important because African Americans are one of the most religious subgroups in the U.S. (Kim, 2011), and religiosity usually results in psychological benefits (Constantine et al., 2002). However, African Americans who identify as LGBTQ could face conflict between these two identities. Since Christianity is often seen as intolerant of homosexuality/gender variance (Dahl & Galliher, 2012), it may be that those with both identities experience inner discord, which could then lead to decreased emotional or psychological well-being. The emerging adulthood time period is a time where identity centrality continues to develop via exploration, and often comes with significant psychological distress, making it an important age range to examine (Kessler et al. 2007).

Tennessee for Pre-Teens: Tennessee Williams' Short Fiction as Theatre for Young Audiences

Student Author(s): Matthew Lopez, Senior (Anthropology, Drama)
Faculty Mentor(s): Denise Gabriel and Rachel Briley (Theatre)

An oral presentation about The Provincetown Tennessee Williams festival's lectures, and performances as research, and inspiration for modern abstractions of Williams' work.
The audience got to see a short skit about the rules of croquet, and how it's played. Then they saw a staged reading of Matthew Lopez's original short play based on William's short story Three Players of a Summer Game. Then they got to give feedback and write in their own scenes. After intermission, the scenes were read aloud, and the most voted upon scenes were added into moments expressed by the audience, and they saw the staged reading again along with their new scenes.
The goal is to bring the audience in as development participants in a developmental process and create their own unique theatrical experience.

Where is Regenerative Medicine and Where is it headed?

Student Author(s): Gabrielle Louque, Sophomore (Biology)
Faculty Mentor(s): John Sopper (Grogan College)

There is a growing need for organs and organ donors and millions of people die every day on the organ donor list, but there is a way for biomedical engineers to create and grow new or regenerate organs from stem cells. This field of study is called regenerative medicine, it is rapidly growing, and people are wanting to understand what it is and where is it heading. Amongst all these things it leads people to wonder where regenerative medicine is and where can it take us. To compile the information needed for the question, find some educational videos, peer reviewed articles, and research studies and conducting an interview of a professional in my field. After compiling many research studies, it shows that regenerative medicine is moving towards being to completely regrow organs and hopefully eventually be able to use them in humans. Regarding the findings, regenerative medicine will hopefully lead to a better outcome for those in need of new organs and revolutionize the medical field.

Building Resilience in Education

Student Author(s): Erika Lowrance, Senior (Art, Communication Studies)
Faculty Mentor(s): Kristen Christman and Roy Schwartzman (Communication Studies)

My experience in middle school was dreary, isolating and it made it harder to focus on my education even though our school motto was about creating lifelong learners. Many students got discouraged because they didn't feel comfortable and engaged in a productive and positive atmosphere. At a young vulnerable age, middle schoolers seek approval, social validation, and attention. Positive Communication is critical in providing affirming and encouraging messages that help students recognize their strengths and reveal opportunities for growth and resilience.
I am working on a BFA in Painting and a BA in Communication Studies. I plan to combine these two disciplines as the basis of my service-learning/experience/research. I intend to show how using intentionality and creativity brings these disciplines together in a powerful way. My research involves leading students through artistic activities. Through my research and service-learning experience with Reidsville Middle and Hope Academy, I have been bridging the distance between the middle schoolers and college students, so that the former can have someone to look up to. For this project, I intend to incorporate painting into leadership development, community building, and positive communication. I hope to enrich the school with art that the students had a part of so

that they feel like they contributed in building a positive environment for themselves and each other, reinforcing or giving them self-confidence.

Combinatoric Analysis of Flow and Non-Flow in Heavy Ion Collisions Student

Author(s): Aidan Lytle, Sophomore (Physics), Dylan Antonacci, Post-Bac (Biology)
Faculty Mentor(s): Ron Belmont (Physics)

In the study of heavy ion collisions, heavy elements stripped of their electrons collide at nearly the speed of light. The result of this collision can be described as a fluid, known as the quark-gluon plasma, or QGP for short. The QGP is one of the states of matter in the early universe, and has remarkable properties, such as a very low viscosity. The fluid exhibits a collective movement, known as flow, but some parts of the collision lie outside of this description. In this study, we compare a combinatoric approximation of non-flow phenomena to data generated by the event simulator Pythia.

The Lawn Sign Project

Student Author(s): Irvin Maldonado, Senior, Victoria Landers, Senior (Art), Filberto Hernandez, Senior (Business Administration)
Faculty Mentor(s): Leah Sobsey and Adam Carlin (Art)

When is a time when you feel free, and a time when you feel your freedom taken away? In 2018, students enrolled in Professor Leah Sobsey's Photographic Installation course invited the Greensboro, NC community to respond to these two prompts. Students interviewed participants, photographed them, then printed the portraits along with their responses, installing them in public spaces.
The Lawn Sign Project, made possible through a UNCG Diversity Grant, is in collaboration with UNCG's Community Arts Collaborative, the UNCG School of Art, and in association with For Freedoms. Founded by artist Hank Willis Thomas, For Freedoms is a non-partisan nationwide initiative that uses art to deepen public discussions on civic issues and core values for people who want to be more engaged in public life.
The lawn signs had their first exhibition in the fall of 2018 at Greensboro Project Space, UNCG's off-campus gallery space. Since then, the exhibition has traveled to Prospect

Park in Brooklyn, NY in November 2019. Students collected more portraits and responses from a diverse pool of participants.
The Lawn Sign Project uses public art to approach deeper public discussions on civic issues, core values, to advocate for equity, and civic participation. Each exhibition adds more portraits and responses from the last, allowing community members to think critically with themselves about what it means to be free.

Applications of Artemisia Annua for anti-malarial drugs

Student Author(s): Joseph Mangun, Post-Bac (Biology)
Faculty Mentor(s): Nadja Cech (Chemistry)

Malaria continues to be a worldwide health concern, with over 200 million cases reported in 2019 and over 400,000 deaths. While some treatments do exist, the there is room for improvement in achieving widespread and affordable treatment for many regions across the globe. Given its known anti-malarial properties, the plant *Artemisia annua* has the potential to be the basis for further breakthroughs in the production of anti-malarial drugs. While whole portions of the plant are known to have therapeutic properties, individual components of the plant demonstrated less potency, which suggests that the plant contains synergistic chemistry within its components. The goal of this research project is on the role of specific bioactive compounds present in *Artemisia annua*, with a focus on identifying the constituents of the plant that have bioactivity so that more potent forms of anti-malarial drug can be developed. Current research supports the idea that the component labeled CYP2B6 is metabolized in conjunction with plant samples, which supports the idea that this compound is metabolically active alongside *Artemisia annua*. According the initial bioassay, the ethyl acetate extract contains bioactive compounds that can potentially become new drug leads for malaria, and so the project also seeks to consider possible compounds for drug leads that will reduce the cost of production and make the drug more accessible.

Use of Psychotropic Medications in The Foster Care System

Student Author(s): Evelyn Marin-Sanchez, Sophomore (Psychology)
Faculty Mentor(s): John Sopper (Grogan College)

The mental health outcomes of children in foster care is a continuous concern for mental health professionals. Children entering the foster care system present psychosocial disorders that are caused by past traumatic events or the transition into the foster care system itself. Treatment for these psychosocial disorders would be a combination of trauma-focused therapy and, if necessary, psychotropic medications. According to a research study titled 'Psychotropic Medication Patterns Among Youth in Foster Care', it is shown that children in foster care receive psychotropic medications three times the rate of children not in foster care (Zito et al., 2008). The expectations for this research project are to identify the factors leading to why children in foster care are receiving psychotropic medications at a higher rate than children who are not in foster care. The methods utilized for this project will be literature reviews of articles highlighting the discrepancy of care, an interview with a licensed psychologist who works with children who have experienced trauma, and federal reports tracking the continuity of care for foster children. In reviewing the various factors leading to this disparity, it is apparent that there is a dissociation between policy and practice within the foster care system.

The Value of Hamilton, the Musical, as History Lesson
Student Author(s): Alicia Marrero, Sophomore (Psychology)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

The musical *Hamilton* takes some creative license with history but succeeds in focusing popular attention on Founding Father and first U.S. Treasury Secretary, Alexander Hamilton. In 2004, Ron Chernow's biography *Alexander Hamilton* was a best-seller, receiving much critical praise. It inspired Lin-Manuel Miranda's Broadway megahit *Hamilton* that premiered in February 2015 to universal critical and popular praise. I argue that, although the musical *Hamilton* is not an exact depiction of personalities and events that the book strives to be, it is true enough to the historical record to be a valuable learning tool. First, I look at the portrayals of the three main figures, Alexander Hamilton, his wife Eliza, and Aaron Burr. Second, I focus on slavery. Were the Hamilton couple opponents of slavery and how did their actions, if any, further the abolitionist cause? Third, are the free-spirited Schuyler sisters accurately portrayed or is this a feminist image intended to make modern audiences feel good about the past? I argue that the musical *Hamilton* is not just great entertainment but also serves as a

good introduction for those that might not have read the Chernow book nor remember much about Alexander Hamilton from high school or college history classes.

What are Legal Attorneys and Why are They Important to Maintaining Justice in American Society?

Student Author(s): Jaear McClendon, Sophomore (Political Science)
Faculty Mentor(s): John Sopper (Grogan College)

The legal profession is one of America's most prestigious professions and plays an extensive role in the maintenance and progression of our society. Many undergraduates attend college in hopes of being a legal professional but do not fully understand what a legal professional is and what it takes to become one. This research intends to provide a source of information for those who are interested in going into the legal profession. From conducting an interview with a former lawyer as well as analyzing scholarly articles and websites such as The National Lawyers Association, The American Bar Association, and The U.S. Department of Justice, it is expected that this project will discover that legal professionals play a critical role in maintaining justice in our society on both sides of the law. Also the values, educational requirements, influential figures, and the organizations that make the legal profession a large community will be discovered as well. Knowledge from the research will provide undergraduates with a source of information that they can go to as a tool for helping them make the right decision on their choice of major, profession, and requirements for law school.

Understanding Trust in Healthy Aging

Student Author(s): Alexander McGlamery, Post-Bac (Psychology)
Faculty Mentor(s): Brittany Cassidy (Psychology)

When meeting others, people make quick trust decisions that pose serious consequences for well-being. The extent to which people trust others, however, is not stable across the lifespan. Rather, older adults (OA) have excessive trust versus younger adults (YA). Why OA have excessive trust is poorly understood. One explanation for OA' excessive trust could be that OA treat negative outcomes more positively than YA when learning trust information. To this end, YA and OA were given endowments and decided how much to share with the same trustees over multiple games. If shared, the investment was

quadrupled, and the trustee could either earn trust by sharing or violate trust by keeping the money. All participants gave more money to trustees who were trustworthy than who were untrustworthy. OA, however, gave more money than YA to trustees who were untrustworthy. These findings suggest that OA treat negative outcomes more positively when making trust-based financial decisions.

Impermanence: Collision

Student Author(s): Ethan McKellar, Junior (Art)
Faculty Mentor(s): John Sopper (Grogan College), Patricia Wasserboehr (Art)

Impermanence has many factors that we must consider in finding our humanity. The material chosen to challenge this idea was by using poplar hardwood to add to the ephemeral nature of the project. In the piece the process followed from sketch to materialization, yet as the project progressed the material began to react changing the outcome. The project's original process changed from the beginning once the mass of the project wouldn't fit on the lathe, so it came to the point where it had to be carved by other means. This obstacle changed the form of the sculpture entirely from its original plan, but in the process a narrative formed from identifying the collision between the material and the artist.
In the creation of this work the conversation of the material and artist is a conversation that is always actively happening in the sculpture community. Artists such as Alyson Shotz and Tony Cragg have faced this dialogue in their work. As this piece began to have this dialogue with the narrative created with collision it created a conversation with the viewer of the temporary moment.

Retta Scott Worcester: Hidden History

Student Author(s): Danielle McRae, Senior (Art)
Faculty Mentor(s): Heather Holian (Art History)

Retta Scott was born on February 23, 1910 in Omak Washington. From a young age she was interested in art, animals and drawing flora wherever she went. She studied art at Seattle's Roosevelt High School, then went on to study and graduate from Chouinard Art Institute in Los Angeles. Leveraging her training, she applied for a position at the Disney Studio in 1938. Walt was so impressed with her sketches that he immediately put her in

the story department. Her storyboard drawings for the movie "Bambi" were so vivid, specifically the scene when the dogs are chasing Faline. Walt put Retta in charge of animating this scene.
For this project, I plan to explore Retta Scott's 8 year career at Disney doing animation and storyboarding, along with her 24 years of freelance work and her animation on the movie "The Plague Dogs". While Retta is well known in the animation and art history world, I would like to utilize my research and artistic skills to educate more people about her. I plan to do this by researching articles, interviews, books, and get in touch with Disney art historian Lucas O. Seastrom about her career

The lack of black representation in films and the film industry

Student Author(s): Kayla Mercer, Sophomore (Media Studies)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

The film industry has been "trying" to become a more inclusive and progressive industry but have they really? In the last ten years, the film industry has been lacking in black representation and acknowledgment. This leaves out thousands of black filmmakers and black art that portrays African Americans in the way that they want to be portrayed. In order to reach the masses, I argue that as a Media Studies student and as a future filmmaker, that the film industry needs to change the narrative in Hollywood, and not just focus on films produced by white men. By using various films such as *Do The Right Thing*, *Boyz n The Hood*, and *Black Panther*, I analyze the impact of these films created by black filmmakers and will be using sources such as the book, *Black Lenses, Black Voices: African American Film Now* by Mark A. Reid and other scholarly materials to elaborate on the ways the film industry has lacked in being inclusive and how it affects the black community socio-culturally. My research will discuss how the absence of black representation in films and the film industry is due to the lack of acknowledgment from Hollywood, international appeal, and racism.

Transgenetic heat treatment of the Tobacco plant

Student Author(s): Emiri Michishita, Senior (Chemistry)
Faculty Mentor(s): Ayalew Osena (Biology)

Under abiotic stress such as high temperature due to climate change, plants will suffer oxidative stress due to accumulation of reactive oxygen species (ROS) such as peroxide and superoxide radicals. Plant tend to increase the activity of antioxidants which destroy reactive oxygen species (ROS) but the activity of plant antioxidant enzymes is limited to ambient temperatures. Whereas, archaea such as *Sulfolobus solfataricus* are adapted to hotter areas with optimum temperature of 75^{o}C. In this project, *S. solfataricus superoxide dismutase* (SsSOD) will be constitutively expressed in the transgenic tobacco plant with the purpose of increasing the tolerance of plants to heat stress. we construct the expression cassette of SsSOD in a pSAT plasmid and the expression cassette is assembled into pPZP-NPTII binary vector. The binary vector is transformed into *Agrobacterium tumefaciens* which will inset the gene into tobacco (*Nicotiana benthamiana*) leaf segments. The leaf segments will be cultured on selection media containing antibiotic Kanamycin. Regenerated shoots will be transferred to root induction media. Putative transgenic lines will be validated by PCR using genomic DNA as a template. We expect that transgenic tabocco expressing SsSOD will be more tolerant to heat stress that control plants.

Pinner cyclization of lactone

Student Author(s): Emiri Michishita, Senior (Chemistry)
Faculty Mentor(s): Kimberly Petersen (Chemistry)

The synthesis of enantioenriched heterocyclic bioactive molecules have been the main focus in Dr. Petersen's research group. Enantioselective synthesis is critical to increase the efficiency for the construction of the desired product. Currently, Dr. Petersen's research group has been developing a technique to cyclize lactones from nitrile groups containing electrophilic carbons via Pinner Cyclization using a Brønsted acid. The desired product can be used in the Raney Nickel reaction to carry out synthetic transformation of nitriles to primary amines. The novelty of this project is in using nitriles to form a C-O bond instead of using hydroxy diesters; the deprotection of the oxygen and cyclization of the lactone occur in one step. The Pinner reaction usually utilizes a harsh acidic environment, but in this work a Brønsted acid can be used instead.

Dependency, Dehumanization, and Insecurity: Analyzing Why Women Stay in Toxic Relationships

Student Author(s): Asha Moore, Sophomore (Psychology)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

This paper will analyze toxic relationships and factors that prevent women from leaving said relationships. Dependence on partner, dehumanization of both parties, and insecurities are deterrents to leaving their partner. I am particularly interested in this topic, because I have friends in similar situations and I would like to understand more about it. One secondary source, *A Dehumanization Perspective on Dependence in Low-Satisfaction (Abusive) Relationships*, written by Brock Bastian, shows how dependence and dehumanization make it difficult for someone to leave a relationship. Increased knowledge on this topic will educate and prevent women from staying with their emotionally abusive partner.

What ways of communicating and educating patients who are minors lead to the best health outcomes?

Student Author(s): Kaela Moore, Sophomore (Public Health Education)
Faculty Mentor(s): John Sopper (Grogan College)

Doctors of pediatric patients typically speak to the parents of their underage patients instead of including the patients themselves in the conversation about their well-being. But should doctors explain to the children themselves about their condition? Does including minors in medical conversations and educating them directly about their health increase their chance of a better outcome? And if so, which ways of having those conversations are the most effective? This research study attempts to answer these questions through Child advocacy websites, and scholarly peered reviewed journals. Findings from this study could possibly lead to educating pediatric patients and giving them a better health outcome.

Myth and Memory: Exploring British Identity Through Myths and Landscapes

Student Author(s): Malcolm Motley, Senior (English)
Faculty Mentor(s): Christopher Hodgkins (English), Robyn LeBlanc and Joanne Murphy (Classical Studies)

This paper will explore the construction of British national identity and argue that it is derived from myths that were formulated into memory and from British landscapes themselves. I will support my argument with texts including Geoffrey of Monmouth's 12th century History of the Kings of Britain. While this chronicle is now widely regarded as myth rather than history, it still informs modern British identity, taking the form of mythic memories and of memorial British landscapes. First, I will consider these various myths, which range from the Arthurian legends to obscure bits of regional folklore, for their contribution to the British national character. Second, I will examine various archaeological texts that focus on British landscapes—for instance, caves and woodlands—to explore the role that Britain's geography played in forming the British self-concept. Third, I will not limit "Britain" in the context of this paper to England; Gaelic and Welsh myth and identity will figure in my analysis of an overall Celtic identity. The purpose of this project is view British culture from fresh angles by tying its topographical features to its sense of cultural identity, while also uncovering lesser known aspects of Gaelic and Welsh tradition.

Kandake Amanirenas: Legacy of Kush and Women in the Ancient World

Student Author(s): Tyree Myers, Sophomore (Music)
Faculty Mentor(s): Omar Ali (AADS) and Rebecca Muich (Classical Studies)

Kandake Amanirenas was a Kushite Queen that reigned during the Meroitic period. She is most commonly known for displaying important leadership and battle skills such as being a trained warrior, a good politician, and expert strategist. The Nubian queen is also associated with the five year war with the Romans during the first century BCE in their attempt to occupy Kush after the conquering of Egypt. Her battle tactics and strategy halted the Romans at the Kushite border and led to their extended independence in Africa.

Based on the evidence found on ancient Kush society through burials and excavations, it would be beneficial to formulate and hypothesize the appearance of her

tomb due the loss of Kushite culture during the occupation under Egypt and the reemergence during the twenty-fifth dynasty. Utilizing the evidence found based on the Egyptian influence absorbed during that time. It can also provide insight into burial rituals and sacrifices common to the Nubian people. As one can see, a good amount of what we know comes from the excavation of Kushite tombs, housing the bodies of kings, queens and sacrifices. The great political skills displayed by Kandake led to the negotiation of a peace treaty, a feat not commonly associated with women from antiquity.

The Archaic Temple of Apollo in Karthaia: A Case Study of the Interaction Between the Cultures of Mainland and Cycladic Greece

Student Author(s): London Nance, Senior (Classical Studies)
Faculty Mentor(s): Joanne Murphy (Classical Studies)

In this paper, I examine the chronology and geographical placement of the ancient Temple of Apollo in Karthaia within the context of earlier Cycladic temples. The contrast between this Cycladic development and that of the mainland temples illuminates the complex exchange between diverse groups of ancient Greeks. This reveals a multifaceted pattern of cultural exchange, assimilation, and deviation communicated through religious ritual and material remains.

The brief period between the development of the Doric temple style (7th century BC) and the construction of Karthaia's Temple of Apollo (approximately 6th-5th centuries BC) shows the rapid adoption of the mainland temple style in Karthaia. Yet the temple's peculiar placement defies the conventional east-west orientation of mainland Greek temples to a degree which does not indicate haphazard response to topography. Rather, this unusual positioning required an intentional deviation from the typical east-west pattern.

These features serve to refine our understanding of the relationship between the Cyclades and Greece as a whole. Greek culture was not homogenous. Instead, the Greeks were a group of distinct yet related cultures using shared symbols to express local manifestations of prestige, wealth, and security.

The need for EV infrastructure and improved battery technology in order for mass market electric cars to be possible

Student Author(s): Jason Naudé, Sophomore (International and Global Studies)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

EV infrastructure throughout the United States is a critical component of an electric vehicle future. This infrastructure includes more charging stations strategically placed around the United States, as well as faster charging capabilities included with the charging stations. I have been passionate about the car industry since I was a kid and electric vehicles have always interested me. This is why as a car enthusiast I am very interested in this topic and I argue that electric cars are the future of the automotive industry and the way to get there is through infrastructure and battery technology. By using sources such as the book *Advances in Battery Technologies for Electric Vehicles* from Elsevier Science & Technology, I will be able to conclude that in order for the United States to successfully make the switch to electric vehicles, better charging infrastructure and battery technology is needed.

Effectiveness of Social Work on People with mental illnesses

Student Author(s): Alyssa Nearhoof, Sophomore (Social Work)
Faculty Mentor(s): John Sopper (Grogan College)

Mental Illnesses are very common today and more likely to be talked about along with many treatments. The number of people struggling with mental illness are high. The new treatments options can be offered by social workers because they are there for support. However, the positive effectiveness social worker is having on these clients are unknown. They try hard to get help to people in need but, who knows if the help is working or how it is. By interviewing a current social worker and social work professor it will help determine if there could be a positive or negative impact on them. There are several UNCG library's scholarly articles on the impacts on clients with mental illnesses to help determine if there are positive impacts. Using the information found, the focus will be on clients who have dealt with mental illnesses and believe they were or were not positively affected by the different treatment options like groups, therapy, and medications. The more social workers impact people with mental illnesses the more help is brought to them.

Asymmetric Synthesis of Lactams via Brønsted Acid Cyclization

Student Author(s): Chioma Onokalah, Junior (Chemistry)
Faculty Mentor(s): Kimberly Petersen (Chemistry)

The Petersen group is dedicated to the synthesis of enantioenriched heterocyclic bioactive molecules. Often only one of the enantiomers in such a compound is active and desirable thus, the efficiency of the synthesis of the active enantiomer is critical to avoiding undesirable symptoms as a result of the presence of the inactive enantiomer. Previous work in the Petersen group has focused on the synthesis of lactones through the construction of a C–O bond via a desymmetrization of hydroxy diesters. The emphasis of the work described here has been to synthesize nitrogen-containing heterocycles using a chiral Brønsted acid to initiate a stereoselective C–N bond. Substrates targeted contain an indole moiety, capable of acting as a nucleophile in the reaction. We will detail the synthesis of different substrates for the desymmetrization and our progress towards the development of an asymmetric Brønsted acid cyclization to yield 5- or 6-membered ring lactams

Analysis of Gravitational Stress-Resistance in Arabidopsis thaliana Plants

Student Author(s): Melika Osareh, Sophomore (Biology)
Faculty Mentor(s): John Kiss and Tatsiana Shymanovich (Biology)

Growing plants during long-term space missions can help provide astronauts with food, oxygen, and psychological benefits. However, growing plants in altered gravity conditions can be challenging because plants suffer from gravitational stress. To enhance current knowledge on growing plants during space missions, this research project aimed to find genotypes of *Arabidopsis* thaliana, that have resistance to gravitational stress. In this project, 17 wild-type genotypes of *A. thaliana* were tested and analyzed for their gravitational stress-resistance by comparing seedlings grown under gravitational stress treatment via continuous rotation at 1.25rpm against ones grown vertically (control). Average shoot length, main root length, number of secondary roots, total root length, and number of root hairs were compared from rotated and vertical seedlings for each genotype. Although most genotypes were negatively affected by the gravitational stress, one genotype, CIBC-5, showed no difference among all growth parameters and was expected to adapt better for growing in altered gravity conditions. Genotypes Eden-1, FAB-2, and Cvi-0 also showed an increase in total root length and may be of interest for further study. Future plans include identification of genes essential for gravitational-stress resistance in plants to engineer plant varieties that will grow well during space missions.

ABSTRACTS

What Effects do Peer Academic Leaders (PALs) Have on First-Year Students' Sense of Belonging?

Student Author(s): Hailey Paivanas, Sophomore (Public Health Education)
Faculty Mentor(s): John Sopper (Religious Studies)

It is very common for college freshmen to feel very out of place since they are entering a new environment and transitioning into a new part of their life. Often, they feel very alone and confused as to what to do to feel more connected. While more attention has been given to the issue of first-year students' sense of belonging in recent years, and while bringing the issue to light has had positive effects, still more is needed. UNCG is constantly looking for ways to improve their First Year Transitions Program to help freshman to truly "find their way" here on campus. One strategy to see how well the Program is doing is to look in depth at the Peer Academic Leader (PAL) who is a student mentor who helps first-year students transition both academically and socially. This study will examine surveys completed by first-year students who entered college in fall 2019 and took a First-Year Experience course. It will also look at surveys completed by some upper-class students. This data will be examined to determine what areas are strong and what areas need improvement. The results will guide future steps to improve the role of the PALs.

Meeting Mary Blair: The Early Life of One of Disney's Best-Known Artists

Student Author(s): Ariana Pappas, Senior (Art)
Faculty Mentor(s): Heather Holian (Art History)

Mary Blair is often considered one of the most influential concept artists and credited on animated feature-length films from Disney between 1940 and 1948, and it's vital to learn what led her to the position she held at the Walt Disney Studios for several years. My proposed timeline will explore notable events of Blair's early life, such as her entry into the animation field with Metro-Goldwyn-Mayer prior to being hired by Walt Disney in 1940. Her early work ranged in time from *Dumbo* (1941) to the end of the addressed period with *Song of the South* (1946) and *So Dear to My Heart* (1948).

My illustrative timeline will display key events in Blair's early life starting just before her graduation from Chouinard Art Institute in 1933 and progressing all the way through the year 1948. There is limited reliable information on Blair's early life. The vast majority of my research will be done through reputable online sites and more current books from the university library. My goal is to condense the verified, available

information about Blair's early life into one graphic (a timeline with visually distinct text) for ease of comprehension, and perhaps even find something new.

And the Wall Came Tumbling Down: Food and Economy in East and West Germany

Student Author(s): Alexandra Pardo, Senior (Classical Studies)
Faculty Mentor(s): Richard Clay Stuart (Anthropology)

This paper explores the political economies of East and West Germany through the lens of food. My question, then, is how are the changes in both East and West German cuisine before, during, and after reunification, a reflection of shifting cultural values resulting from new economic systems.
I based my study on ethnographic accounts of life during this time, historical descriptions of East and West German foods, and anthropological theory. This research showed that, pre-reunification, East and West Germany used food to simultaneously cope and interact with their new economic systems. Post-reunification, East Germany, encouraged by West Germany, initially welcomed the changes brought on by the sudden introduction of a capitalist economy but soon began to hate the rampant materialism and lack of trust, kindness and sense of community. West Germany also felt the effects of capitalism through their inability to engage with their own past in a meaningful way. Lastly, food is instrumental in encouraging nationalism through the invention of new traditions, creating and expressing collective identities, and acting as a marker for epochal transitions.
Thus, in this paper I use food to show the effects of socialism, capitalism, and re-unification on the cultures of East and West Germany.

Exploring Foreground to Background: The Animation Careers of Lisa Keene and Tia Kratter

Student Author(s): Ariana Pappas, Senior, Hannah Borders, Senior, Kayla Timpson, Junior, Preston Byrd, and Isaiah Poole (Art)
Faculty Mentor(s): Heather Holian (Art History)

Lisa Keene and Tia Kratter are two female artists who have spent their respective careers working at the Walt Disney Studios (and in Kratter's case, Pixar following her

employment at Disney). Keene, a background artist and concept illustrator who continues to work at Disney, has an extended career at the studio having worked on films such as *The Black Cauldron* (1985) all the way to *Frozen* (2013). Kratter started her productive career at the Walt Disney Studios in 1980 before she was hired on at Pixar Animation Studios, where she is still employed. Kratter is best known for her work on stories such as *Cars* (2006) and *Brave* (2012). Both women paint evocative scenes through their work, though neither are limited to backgrounds as they both excel at concept illustration.

Our group will collaborate to produce two graphic parallel timelines with clear text boxes indicating pertinent events in these artists' careers. We will endeavor to locate the most reliable sources available to us, both in printed and digital forms, to fill our timelines with. This information, when compiled, will paint a broad picture that will grant new insight into the lives of Kratter and Keene.

Funding for the Apostle Paul's Missionary Journeys

Student Author(s): Alexandra Pardo, Senior (Classical Studies)
Faculty Mentor(s): Robyn Le Blanc (Classical Studies)

Early Christians, who faced an assortment of challenges, relied on letters, advice, and teachings from the traveling Apostles to help establish the structure of the early church. It is from the Apostle Paul's epistles that we learn about the early Christian communities in cities like Rome and Corinth. Paul's missionary journeys, detailed in the Book of Acts, which acted in a similar fashion, covered thousands of kilometers. They would have been carefully planned around resources, weather and the time of year, as sailing and travel via roads were unavailable under certain conditions. Even when the weather permitted travel, it was expensive and difficult because of piracy, robbers, and cost. As a tentmaker earning one denarius a day, it is doubtful that Paul would have been able to afford these trips on his own. By researching Paul's letters and using a geospatial network model of the Roman world, I will be calculating the price of Paul's trips, while also looking at where Paul was getting funding for his journeys. This will shed light on the organization of the early church, the economic hardships they faced, possible funding models for these congregations, and, in turn, the participation of the congregation members.

"An Alternative Sense-making Collective": A Rhetorical Analysis of The Intellectual Dark Web

Student Author(s): Gabriel Parks, Senior (Communication Studies)
Faculty Mentor(s): Jenni Simon (Communication Studies)

This essay examines the roles of five Public Intellectuals from a group known as *The Intellectual Dark Web* (IDW) in current political discourse. Situated within the context of political polarization and declining institutional trust in the United States, this essay incorporates theories from political philosopher Antonio Gramsci and rhetorical critic Kenneth Burke to frame the IDW as central to an ongoing "Battle of Ideas." The examination of prominent IDW figures, such as Ben Shapiro, Dave Rubin, Eric Weinstein, Joe Rogan, and Jordan Peterson reveals their rhetorical exploits as indicative of Gramsci's definitions of traditional and "Organic" intellectuals that bridge different social dynamics, such as identification, commitment, and narratives, in an interplay to influence "sense-making" for both the IDW and their audiences. From a critical-rhetorical perspective concerned with audience empowerment, the paper argues that the IDW is a fragmented movement with subversive potential, maintaining hegemony and scattering opportunities for unification.

Brenda Chapman

Student Author(s): Skyler Paschal, Sophomore, Jayson Manns, Allison Johnson, Sophomore, Jessica Cunningham (Art)
Faculty Mentor(s): Heather Holian (Art History)

When Brenda Chapman began work for fledgling Dreamworks after its inception in 1994, she did so with the hopes of establishing her own story department. However, Jeffery Katzenburg had other plans and approached her for a temporary role as director on what would become 1998's *Prince of Egypt*. Initially unreceptive to the role, and preferring her role in story instead, Chapman soon found herself fully invested in the project and would go on to co-direct the film with Steve Hickner and Simon Wells, becoming the first woman to direct an animated feature film, a feat even she never imagined herself accomplishing.
This poster timeline will detail Brenda Chapman's contributions to the field of animation as both as a woman and an influential director and story consultant, including her early life and influences which lead her to work in the industry. Our

research will include her firsts in the field, such as becoming the first woman to win an Oscar for Best Animated Feature for PIXAR's 2012 release *Brave*. This timeline will also address controversies and struggles Chapman encountered over the course of her career, and how her status as a woman in a predominantly male industry has influenced her work and the translation of her vision to the movie screen.

Carbon Nanodot Release Mechanisms and Kinetics in THP-1 Human Monocyte-Derived Macrophages

Student Author(s): Kamal Patel, Post-Baccalaureate (Biology)
Faculty Mentor(s): Zhenquan Jia (Biology)

Cardiovascular diseases (CVDs) present a critical concern in the U.S., and atherosclerosis is the most common condition underlying the onset of CVDs. Atherosclerosis spurs the transition of monocyte-derived macrophages into foam cells, a critical step in the formation of plaques. Carbon nanodots (CNDs) are 10 nm or less in size and are among the most recent nanoparticles to generate interest in research due to their marked biocompatibility, stability, water solubility, and low toxicity. Our lab recently demonstrated that CNDs can be taken up into monocyte-derived macrophages. However, no report exists regarding if CNDs can be released from macrophages. Using THP-1 monocyte-derived macrophages, this study explored CND release by quantification of CND fluorescence in the cell culture supernatant and potential release routes by treatment with select transport inhibitors. The results showed that CND release occurred as early as 15 minutes after cellular uptake. However, cells treated with nocodazole (a disruptor of microtubule and actin filaments) showed a significant increase in CND release, suggesting that actin and microtubule cytoskeleton might be implicated in CND release mechanisms. These results demonstrate the potential for the biological utilization of CNDs.

The Impact Social Media has on Elementary Age Children

Student Author(s): Chrishay Pearce, Sophomore (HDFS)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

I argue that social media among elementary-age children has negative health impacts on their development. The use of social media among elementary-aged children

has increased causing problems such as mental brain damage, emotional depression, and physical obesity. I'm interested in this topic because this is an issue that has yet to be researched upon, and I want to be one of the first to get to the bottom of it. For my sources, I am using journals, websites, and a few books. I hope to interview and survey both parents, and kids, based on their positive and negative opinions on social media use. I am currently using a book called "Glow Kids" by Nicholas Kardaras, which talks about the increase in screen time use among children. This book is helpful because it explains the dangers and consequences of children on technology devices. This project will allow individuals to realize that social media impacts kids negatively at a young age. Hopefully, my research project will demonstrate why social media use should be monitored, among children and the health effects it can have on their development.

Retractions with Reminders of fake news enhance memory and beliefs for facts

Student Author(s): Carson Peske, Sophomore (Psychology)
Faculty Mentor(s): Chris Wahlheim (Psychology)

Exposure to fake news can lead to misinformation being believed and remembered despite being incorrect. We examined whether retracting misinformation can enhance recall and beliefs for facts in two experiments. Subjects were first tasked with reading both facts and misinformation, while trying to memorize them for later phases. In a subsequent phase they were tasked to read corrected statements that retracted misinformation. During the retractions phase some of the retractions presented the misinformation associated with the retraction, and some retractions did not do this. The statements used were taken from real-world resources such as news websites. Subjects were then tasked with recalling facts and gauging how strong their belief in that fact was (Experiment 1). In our most recent experiment, we tasked the subjects to report the facts they believed were true and to rate the belief (Experiment 2). In this same phase subjects would identify whether they remembered either misinformation or retractions. The reminders improved memory accuracy and beliefs in the correction of retracted misinformation. This was increased further when subjects recollected misinformation and remembered the retractions of the misinformation. The results from these studies support that misinformation reminders can reduce the effects of fake news.

ABSTRACTS

An Analysis on the Effects of Sexualized Female Characters in Anime Holds on Its Viewers

Student Author(s): Oona Phillips, Sophomore (Media Studies)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

In anime, the creators tend to portray women in a very sexualized way that can be uncomfortable to viewers. I wanted to look deeper into this and analyze the ways it can affect the viewer. My working thesis statement is "The sexualization of women in anime can cause negative effects on viewers such as, impossible standards, increased insecurity, and in extreme cases, pedophilic tendencies." Personally, I am interested in this topic because growing up watching anime had affected me to where I felt insecure because I wasn't small, cute, and comfortable enough with my body to wear revealing clothing. Being small, cute and wearing revealing clothing are all aspects of an anime girl. I am planning on using "The Moe Manifesto," which explicitly describes all of the aspects I am wanting to discuss. Through working on my project, I hope to gain a deeper understanding of what kind of effects sexualized female characters have on the anime community. I also hope to spark deeper discussions and hopefully make a change in the demand of the industry to make anime comfortable for all viewers.

Examining Self-Efficacy, Sense of Belonging, and Science Identity Within a UNCG STEM Program

Student Author(s): Kellar Poteat, Senior (Communication Sciences & Disorders), Sharon Ladokun, Senior (Psychology)
Faculty Mentor(s): Ayesha Boyce (Educational Research Methodology)

The UNCG NSF-funded S-STEM: STAMPS project selects participants based on significant promise for success in the sciences/math and measurable financial need. The purpose of this study is to examine the program's impact on student's self-efficacy, sense of belonging, and science identity. These three affective factors have been demonstrated to be associated with persistence in STEM and the choice of a STEM career. Our research explores the impact of the UNCG STAMPS program on each of these three factors and identifies which components of STAMPS have the most influence. A mixed-method research design was utilized. The mixed-method approach includes participant observations, three surveys, two focus groups, and a participant Photovoice Project. Our key findings show that participation in the STAMPS program

has increased STEM students' self-efficacy, science identity, and sense of belonging. Furthermore, STAMPS field trips, interactions with program personnel, and faculty mentors contribute to students' persistence in STEM and working towards STEM-related careers. We also found that student interaction with others with similar interests in STAMPS and within the science community validated feelings of choosing the right major, and feelings of acceptance at UNCG.

Preparation, purification, and characterization of carbon nanodots

Student Author(s): Brandon Priebe, Post-Bac (Chemistry)
Faculty Mentor(s): Norman Chiu (Chemistry), Zhenquan Jia (Biology)

Over the past decades, thousands of different nanomaterials were made. The new nanomaterials have been utilized in a variety of industrial processes and the manufacturing of many commercial products. These numbers are expected to increase exponentially in the near future. On the other hand, concerns about the safety aspects of nanomaterials are rising. Due to the bio-compatibility of carbon-based nanomaterials, it is expected the carbon-based nanomaterials would minimize the impacts on our living environments as well as our health. As part of our ongoing research in nanomaterials, this project focuses on the preparation and purification of carbon nanodots, which have an average size of 10 nanometers. The most common one-step synthesis method for making carbon nanobots is adopted. The newly synthesized carbon nanodots are dialyzed against deionized water with a molecular weight cutoff at 1,000 to remove any unreacted reagents. The solution of carbon nanodots was lyophilized to yield a dry product state for which to provide the biological study with the ability to control the desired solution concentration more accurately. The fluorescence properties of carbon nanodots were characterized by using fluorescence spectrophotometry (360 nm excitation and 460 nm emission).

An Investigation into Star Wars: The Original Trilogy as a Classical Epic Poem

Student Author(s): Sophia Priest, Sophomore (Psychology)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

Though our methods of delivering stories have changed drastically from the beginning of time, the core concepts of stories have remained consistent. To investigate this theory, I will delve into which ways the original Star Wars trilogy exhibits characteristics of a classical epic poem, such as the Odyssey. Star Wars was the perfect choice for a story to look into as it is popular all over the world and has many diehard fans, such as myself. By using sources like *Myth, Media, and Culture in Star Wars: An Anthology,* and also by going through the necessary components of an epic poem step-by-step, I will show with strong evidence that the Star Wars original trilogy is a modern retelling of a classical epic poem. My audience will thus have a firm understanding of how the same stories speak to people no matter what year they are in. The Odyssey and Star Wars differ greatly in face value, but they are both about someone who was destined to do great things, and accomplishes those things despite the many trials they face. Stories do not necessarily change; only the faces and plotlines do.

Bianca Majolie; Disney's First Woman Story Artist

Student Author: Erika Radke, Junior (Art), Lee Johnathan, Junior (Art), Hannah Saseen, Junior (Art), Jessyca Premo, Junior (Art)
Faculty Mentor: Heather Holin (Art)

Bianca Majolie was born in Rome, Italy, on September 13, 1900. In her lifetime she produced many concept art pieces for Disney Studios and was talented in story writing. As a young adult, she studied at the Art Institute of Chicago and used her education to become a brochure designer for JCPenney in New York. It wasn't until she witnessed *The Three Little Pigs* in theaters that she took a step back to reflect on her life and consider a career at the Walt Disney Studios. She recognized Walt's name from her yearbook, in which Walt had drawn pictures in before dropping out to enter the Army during the first World War. She swiftly sent a letter to Walt, and shortly after meeting to present her portfolio, she was hired into the story department in 1935.
In this project we will map out a timeline of Majolie's art career starting with her education, her time at Disney, to her private commissions and work after retirement. With this, we will illustrate the trials she faced as a woman in the workforce and celebrate her artistry and story writing. This project aims to highlight her achievements as the first woman on the story team for Walt Disney Studios.

Implementation of Restorative Practices with Sport for Positive Youth Development

Student Author(s): Sarah Ragab, Senior (Kinesiology), Destini Hogan, Senior (Peace and Conflict Studies), Mahlik Conley, Senior (Kinesiology), Asha Moore
Faculty Mentor(s): Michael Hemphill (Kinesiology)

The authors lead a high school restorative practices program to positively impact rates school suspension, interpersonal conflict, and absenteeism. The purpose of this study is to implement and examine a student-led process of developing youth leadership and student empowerment.
This is a case study design to better understand youth development through qualitative methods including individual and focus group interviews, formal and informal observations, and reflective field notes.
Preliminary results suggest that 1) student empowerment enhances engagement and youth leadership 2) restorative practices promote deep reflection on life skills, and 3) life skills have potential for transference to promote positive changes in schools. At the time of this submission, the results were still in analysis. Therefore, preliminary results will be further contextualized by qualitative trustworthiness techniques including peer debriefing and member checks.
Youth development programs should consider student empowerment-based teaching methods in order to have a positive impact on student's social and emotional learning. The application of restorative practices provides a way to build and strengthen relationships in a local high school that experiences high rates of interpersonal conflict. Circle processes are a fundamental restorative practice to help students repair harm and restore a positive school community.

The psychological consequences for adults who have been abandoned by their primary caregiver during adolescence

Student Author(s): Estafani Ramos Picasso, Sophomore (Psychology)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

Teenage abandonment from a primary caregiver has various psychological effects that can perpetuate a negative mindset for future relationships and/or adulthood. A disruption in attachment from a primary caregiver can impact one's need to form and keep relationships throughout their lives. Teenage abandonment is far more common

than people realize. Furthermore, I am interested in researching this topic, specifically, because of my early experience with teenage abandonment. Understanding the psychological effects of abandonment will allow those who have had a similar experience to understand their own effects and allow others to understand as well. By using sources such as scholarly articles such as "Parental Divorce and Romantic Attachment in Young Adulthood", peer-reviewed journals such as Girls and Violence: Tracing the Roots of Criminal Behavior, "More Than the Loss of a Parent: Potentially Traumatic Events among Orphaned and Abandoned Children." and websites such as Kimmel Psychology. The research project will also focus on the impairment of a person's ability to trust others and common disorders such as the borderline personality that creates abandonment issues. In conclusion, each source will help incorporate examples and explanations of different effects caused by abandonment.

Assessing the risk and protective factors of community violence within Greensboro

Student Author(s): Charmaine Randolph, Senior (Human Development & Family Studies), Ajah Haskel, Senior (Psychology)
Faculty Mentor(s): Jocelyn Smith Lee (HDFS) and Erica Payton Fo (Public Health)

Homicide is the leading cause of death for Black youth (ages 10-24 and it remains the leading cause of death for Black males through age 34. In 2017, Greensboro (GSO) experienced a record number of homicides and these victims were overwhelmingly Black males. The homicide rate for 2019 tied this record (44 homicides). Research indicates that factors such as residential segregation, poverty, educational inequalities, unemployment, racism, and a constellation of social and structural conditions (e.g. urban decay) combine to increase the propensity for community violence, including firearm violence. Using a Community-Based Participatory Approach (CBPR), we conducted Windshield Surveys of the City of Greensboro and conducted stakeholder interviews to assess environmental factors that may promote or reduce community violence. We systematically observed all four quadrants (East, West, North and South) of Greensboro to understand contextual vulnerabilities to community violence. Our findings revealed that more risk factors for violence (e.g. liquor stores, vacant lots) are located throughout economically deprived neighborhoods, mainly East Greensboro where violence is concentrated. Conversely, we found that protective factors such (e.g. little libraries, food pantries) were placed in resource-rich neighborhoods where they

are not a necessity. Our findings suggest that strategic investment in economically disadvantaged neighborhoods may be a critical component to reducing and preventing violence in Greensboro.

Factors Controlling the Mechanisms of Eating Behavior in Mammals

Student Author(s): Madeline Rees, Senior (Psychology)
Faculty Mentor(s): George Michel (Psychology)

Hunger and eating are behavioral states that are an integral component of the mammalian behavioral repertoire, yet the mechanisms that determine when and how one will experience hunger or engage in eating have yet to be fully elucidated. Various organ systems and cellular signaling mechanisms are thought to contribute to hunger experience and eating behavior, and these factors are modified by environmental influences (e.g. light, nutritional intake). In humans, and Western societies in particular, unprecedented, species-specific conditions including the prevalence of shift work, artificial light, processed foods, and even cultural mindsets and attitudes regarding hunger and eating affect eating behavior and may contribute to the prevalence of eating disorders and obesity. Considering the health risks posed by obesity, eating disorders, and poor nutritional intake, it is important to identify research questions that will advance scientific and medical understanding of the processes that underlie the motivation of hunger and eating behavior. In this presentation, the known physiological (e.g., glucose metabolism, hormone secretion, brain neurotransmitters), psychological (e.g., meal expectation, food-related attitudes), environmental (e.g., sleep patterns, nutrient intake, drug use), and developmental mechanisms that influence hunger and eating are outlined and discussed to identify where more research is required.

Science Fiction Literature

Student Author(s): Ashton Reid, Freshman, (HDFS) and Jaear McClendon, Sophomore (Political Science)
Faculty Mentor(s): Sarah Colonna (Grogan College)

In RCO 214: Science Fiction, we were encouraged to ask the question “what if”, because before anything can be created whether it be a skyscraper or the latest iPhone, somebody has to first imagine that creation, and ask “what if.” Our stories are part of a

larger class-produced magazine titled “The 3 Percent”, which combined our creativity, imagination, and research skills to think about issues such as oblivion and inequality. The research for the magazine not only served as inspiration for our stories but also reinforced the validity of science fiction in today’s society. During the semester, we learned how to use science fiction to think about social justice, current events, and various award-winning science fiction authors such as Octavia Butler and Ursula Le Guin. The two stories that we created are titled “It’s Not Rocket Science” and “The Abducted”, which highlights conflicts and ideas within today’s society. In the short story “It’s Not Rocket Science”, the theme is to never just believe what you are told and always ask questions. The goal of our project was to reflect on ongoing real-world problems and use science fiction to think of creative alternatives to unnoticed problems around the globe.

Relating Parents’ Elaborativeness to Children’s Strategy Usage in Remembering

Student Author(s): Sydney Revell, Senior (Psychology), Keadija Wiley, Post-Bac (HDFS)
Faculty Mentor(s): Jennifer Coffman (HDFS)

Although there is a rich literature on the development of children’s memory skills, less is known about contexts that support the development of these skills. Previous literature suggests, however, that conversations between parents and their children in which they reminisce together are influential to the development of children’s autobiographic memory skills, which has also been suggested to be linked to children’s performance in deliberate memory tasks (Langley, Coffman, & Ornstein, 2016; Reese et al. 2011). The work presented here extends these findings and highlights the importance of continued consideration of contexts that support the development of memory. A sample of 51 kindergartners from an ongoing longitudinal study was assessed at multiple timepoints, with various memory tasks designed to characterize their recall performance and strategy use. Children also completed a reminiscing task with a parent to capture parents’ elaborative style. At Timepoint 1, results indicate significant differences in children’s deliberate strategy use, such that children who have parents with higher levels of elaborativeness evidence greater strategic skills, including elaborations ($p = .01$) and category naming ($p = .03$). These findings extend previous claims that parents’

elaborativeness is associated with children's recall and strategy use in a deliberate memory task.

Bryn Imagire and Gyo Fujikawa

Student Author(s): Nicole Rich-Mandel, Senior (Art Ed.), Alexis Pemberton, Senior, (Art), Austin Pruitt, Senior (Art), Nayeli Campos-Franco, Senior (Art)
Faculty Mentor(s): Heather Holian (Art)

This project will compare, and contrast two animation artists born in different eras, both showing resilience and determination to become successful artists. Doing so, we have designed a poster showing timelines of Bryn Imagire and Gyo Fujikawa's lives and their progression through the Walt Disney and Pixar Animation studios as women. Born in 1963, Bryn Imagire is currently a shading art director at Pixar Studios and has been for over two decades. She has worked on several popular and successful films at the studio, all displaying a wide range of colors and styles. In an interview, she revealed that she was not immediately hired into the Pixar Studio at first but was determined until she was. This story of persistence is similar to that of Gyo Fujikawa, our second artist. Gyo Fujikawa is an Asian-American artist, born in 1908 in Berkley, California. She was an experienced artist and showed an early interest in artmaking. While she produced some work at Disney,her talent in adulthood also existed outside of the Disney studios, as she made several children's books along with designs for various logos and stamps. Being an Asian-American at the height of World War II and of Japanese internment, her job as an artist was not easy.

Isolating Fungal Secondary Metabolites as a Source of Novel Drugs Leads

Student Author(s): Chris Roberts, Junior (Chemistry)
Faculty Mentor(s): Nicholas Oberlies (Chemistry)

In the United States approximately 40% of individuals will be diagnosed with cancer within their lifetime, and for every 100,000 cases, 171.2 will be fatal. According to the NIH, approximately 600,000 people have died from cancer in 2019 alone. It is estimated that nearly half of anti-cancer drugs and antibiotics was derived from a natural source, like plants, bacteria, and fungi. Fungi are an under investigated source for novel anticancer drug leads. It is estimated that there are between 1.5 and 5 million

fungal species that inhabit the earth, and approximately 135,000 have been described, with only a fraction being chemically investigated. The fungal secondary metabolites were extracted, and the extract was separated using bioactive guided fractionation and several chromatographic techniques. The pure compounds were characterized by Mass Spectrometry and Nuclear Magnetic Resonance Spectroscopy and tested against human melanoma, human breast cancer, and human ovarian cancer.

Liberal Arts Education is No Longer Enough for College Students to be Prepared for Life and Work

Student Author(s): Liz Roberts, Sophomore (Teacher Education & Higher Education)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

Liberal education programs are highly ubiquitous within colleges and universities, and have been for quite some time. Usually taking two years of a four year bachelor's degree program, general education (Gen Ed) classes follow a wide range of subjects that are taught for students to learn specific skills from each, including writing, rhetoric, reading, speaking, etc. However, these transferable skills are often soft, and though they can be applied in a wide range of jobs and applications (well-rounding individuals like in "From the Editor: Undeclared," *Educational Theory*), they do not go as deep as specialized, focused skill sets: computer programming, architecture, engineering, nursing/medical work, etc. These are more in demand in the competitive and important jobs of today's industry. The focus on "employability" that colleges espouse denotes this liberal arts mindset, though the skills being marketed to students aren't necessarily as employable as, say, a vocational education (“Economic Precarity, Modern Liberal Arts and Creating a Resilient Graduate,” *Educational Philosophy & Theory*). Using sources such as the ones named earlier and others such as Zakara's *In Defense of a Liberal Education*, I wish to show the importance to the students of today (such as me) of their education system.

MAMA Mindfulness Arts Mindfulness Action

Student Author(s): Cameron Robinson, Junior, Tevondre Bryant, Sophomore, and Carla Fuller, Junior (Theatre)
Faculty Mentor(s): Denise Gabriel (Theatre)

How can current theatre practitioners begin to create a culture for young artists that supports emotional, physical, and social well-being? These undergraduate researchers sought to answer this question with mindfulness practices. The UCLA Mindfulness Research Center defines mindfulness as "paying attention to present moment experiences with openness, curiosity and a willingness to be with what is." Through a partnership with Triad Stage, the researchers began teaching mindfulness workshops at Dudley High School, a Title I school in Greensboro. They also utilized an approach inspired by the novel Escape to Berlin by Adrian Piper, which analyzes how she peeled off the layers of her socialization--as a black educator-- in this country to become her authentic self. "Then you are really free. That is when you become the self you really are" (Piper, 21). Organically, these workshops made space for the high school students to create a performance piece that explored the impact of going to a majority black high school. The undergraduate researchers will perform an original piece based on their work with the high school students and on their research of Piper's novel.

Experimental Evolution of Magnetite Nanoparticle Resistance in *Escherichia coli*.

Student Author(s): LaShunta Rodgers, Senior (Biology), Daisha Campbell, Post-Bac (Biology), Constance Staley, Post-Bac (Chemistry & Biochemistry)
Faculty Mentor(s): Joseph Graves (Biology), Jude Ewunkem (Joint School of Nanoscience and Nanoengineering), Misty Thomas (Dept. Biology, NCATSU)

There has been an increased usage of metallic antimicrobial materials to control multi-drug resistant bacteria, yet there is a corresponding need to know if this usage may lead to resulting genetic adaptations that produce more dangerous bacterial varieties. Our research group has utilized experimental evolution to produce *Escherichia coli* K-12 MG1655 strains resistant to excess iron (II and III) sulfate with increased resistance to silver, gallium, and traditional antibiotics. Genomic analysis identified intergenic/pseudogene mutations in several genes in the iron (II) and (III)-resistant lines. Gene expression studies demonstrated a profound difference in regulation of some genes chosen for their association with iron and general metal metabolism between the iron (II and III) resistant and control populations.
Here we continue the study of iron resistance by utilizing experimental evolution to generate 5 populations that are resistant to magnetite nanoparticles ($FeNP_{1-5}$). Preliminary data shows that by 21 days, FeNP-selected populations showed superior 24-

hr growth from 500—2,500 mg/L magnetite, gallium, silver, copper, tetracycline, ampicillin, chloramphenicol and rifampicin compared to controls. Whole genome and gene expression studies will be conducted to test if the genomic foundations to iron nanoparticle resistance match those determined in ionic iron (II) and iron (III).

The African Burial Ground Project: Discovering Personal Identity and Culture

Student Author(s): Carelle Robinson, Senior (Anthropology)
Faculty Mentor(s): Linda Stine (Anthropology)

After construction on a federal office tower on 290 Broadway in 1991, a preliminary cultural resource management archaeological project revealed around 15,000 intact skeletons of free and enslaved Africans, who lived and worked in Colonial New York, dating from the 1630s to 1795. The following research project asks how the material culture found at the African Burial Ground sheds light on the personal identity and culture for a subset of the approximately 15,000 deceased. I have compared bead data amongst women, men, and children between the ABG and another famous African graveyard, located in St. Helena that was excavated in 2007, and examined the beads as to their body positioning and relationship to gender and age. Archaeological excavations revealed burial traditions and mortuary practices of these people, and scientists were able to look at individual burials, and identify some unique artifacts that showcase the significance of this graveyard and colonial African culture. Investigations have caused researchers to rethink how crucial the Africans were to the original construction of this city. Since the rediscovery of this burial ground, scholars, researchers, and community leaders have been politicized and motivated to honor the lives of those who built Colonial New York.

Investigating the Effects of Expressing cpn60 as a Transgene in Model Tobacco Through Agrobacterium Mediated Transformation

Student Author(s): Kaleigh Roe, Post-Bac (Chemistry)
Faculty Mentor(s): Ayalew Osena (Biology)

The production of antioxidants is employed as a defensive response during times of high abiotic stressors such as salinity, heat, or drought. These stressors also generate

increased concentrations of reactive oxygen species, which can be fatal to the cells. During these strenuous stresses plants utilize chaperones as a means to create abiotic stress resilience. Chaperones specifically chaperone 60 (Cpn60), aid as a catalyst in the folding and refolding of proteins to keep proteins from degrading and maintain intended function. Introducing a heat shock protein such as Cpn60 into plants would improve plant tolerance to increasing temperatures. In this research we will be inserting genes that aid in defense mechanisms against abiotic stresses to increase crop yield and integrity within Transgenic Tobacco (*Nicotiana benthamiana)*. This research will primarily focus on the effect of Cpn 60 in model tobacco. Cpn 60 was expressed in transgenic tobacco through the control of a heat inducible promotor, HVHSP, via agrobacterium mediated transformation. The results with the HVHSP promoter did not generate the plant resilience expected. Therefore, a new constitutively active promoter, cauliflower 35s promter, has been inserted to the tobacco and will be used in further research to hopefully create increased plant integrity under high temperatures.

Dungeons and Dragons and the Effect on Humans.

Student Author(s): Julian Rojas, Sophomore (Media Studies)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

My project where it stands right now is at a point where I have been able to do research through the internet as well as the UNC Greensboro library. My research question that I have written “Does Dungeons and Dragons as a tabletop role playing game help develop a creative mindset as well as help develop creative writing skills, social skills, and basic arithmetic?” The thesis statement that I have written so far is “Dungeons and Dragons is a tabletop role playing game that helps develop a creative mindset as well as help develop creative writing skills, social skills, and basic arithmetic.” The reason I am interested in this topic is because I am heavily interested in Dungeons and Dragons and I play and write for Dungeons and Dragons campaigns. Dungeons and Dragons so very much and it has become a very big part of my life and so I hoped I could write a research paper about it. When I first started playing Dungeons and Dragons, I personally was not a very creative person, and I could hardly think of anything creative. I have also seen many other people become more creative as well as they have become more skilled with problem solving because of Dungeons and Dragons. Now after playing Dungeons and Dragons for a year, I have thought of some of the most creative ideas and thoughts I have ever had. I also have felt One of the resources that I have chosen is an article by

KQED news titled “How 'Dungeons & Dragons' Primes Students for Interdisciplinary Learning, Including STEM”. The article talked about how including Dungeons and Dragons in everyday teaching helped students social skills as well as problem solving. I would like to find interviews or more articles from people who talk about how they feel like they have become more creative or more social because of it. I hope that I learn from my research about how Dungeons and Dragons affect our brains and our social skills.

What are the Outcomes Associated with Comprehensive as Compared to Abstinence Only Sex Education Programs?

Student Author(s): Caytlyn Rose, Sophomore (Public Health Education)
Mentor(s): John Sopper (Religious Studies)

Comprehensive sex education is empowering, consent-based, and scientifically accurate. It encourages people to advocate for their own bodily autonomy and take charge of their own holistic wellness. Abstinence only sex education is religion sensitive and encourages students to avoid sexual interactions all together until they may be ready to be a parent. This study will explore the outcomes associated with teens who were only exposed to abstinence-based sex education in comparison to those who were exposed to comprehensive sex education. Using scholarly journals, peer reviewed research, and statistics from government agency databases, this study navigates how abstinence based only sex education, as well as comprehensive sex education, effectively prevent teen pregnancy rates, rates of teen rape/sexual assault, rates of teen STIs, and teen empowerment/agency. Research concludes that comprehensive sex education best prevents rising rates of teen pregnancy, teen rape/sexual assault, and teen STIs, when compared to abstinence only sex education. This research will allow us to understand the importance of comprehensive sex education and encourage state and federal funding towards it.

"The Damning Word": The People's Side of Irish History in Frank Delaney's Fiction

Student Author(s): Eliza Rosebrock, Senior, (English and Art History)
Faculty Mentor(s): Ben Clarke (English)

Frank Delaney was an Irish author, broadcaster, and journalist working from the 1970s to the early 2000s. While Delaney developed the narratives of his fictional characters so they would intersect with events in modern Irish history, his main focus was on the emotions and internal struggles of the common man. This use of an 'everyman' character is not unusual, but all of his main characters have something that sets them apart from others and affects their perspectives; this can range from PTSD to severely underdeveloped social skills. The personal dramas of these characters ultimately take precedence over the historical events, even as the characters are pulled into the events themselves.

By telling Irish history in the form of a fictional narrative in *Ireland: A Novel* (2005), Delaney both made it accessible to a wider audience and paid homage to the long tradition of storytelling and oral narrative found in Irish culture. I will examine sections of *Ireland*, as well as historical information that I gathered while completing a GE-URCA-funded research trip to Ireland, in order to trace the progression of the characters' internal histories and the historical events running parallel to them and identify where personal history supersedes national history.

Sylvia Holland: Her Life and Impact at Walt Disney Studios

Student Author(s): Eliza Rosebrock, Senior, Emily Moser, Senior, Kelsey Daniel, Senior, and Hannah McCarthy, Senior (Art)
Faculty Mentor(s): Heather Holian (Art History)

Sylvia Holland was hired directly into the Story Department at Walt Disney Studios in August of 1938 and immediately began work on *Fantasia*. Holland eventually led the team working on the Tchaikovsky segment and was the first woman to be a story director in any Disney production to that date, opening up this department more for other women. She went on to contribute concept art for several other pictures and projects that were not completed before being laid off at the end of WWII but continued making art until her death on April 14, 1974.
We hope to demonstrate both Holland's individual contributions to the projects on which she worked at Disney and her influence as a pioneering woman as she paved the way for other women in animation. We will construct a timeline showing how Holland's career and personal life intersected with relevant world events in a time where a woman's position in society was beginning to change. By looking at Holland's artwork, various academic sources, accounts of her by her contemporaries, and her own writings,

we will construct a comprehensive representation of Sylvia Holland at Walt Disney Studios and the impact she had that is still felt today.

Dynamics and dimensions of subjective age in response to challenge

Student Author(s): Tanaijah D. Rutledge, Senior (Psychology)
Faculty Mentor(s): Dayna R. Touron (Psychology)

Subjective age, or the age one feels, predicts health and life satisfaction. Older adults tend to feel younger than their actual age, whereas younger adults feel older. Although most studies measure overall subjective age, it can also be measured by cognitive, physical, and social subjective age. Research has shown that older adults' overall subjective age changes when they are challenged by a test of memory (Hughes et al., 2013) or grip strength (Stephan et al., 2013). In our study, we compared the impact of cognitive and physical challenge on overall subjective age as well as targeted dimensions. Participants completed either a balance test, a memory test, or a vocabulary test. This research informs our understanding of how subjective age responds to experience. The link between subjective age and well-being suggests that older adults might avoid healthy activities when they feel older, or vice versa. We also examined how physical and cognitive challenges impact how often participants anticipate engaging in everyday activities, both overall and within relevant dimensions.

Physical Activity System of Support for Latinos with Diabetes (PASOS-LD): a pilot intervention to improve diabetes control among Latinos.

Student Author(s): Jacqueline Sandoval, Junior (Public Health Education)
Faculty Mentor(s): Sandra Echeverria (Public Health Education)

Recent data indicates that Latinos are disproportionately affected by chronic health conditions, particularly type 2 diabetes mellitus (T2DM). Diabetes is characterized by elevated levels of glucose in the bloodstream and can lead to serious health complications, including death. Research suggests that social determinants of health are key drivers of a population's health and shape the adoption of health-enhancing behaviors. Specifically, little research exists proposing community-based physical activity interventions for individuals living with diabetes. The present pilot study seeks to answer two questions: 1) What are the key community, work, healthcare and

interpersonal factors that limit Latino adults' (18-65 years of age) adoption of physical activity? and 2) How can healthcare systems more effectively integrate physical activity promotion in clinical care? My role on this study involves interviewing Latino patients (n=75) receiving care at a Cone Health clinic, identifying new sites to recruit participants, preparing progress reports, and assisting with the interpretation and presentation of study findings. The project results will be used to develop a future intervention linking community-based physical activity programs with clinical care.

Where do food deserts come from and what can be done?

Student Author(s): Renee Santos, Sophomore (Social Work)
Faculty Mentor(s): John Sopper (Grogan College)

Do you know a grocery nearby where you can access fresh fruits and vegetables for you and your family? If you answered yes you are one of many fortunate Americans that don't live in a food desert. Food deserts are an issue found throughout the United States especially here in Greensboro. Food deserts don't discriminate against age, race, or gender only where you live. It has been noted that there have been initiatives taken to attempt to solve the problem but food deserts are a complex problem affected by many different factors. Through extensive review of scholarly peer reviewed literature and interviews with social workers and those directly affected. By using these research methods it can determine exactly what causes food deserts, what initiatives have been taken, and how effective these initiatives have been. Once findings have been brought to light, this knowledge can be applied to implement programs to better this situation not only on a local and global scale.

Selecting Arabidopsis thaliana ecotypes for a proposed Moon lander project

Student Author(s): Alexandra Settle, Junior (Biology)
Faculty Mentor(s): John Kiss and Tatsiana Shymanovich (Biology)

As part of the Artemis program, NASA plans to send robotic landers to the Moon's surface to execute scientific experiments and develop techniques for future space exploration. In our proposed experiments, *Arabidopsis thaliana* seeds will be delivered to the Moon's surface in a small, portable greenhouse, watered, and grown for 10 days. In this study, we must determine which ecotypes of *A. thaliana* will have robust growth

at a broad temperature range due to temperature control limitations on the robotic lander. Our hypothesis is that ecotypes adapted to colder and warmer climates will allow us to have successful broad temperature range of vigorous growth. To test this hypothesis, we used nine *A. thaliana* ecotypes originating from Finland to the Cape Verde islands. Seedling germination and growth at 11, 15, 25, 30, and 35°C were recorded. Software was used to determine leaf area and total root length. In general, *A. thaliana* plants had sufficient growth at 11-25°C, but do not at 30 and 35°C. Contrary to our initial hypothesis, one *A. thaliana* ecotype, Col-0, (originating from Poland) had the best growth at 11-25°C compared to all others. We expect that Col-0 will be the best suited for our proposed lunar experiments.

For Samantha

Student Author(s): Asher Sizemore, Senior (Music), Sean Mulcahy, Senior (Music), Lihuen Sirvent, Post-Bac (Music)
Faculty Mentor(s): Alejandro Rutty (Music)

For Samantha is a piece written for saxophone quartet and dedicated to a good friend of mine. There are a couple of driving forces to the piece, namely the use of time signatures and the use of quarter tones. In the beginning, a theme is presented in the time signature of 13/16, giving it an uneven and asymmetrical feel. This same theme is repeated at the end of the piece, but this time in standard 4/4 time. The quarter tones in the piece are used as passing tones to transition from note to note, giving it a smooth and ethereal feel.

Mono- and Di-Substituted Fluorobenzaldehydes as Substrates for Rabbit Liver Aldehyde Oxidase

Student Author(s): Marisa Sloan, Senior (Chemistry)
Faculty Mentor(s): Bruce Banks (Chemistry)

The enzyme aldehyde oxidase (AO) metabolizes a wide range of drugs in the liver and contributes greatly to the clearance of these drugs from the body. Because approximately 20% of current drugs contain fluorine substituents, we explored the influence of fluorine on oxidations catalyzed by AO. In this research, the compounds 2-fluorobenzaldehyde, 3-fluorobenzaldehyde, 4-fluorobenzaldehyde and 2,4-

difluorobenzaldehyde were studied to determine if the positioning of their fluorine substituents affects their affinity for and oxidation by AO. Substrate activity with rabbit liver AO was measured by spectrophotometric assays and Michaelis-Menten kinetic constants were determined. Although 2,3,4,5,6-pentafluorobenzaldehyde had previously been shown to serve as a noncompetitive inhibitor of rabbit liver AO, the mono- and difluorobenzaldehydes acted as substrates for the enzyme, suggesting that a significantly larger number of fluorine substituents may lower substrate activity and result in inhibition of AO oxidations. 2,4-Difluorobenzaldehyde had the lowest K_M, a measure of substrate affinity for the enzyme, and the largest V_{max}/K_M, a measure of catalytic efficiency for the oxidation. The 2-, 3-, and 4-fluorobenzaldehydes had similar K_M and V_{max} values. This research supports the hypothesis that the rate of enzymatic oxidations of benzaldehydes by rabbit liver AO is enhanced by substituents that are electron withdrawing.

Walking as a Critical Practice

Student Author(s): Arielle Smallwood, Post-Bac (Media Studies), Inda Baldwin, Senior (Dance), Alexandria Vilchis, Senior (Music), and Elisabeth Fisher (Media Studies)
Faculty Mentor(s): Jennida Chase (Media Studies), Lee Walton (Art), and Clarice Young (Dance)

Walking: A Critical + Creative Research Practice explored the practice of walking and moving through space as a critical and creative research method across disciplines. Students from Dance, Music, Art, and Media Studies were guided by faculty from correlating disciplines to explore *walking and movement through space*. This research acts as a resistance to our current competitive cultural obsession with production (at any costs) to focus on more mindful, humble and *human* approaches to the production of experience. The practice of walking becomes a method to examine *human experience* in relation to the built environment, manufactured time, and the process of learning. Emerging from each of the four disciplines, the conscious act of *walking and movement through space* yielded a diverse range of perspectives, strategies, and objectives. The participating students will present a multimedia presentation for Expo sharing methods and outcomes.

The compensation gap of nurses in different settings

Student Author(s): Jala Spain, Sophomore (Grogan College
Faculty Mentor(s): John Sopper (Grogan College)

Nurses play an important role in the healthcare system and nursing is one of the biggest occupations in the healthcare field. Being in the nursing field, nurses have many different settings that they can work in. They can work in hospitals, nursing care facilities and other facilities. Even though they are all considered registered nurses working in these facilities doesn't mean that they all get paid the same. This research study will explore the compensation gaps between nurses that work in major healthcare systems versus nurses that work in nursing homes. Using interviews and also reviewing scholarly journal articles and the Department of Labor database, this study will explore the pay differences between the two settings. It brings awareness to the compensation gap between the two different work environments. By conducting this research, it will show if there is a big gap or if there is any gap between the different settings. These findings will help future nurses and current nurses understand the compensation gaps and they can determine where they can prefer to work.

Regulating Glucose Metabolism with the Grapefruit Flavonoid Naringenin in Type 2 Diabetes and Breast Cancer

Student Author(s): Jessica Speckman, Senior, Caroline Nelson, Sophomore, (Biology)
Faculty Mentor(s): Yashomati Patel (Biology)

Breast cancer impacts one in every eight women in the United States alone, and worldwide it is the second most deadly cancer in women. Diabetes is the seventh leading cause of death in the world. Both of these diseases are associated with glucose dysregulation. Breast cancer cells are dependent on high glucose intake to proliferate, and type two diabetes fat cells, or adipocytes, are hindered in their ability to intake glucose due to insulin resistance.
Naringenin is found in tomatoes and citrus fruits, such as grapefruits. This flavanone has been found to impact glucose metabolism in both breast cancer and insulin resistant adipocytes through research involving lipid formation, or lipogenesis, and glucose regulation.
The method through which the flavanone produces its effects is unknown, however it is hypothesized that in both cell types the compound stimulates anaerobic respiration. Our

studies have focused on the possible methods through which the flavanone redirects the metabolization of glucose in both diabetes type two adipocytes and breast cancer cells.

Regulation of Extrahypothalamic Kisspeptin in the medaka brain by BPA

Student Author(s): Alexis Starr, Senior (Biology), Deborah Killian, Senior (Biology)
Faculty Mentor(s): Ramji Bhandari (Biology)

The physiologically active peptide, kisspeptin, has been shown to initiate sexual maturation and ovulation by activating GnRH neurons in several vertebrae species. However, despite a wide kisspeptin (KISS) receptor distribution in the brain, especially in the preoptic area and hypothalamus, the research focus has mostly been confined to the kisspeptin regulation of GnRH neurons and reproduction. We have demonstrated that an exposure to bisphenol A (BPA), a chemical compound that leaches out of plastics, results in an increase in expression of kisspeptin and their receptor mRNA levels in the brain without altering GnRH expression. This change was correlated with an increased impairment of fertility in the male medaka fish. In the present study, it was hypothesized that kisspeptin and their receptors are localized to extrahypothalamic areas including nucleus preopticus and that BPA exposure stimulates their expression leading to activation of isotocin/vasotocin neurons leading to alteration in mating behavior in males. Determination of the expression pattern of *Kiss* mRNAs their receptors in the hypothalamic and extrahypothalamic area of medaka brain and their regulation by BPA is currently in progress and the results will be presented at the 14th URSCO meeting.

Why Do People Drink Bottled Water? A Geographic Study of Bottled-Water Consumption in Greensboro, North Carolina

Student Author(s): Stephanie Stephens, Senior (Environmental and Sustainability Studies)
Faculty Mentor(s): Dr. Sarah Praskievicz (Geography, Environment, and Sustainability)

Freshwater, one of the most important resources in the world, is bottled and sold as a commodity. Emerging contaminants, plastic pollution, and water scarcity are all issues we face now and ever more pressingly in the future. Prior research has examined why people drink bottled water on a national scale; this study is innovative because we are

focusing on bottled water consumption within a single city. We have found that more people in low-income areas drink bottled water inside and outside of their homes and are concerned about tap-water contamination. Understanding why people drink bottled water is crucial to promoting a more sustainable future in water quality and pollution reduction. In spring 2020, I will visit low-income neighborhoods of Greensboro, NC and give surveys, test water from homes, and conduct interviews on how people feel about tap water in comparison to bottled water. Testing the water in the homes will also reveal if heavy metals like lead could influence tap-water quality as it pertains to taste and safety. The hope is to restore faith in tap-water quality, understand bottled-water consumption at the consumer level, and make sure people are drinking safe water.

The Bombarde Reed: Understanding the Design and Construction

Student Author(s): Alex Stewart, Junior (Music)
Faculty Mentor(s): Mary Ashley Barret (Music)

The Bombarde is a small, double- reed instrument native to Brittany made to accompany the bagpipe in Breton music. The most important part of this instrument is the reed, as it is responsible for the production of sound. Bombarde reeds cannot be mass produced; they must be made by hand to achieve a good tone quality and function well with the instrument. There are very few people alive who know how to make them and fewer still who are willing to take on new customers.
In the initial development of this study, the only available resources found that relate to the Bombarde were written in French and focused on the music of Brittany, not the construction of reeds. Dr. Barret and Alex Stewart had access to a collection of approximately thirty different reeds from Brittany in various strengths through EJ Jones, a local Bombarde player and bagpipe instructor of Alex.
Throughout the course of this research, Barret and Stewart learned as much as they could about the Bombarde reed construction and devised a system to make them. Information about the dimensions of the reeds was gathered and a detailed reed diagram was constructed. Twelve reeds were crafted and tested by several Bombarde players in the NC area.

Characterization of transgenic tobacco constitutively expressing Pyrococcus furiosus small heat shock protein (PfsHSP20)

Student Author(s): Helina Talbot, Junior (Biology)
Faculty Mentor(s): Ayalew Osena (Biology)

This paper introduces *Pyrococcus furiosus* SHSP20 constructively expressed in plants to increase resilient to high temperature. In this experiment, SHSP 20 is extracted from an arechae, *pyrococcus furiosus*. The archaea live in extreme temperatures such as volcanic areas. Construct T0 lines of tobacco using 35s promoter to conduct DNA extraction. Also, conduct heat treatment on T2 lines using promoter HvHSP. Expressing SHSP 20 in tobacco can help the plant resist extreme temperatures.

Utilizing Technologies to Examine the Designed Environment and Perception of Crime

Student Author(s): Katherine Tardif , Senior (Interior Architecture), Margarito Martinez, Senior (Interior Architecture)
Faculty Mentor(s): Asha Kutty (Interior Architecture)

The goal of this project is to conduct a pilot study using innovative technologies, to examine the relationship between the design features of the built environment, and the occurrence and fear of crime in and around the UNCG Campus. The purpose of this study is to help designers and law enforcement to identify environmental features related to crime.
The project focused on crime that has occurred between January 2016 -2018 within the UNCG Campus and its neighborhoods. To collect data, the project used multiple tools, including a spatial analysis software program called SpaceSyntax and an emotion-sensing technological device called NeuroSKY Mindwave. SpaceSyntax was used to study the way in which streets, buildings, and landscape features interconnect to one another, and the degrees to which their relationships foster visual connectivity. NeuroSKY is a low-cost EEG (Electroencephalogram) and can be used to measure how our brain responds to various features in the physical environment as we move through it.
The experimental results show that the perception of crime (as measured through attention levels) were highest in the Spring Garden area, having moderate visibility.

Results also showed that meditation levels were highest in the central campus area, having very low levels of visibility.

African American Perspectives on United States National Parks and Visitation

Student Author(s): Robert Tate, Senior (Geography)
Faculty Mentor(s): Selima Sultana (Geography)

National Parks have been coined as "America's Best Idea" claiming to be a delicate environment where American's and the greater outdoors can coexist. However, Black Americans comprise less than 3% of visitors to National Parks. Underrepresentation of Black visitors challenges the view that public land is open to all. African American's or Blacks have prevailed their way through difficult and racial times throughout US history. Slavery, segregation, and current racial tension have left an imprint on society, calling for a process of unlearning and undoing by centering African American and Black voices. This research examines visitation motivations and hindrances of visiting National Parks using the Great Smoky Mountains National Park, the most attended National Park in the US, as case study. Focus groups and interviews were conducted to better understand the Black perspective of nature as a racialized space and National Parks, and identified perceived gaps in the National Park Service that has led to the lack of racial minority attendance. This research contributes to a broader understanding of how landscapes and institutions are racialized, and how the power of narrative can be used to dismantle racialization.

Updating Episodic Memory: The Role of Encoding Quality in Memory for Change

Student Author(s): Ei "Crystal" Thinzar, Senior (Psychology)
Faculty Mentor(s): Chris Wahlheim (Psychology)

Being able to update our existing memories with new information is crucial for navigating dynamic environments. Retrieval of past events during new learning can enhance memory updating when changes from original to new information are detected and remembered. However, no studies have examined how the encoding quality of predictive cues moderates such effects. My study examined the association between

subjective reports of remembering cues and memory benefits observed when changes are detected and remembered. The findings indicated that higher cue encoding quality predicted better memory updating, but only when changes were detected and remembered. When changes were detected, but not remembered, high cue encoding quality impaired memory updating. These findings contribute to an emergent theory that emphasizes critical roles for encoding and retrieval of integrated representations of past and recent events in the facilitation of episodic memory updating.

The "Mental Health Crisis": The Adolescent Need for Accessible Treatment Plans

Student Author(s): Bailey Thompson, Sophomore (Chemistry)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

Currently, the United States are under what many consider a "mental health crisis." This is especially notable in adolescents from as early as middle school all the way up to—and possibly later than—their college careers. Problems in a scholar's mental health can be troubling and distracting to their success, and it can be worse if it is coupled with an inability to seek a treatment plan in working towards a better mental image. Good examples of this are the books *Adolescent Health Services: Missing Opportunities* and *Child and Adolescent Mental Health Resources: Global Concerns*. These books directly discuss the missing link between mental health and services available within in our country. I argue that accessible treatment for adolescents would allow teenagers who struggle with mental crises to have a place that will help them find ways to work through any problems that they may have. As a pre-pharmacy major—and as someone who has just recently changed from a psychology major—I feel strongly that areas designated towards nurturing of student health would give them the path towards a brighter future; the work towards a healthy teenage generation would be putting input towards the world ahead of us.

Genetic characterization of CG30383: a gene essential for meiotic chromosome segregation in *Drosophila melanogaster*

Student Author(s): Sean Thornton, Senior (Biology) Sarah Pellizzari, Junior (Biology)
Faculty Mentor(s): Dean Tomkiel (Biology)

Meiosis is the process by which haploid gametes are produced from diploid cells. We are characterizing mutants in the model organism *D. melanogaster* that disrupt meiotic chromosome segregation. Here, we describe a new mutation that alters both male and female meiosis. We used recombination and deficiency mapping and whole genome sequencing to identify a frameshift mutation in CG30383. Complementation tests revealed that a P element insertion in CG30383 as well as a deletion of the gene fail to complement. No previous meiotic function has been ascribed to this gene, and analysis of the predicted protein product revealed no conserved features. Genetic tests of chromosome transmission indicated that all allelic combinations cause Meiosis I nondisjunction of both sex and fourth chromosomes in males and females. Meiosis II nondisjunction of the sex chromosomes was also observed in males. Cytological examination of male meiosis using Fluorescence *In Situ* Hybridization suggests that the mono-orientation of sister chromatids at meiosis I is disrupted. Thus, this gene may encode a protein involved in the monopolin complex, which ensures coorientation of sister kinetochores at meiosis I so that homologous chromosomes properly segregate.

In Search of Drug Leads Against Aggressive, Drug Resistant Bacterial Infections

Student Author(s): Madeline Tillman, Senior (Biochemistry)
Faculty Mentor(s): Nadja Cech (Chemistry)

The evolution of bacteria has allowed them to thrive in some of the most hostile conditions, one being the human host. From ancient remedies to the discovery of Penicillin [1], people have sought ways to combat these bacterial infections. During the antibiotic discovery period of 1940-1960s, the impact of bacteria in a human host was significantly reduced and seemed to be a problem we no longer had to worry about; however, this is not the case in today's time. Since then, bacteria are evolving to combat current and traditional treatments making bacterial infections the second leading cause of death in the world.[2] Antibiotics are molecules that can inhibit growth and/or kill bacteria. Nature provides the world with a diverse and unique set of chemicals (known as "natural products") that scientists may never think of to synthesize. The diversity in chemical structures of molecules made by natural product sources and the long-standing co-evolution of living organisms makes natural products an excellent potential source of new antibiotics. The goal of this project is to biologically assess the activity

that *Stachys byzantina* may present against Methicillin-resistant *Staphylococcus aureus* (MRSA) and to isolate the compounds responsible for the activity.

The plant *Arabidopsis thaliana* responds differently in a ground-based microgravity simulation study

Student Author(s): Megan Toler, Senior (Biology)
Faculty Mentor(s): Tatsiana Shymanovich and John Z. Kiss (Biology)

Plant adaptations to light and gravity are crucial for their survival and fitness. Since gravity and light work simultaneously, spaceflight experiments are needed to separate the effects of the two factors. In microgravity, during spaceflight experiments with *Arabidopsis thaliana*, novel root and shoot responses have been observed that are not seen on Earth. The goal for this study is to perform a ground-based control experiment that attempts to simulate the effects of microgravity by using a 2D clinostat to compare plant responses. A 2D clinostat is a wheel-like device that rotates to randomize the gravity vector. Similar to spaceflight experiments, seeds of the wild-type genotype and two mutants lacking light-receptors were plated on growth medium and placed onto the clinostat with unidirectional blue or red-light treatments for 44 hours. Preliminary results suggest that roots and shoots of Arabidopsis plants do not have responses to blue and red-light treatments that were observed in space. Thus, the 2D clinostat does not simulate microgravity for the parameters tested. This project will help us to understand the mechanisms of plant responses to light and gravity and can be applied for growing plants during spaceflights, on the Moon, or Mars.

The Importance of ASL in the Healthcare System

Student Author(s): Lauren Vaile, Junior (Biology)
Faculty Mentor(s): John Sopper (Grogan College)

According to a recent survey derived from the GP Patient Survey 2011 (GPPS), Deaf adults use primary care more frequently than the general population. However, 44% of Deaf people found their visit satisfaction range to be difficult or very difficult. The problem is that deaf people are not receiving the same care as hearing people in a healthcare environment, this needs to be addressed. So, how can hospitals better reach their deaf patients, and provide a more effective healthcare system for deaf people? Would implementing training programs and seminars for teaching ASL hospital staff be effective, if so should hospitals partner with NCDHR, to teach ASL to Physicians and hospital staff? What would the result be if ASL training is implemented? To conduct this

research, peer-reviewed articles, prior research surveys, and online articles were reviewed. This research sheds light on the value of teaching ASL to hospital staff and Physicians, as a way to improve healthcare for deaf people. This study will assist the healthcare community to better serve deaf patients.

Incarceration 2.0

Student Author(s): Maria'Aura Valle-Pennington, Sophomore (Sociology)
Faculty Mentor(s): John Sopper (Religious Studies)

Do you know what happens to people after they get out of prison? When asked this question, many people think about former felon's having a hard time connecting with family, or difficulty finding a place to live, or a job. But they often overlook a bigger picture of the complex ways being labeled as a felon and having a prison record can impact not only those who have been incarcerated, but the entire community where they live. This study reviews the current scholarly literature, government data bases, and advocacy organization websites to examine the connections between the loss of citizenship rights that incarcerated individuals 'often experience, and its impact on those living around them. Focusing on the treatment of former criminals after they are released from prison, and connecting this to the typically poor economic condition of the areas where many former offenders live, this research will shed light on persistent faults in our justice system and help focus attention on addressing them.

How does parental pressure affect the passion of students to pursue a health profession in America?

Student Author(s): Chansity Vang, Sophomore (Public Health Education)
Faculty Mentor(s): John Sopper (Grogan College)

Most students approaching undergraduate education are faced with the challenges of parental expectations. Especially in health-related fields, many undergraduate students who seek majors in the health-fields seem to be responding to pressure from parents who want them to choose something that is stable and high paying. Generally, there are many job openings in these fields, the pay is high, and the income is stable. In addition, health careers are typically associated with high social status. This research project investigates the effects of parental pressure on the passion of undergraduate health

majors for their future profession. Data is gathered through a review of statistical studies, peer-reviewed, scholarly articles, an interview with a college level health professional, and a Likert scale survey of undergraduates majoring in health fields. The result of this research will help determine whether parental expectations decrease an individual's passion to work in healthcare potentially decreasing the number of graduates who work in health professions. This information could improve academic advising for students and lead to them having a more enjoyable career.

French Food Identity: Understanding Angevins' Agro-Food Traditions

Student Author(s): Liliana Vitale, Junior (Anthropology)
Faculty Mentor(s): Susan Andreatta (Anthropology)

Historically, the French are linked to their haute cuisine and to their appreciation of creating and consuming quality foods, both nutritionally and aesthetically. What made French food the epitome of global cuisine? Why do the French adhere to their deep connection between the consumption and production of food as an art form, and not purely as a means of sustenance? During four-months of collaboration and fieldwork in Angers, France, I explored the connection between the people of the Loire Valley and their food identity. Forming continual relationships with locals at an Angers food market, provided me with a deeper insight into local food traditions. Ethnographic methods guided my fieldwork among the local Angevins. Bourdieu's theoretical concepts of "Capital, Field, and Habitus" will provide the framework for this research exploring the access of food: the social, cultural, economic, and symbolic nature of the production, exchange, and consumption of French foods. This poster represents the embryonic stages of my data analysis.

Designing Costumes for *Pippin*, One of the School of Theatre's Mainstage Productions

Student Author(s): Jacquelyn Whiteside, Senior (Theatre)
Faculty Mentor(s): Deborah Bell (Theatre)

In our production of *Pippin*, showcasing the legendary Bob Fosse's exuberant dance style was the predominating factor in the director and design team's concept. To achieve this, I utilized medieval characteristics and contemporary dance silhouettes with bold

figure-revealing lines, vivid colors, and slick textures. Ultimately, my costumes enriched the performers' strikingly articulate dance moves, while underscoring the wit and panache of Fosse's bold vision.
A cohesive, visual design fulfils the director's goal of storytelling. Achieving this required vigilance in character groupings, frugality in resources and budgets, mastery of technical skills in costume and armor construction, and expertise in wig and makeup tailoring. In addition, my knack for music theory and dance techniques greatly influenced the functionality and appearance of costumes.
While I initially felt intimidated with the daunting challenge of designing costumes for one of UNCG's spectacular mainstage musicals (a task usually reserved for graduate students and faculty members), I took great pleasure in collaborating with my team and seeing my ideas successfully realized on stage. I thank the Lloyd International Honors College for awarding me a Summer Research Grant and I appreciated the opportunity to participate in the Southeastern Theatre Conference's Design Competition in late February in Louisville, Kentucky.

Semi-Precious Stones at the Wari site of Cerro Baúl

Student Author(s): Spencer Wieland, Post-Bac (Anthropology)
Faculty Mentor(s): Donna Nash (Anthropology)

Our poster will present the results of pXRF analysis conducted to identify and source semi-precious stones from the Wari site of Cerro Baúl. The Wari Empire existed from approximately 500-1000CE in what is now Peru. The sample includes 118 green stones (most likely Chrysacolla), 111 blue stones (most likely Sodalite), and 45 pieces of what is possibly local onyx. These items represent lapidary objects or production debitage recovered during excavations of Cerro Baúl. We also analyzed reference samples from other locations in the Andes. The data collected from pXRF will allow us to more accurately identify the stones present at Cerro Baúl. We will also compare the chemical composition of stones from Cerro Baúl to the stones from other sites. This comparison will be done to see if pXRF can be used to identify the source of stone materials found in an archaeological context. These stones were part of a vast network of goods accessible to Wari elites from within their empire and abroad. Tracking the movement of these materials can shed light on the political economy of the Wari by increasing our understanding of how raw materials were sourced and transported for the production of prestige goods.

No Wonder I

Student Author(s): Sierra Wilkinson, Senior (Arts)
Faculty Mentor(s): Jennifer Meanley (Arts)

My project is called No Wonder I. It's a large-scale painting/sculpture, with a canvas that is 6' tall, 4' wide. The sculptural aspect is a tree that is "coming out of the painting" toward the viewer. The project is supposed to be a somewhat interactive piece. The idea came from a song of the same title by the band Lake, which will be playing quietly behind the piece. This way, the viewer experiences the piece visually, audibly, and physically, and I am planning on spraying the flower petals of the tree with a perfume so the viewer will also experience it through their sense of smell. I want the viewer to feel as if transported to a new space; a new world. Something not really familiar, but comforting and pleasant, nonetheless.

The Controversies of the HPV Vaccine

Student Author(s): Grace Will, Sophomore (Communication Sciences and Disorders)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

Gardasil 9, the HPV vaccine, is still controversial for multiple reasons. My goal is to dig deeper into reasons behind the controversy and examine them to educate myself and the readers about the psychology behind the controversy. Since Gardasil 9 was released, there have been many people who doubt the need for and safety of the vaccine. Gardasil 9's controversies stem from limited knowledge, religion, and the landscape of sexuality, gender, and morals in the past 20 years. Vaccines are an important part of this nation's public health system and Gardasil 9 specifically is important because it can protect people from contracting certain strains of HPV that increases an individual's risk of developing certain cancers such as cervical, anal, vulvar, or cancer of the mouth and throat. I plan on using sources such as books about how societal norms impact people's view on the HPV vaccine. I will likely learn a little more about why people may be uncertain about the vaccine through this project, and hope it will help individuals understand why someone may choose to get themselves or their child vaccinated or not.

What have anesthesiologists learned from malpractice in their field?

Student Author(s): Samuel Williams, Sophomore (Mathematics)
Mentor(s): John Sopper (Grogan College)

Anesthesiology is a complex field that has a plethora of trial and error scenarios. Anesthesiology as a whole has learned from past mistakes and grown as an area of study. In order to prevent others currently studying or actively working in the field of anesthesiology from making any potentially lethal mistakes in the future, they must be informed about the history of malpractice in order for history to not repeat itself. Using the journals of anesthesiologists, statistics from hospital records, and cumulative research, this study will inform scholars, nurses, and doctors about the history of malpractice in anesthesiology. This study will allow scholars, nurses, and doctors to practice anesthesiology in a more safe and effective manner in the future.

The (Discriminatory) History of Black Employment in the Entertainment Industry

Student Author(s): Zarek Williams, Sophomore (Theatre)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

While Hollywood has become more accepting over time, the entertainment industry has yet to accept the changes being made. The racism that started years ago and that has been internalized by many people suggests that people cannot seem to shake it or progress past it. Black entertainers have been a pivotal part of cinematic history, but they have not always been treated the same as white actors. In the midst of stereotyping and typecasting, what are the starting point and the reason for racism in the industry? I chose this area of focus because this is something that relates to myself and my major. As an aspiring actor, I have doubts about being able to find job opportunities in the entertainment industry. I often see black actors discussing the hardships of not being able to find acting roles. When they do find roles, these roles are negative stereotypes for black people and their culture. I want to find out why this happens and how we can resolve this. By using sources, like the book “Reel Inequality: Hollywood Actors and Racism”, I can say Hollywood discrimination has impacted the lives of black actors and how they move throughout the entertainment industry.

Reaction Time Improvements After A Single Bout of Virtual Reality Training

Student Author(s): Irene Yamalis, Senior (Kinesiology), Preston Ellington, Senior (Kinesiology), Chimeri Anazia, Junior (Kinesiology)
Faculty Mentor(s): Christopher K. Rhea, (Kinesiology)

Reaction time response increases with age and is further decreased among older adults who have fallen compared to those who have not. Simple reaction time (SRT) is the length of time measured between the presentation of an unexpected stimulus and the onset of a response to that stimulus. SRT is a significant predictor of falls and crucial in determining fall risk. The purpose of this study was to determine if SRT may be improved via a dynamic Virtual Reality (VR) obstacle course. Healthy young adults (N=23, 21.8 +/- 1.3 yrs) were placed into either the training (TRN) group (N=10) or control (CON) group (N=13). The TRN group completed 15 trials of an immersive VR obstacle course with obstacles designed to be targeted and avoided in all 3 directions. The CON group walked overground for 15 minutes to control for physical activity duration. Both groups completed 5 SRT trials pre- and post-training. The average was calculated. Following training, a large effect size was observed in the improvement in the TRN group for SRT (Pre M=.305 +/- .044, Post M=.275 +/-.033; Cohen's dz= -.80). The CON group showed a small effect in SRT (Pre M=.358 +/- .175, Post M=.293 +/- .034; Cohen's dz= -.35).

The Effect of Historical Bias on the Portrayal of World War II Era Ground Vehicles in Pop Culture and Fiction

Student Author(s): Eric Yan, Sophomore (Computer Science)
Faculty Mentor(s): Sara Littlejohn (Ashby College)

Pop Culture has long pushed the belief of the mighty German Tanks of World War 2. For example, the notorious Tiger scene in the 2014 action film "Fury", in which it takes three American M2 Shermans to dispatch a single German Tiger I heavy tank. As a passionate fan of World War 2 since a young age, it has always confused me as to why German tanks have a near legendary status. These portrayals in the media have led to the glorification of German tanks. In reality, these tanks were plagued with horrendous reliability issues, poor crew ergonomics, and serious manufacturing problems. By using sources such as, Tanks of the Second World War by Thomas Anderson and Geoffrey

Brooks, and the essay Developing the Panther: Valuable Lessons in Rapid Development, Fielding by Major Matthew Prescott. I inform readers of the true effectiveness of German tanks throughout the Second World War. The technologically superior tanks fielded by the Nazis, would eventually lead to their downfall.

At the intersection of art, research and inclusion: Using devised theater as a research methodology to explore student worldviews on inclusion

Student Author(s): Kara Yost, Sophomore (Theatre), Torey Allen, Sophomore (Deaf Education), and Catherine Minton, Senior (CTP)
Faculty Mentor(s): Lalenja Harrington (Education Leadership and Cultural Foundations) and Marcia Hale (Peace and Conflict Studies)

Although there is a large body of scholarship exploring defintions of inclusion in education, student voice in the development of those definitions is not well-represented. HSS 218: Devising Inclusion in a Global World is a course-based undergraduate research study that wsa designed to address this gap. The course used devised theater as a research methodology to explore college student perspectives about inclusion in education. During the course, students learned about arts-based research approaches and specifically the process for devising theatre. Students were involved in multiple elements of the research process, as they created and then analyzed data, culminating in a final theatrical production that was performed publicly at the end of the class. Thematic analysis highlighted student perspectives related to barriers to inclusion, their embodied, lived experience with inclusion/exclusion and their vision for inclusion for the future; themes that all speak to implications for inclusive research and teaching practice in higher education. The study was a Mellon funded faculty/undergraduate partnership that has and still provides mentorship to the student researchers, and will work collectively to finalize analysis and reporting for the study.

The Undergraduate Research, Scholarship and Creativity Office *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 Kayla Timpson

Kayla Timpson is currently a junior studying New Media & Design here at UNCG, who specializes within graphic design and illustration. As an artist, Kayla works hard on creating colorful and bold pieces that showcase her own unique artistic style. While there is much more to learn, Kayla's time here at UNCG has allowed her greater creative visioning and a better comprehension of artistic composition thanks to her professors and fellow peers. Kayla wishes to continue on the path as an artist and develop even more work for her community to see!

In her spare time at UNCG, she is involved with the Office of Intercultural Engagement and the Vietnamese Student Association where she creates various flyers and promotional tools for both organizations. Some of her hobbies include spontaneous road trips, cooking pasta, and spending time with friends and family.

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