

UNDERGRADUATE RESEARCH WEEK: APRIL 19-23

2021



CAROLYN AND NORWOOD THOMAS

UNDERGRADUATE RESEARCH AND CREATIVITY EXPO
PROGRAM WITH ABSTRACTS



15th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo

2021



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Undergraduate
Research, Scholarship
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Preston Lee Phillips Jr, Ph.D.

Director

Adrienne W. Middlebrooks

Business Officer

Traci Miller, MSA

MARC Program: Academic Enhancement Coordinator

Maizie Plumley

Graduate Assistant

Ali Ramirez Garibay

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April 19, 2021

Dear Students, Colleagues, and Guests,

I would like to welcome you to the **15th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo** and the 2nd Virtual Undergraduate Research and Creativity Expo at UNCG. As we have all worked to navigate our lives and learning through the adjusted approaches required by this ongoing pandemic, we have seen an incredible commitment of the UNCG community to learning through research and creative inquiry. This year, we are thrilled to accept 223 presentations by more than 239 students, working with 90 mentors, and representing 29 academic departments/programs. This year includes another distinction as we have partnered with the School of Art to cohost a portion of the Senior BFA Exhibitions.

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

The URSCO offers financial assistance to promote faculty-mentored student scholarship and creativity. We have also provided support for 57 students through the **Undergraduate Research and Creativity Awards (URCA)** and 6 undergraduates through the **Community Based URCA** program. Finally, 7 students participated in the **Pubantz Artists in Residence** program, in partnership with the **Lloyd International Honors College** and the **College of Visual and Performing Arts**.

This week, April 19-23, is recognized nationally as Undergraduate Research Week and is designated as a time to celebrate your scholarly accomplishments. I would like to thank all students and their mentors for taking the time to share your work with the university community. Many thanks go to the Associate Vice Provost of the University Teaching and Learning Commons, Dr. David Teachout, Vice Chancellor for Research and Economic Development and Interim Provost, Dr. Terri Shelton, as well as Chancellor Franklin Gilliam for their support of the office and their unwavering dedication to student success. As always, special thanks go to Mrs. Carolyn Thomas for her generous contributions in support of the Expo and faculty-mentored undergraduate research. I would also like to thank Adrienne Middlebrooks, Traci Miller, Maizie Plumley, and Ali Ramirez Garibay for their efforts to ensure the success of this program.

Sincerely,

Lee Phillips, Ph.D.
Director, URSCO



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and Creativity Office

15TH ANNUAL CAROLYN AND NORWOOD THOMAS UNDERGRADUATE RESEARCH & CREATIVITY EXPO



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CAROLYN AND NORWOOD THOMAS

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

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

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

2021 Thomas Undergraduate Research Mentor Award

**Non-tenure track: Dr. Aileen Reid,
School of Education, Educational
Research Methodology**

Dr. Aileen Reid approaches research, teaching, and mentoring through the lens of her lived experiences, her commitment to social justice, and her desire to transform the educational research and policy landscape. Her current research centers on diversity, equity, and inclusion in higher education as it relates to faculty, first-generation students and students from low SES backgrounds, and STEM education. Dr. Reid teaches classes on research methodology, assessment and program evaluation, and she co-directs the UNCG STEM (Science, Technology, Engineering, and Mathematics) Laboratory (SPEL), a subunit of the Office of Assessment Evaluation and Research Services. Under her guidance,



Dr. Aileen Reid

undergraduate students investigate the impact of efforts to broaden participation of underrepresented and minoritized groups in STEM. Over the past two years, she has worked with six undergraduate psychology students on nine research and evaluations of STEM education projects funded by the National Science Foundation. In her lab, undergraduate students are mentored by graduate students in qualitative and quantitative research and other technical skills, and in co-authoring technical evaluation reports. Undergraduate students also participate in weekly professional development on diversity, equity, and inclusion, anti-racism, and social justice. In 2020, one of her mentoring contributions was to help prepare undergraduate and graduate students for the NCARE (North Carolina Association for Research in Education) 2020 conference in Greensboro.

“Dr. Reid’s deep commitment to professionalism, excellent interpersonal skills, resourcefulness, pleasantness, and ability to communicate with students from diverse backgrounds kept students grounded and focused throughout the preparatory process for the NCARE 2020 conference presentation. It was my first time presenting and I ultimately felt prepared, due in part to the mentorship from Dr. Reid.... She works hard to balance a student-centered approach which is responsive towards building interests,

2021 Thomas Undergraduate Research Mentor Award

skillset, peer support and celebrating successes of undergraduate students under her tutelage on the one hand, and her supervisory role of graduate assistants and teaching assistants on different projects within SPEL. Dr. Reid creates opportunities for her undergraduate students to assume leadership roles on assigned project teams including creating interview protocols, evaluation surveys, and uploading them in UNCG Qualtrics, transcriptions of focus group data, making simple statistical tables, and analyses, and writing evaluation and research memos.”

-Sharon Ladokun '20

“When I first interviewed to join SPEL, I was a freshman with very little research experience. Despite my lack of experience with the process of evaluation and research, Dr. Reid was always kind and extended whatever knowledge and resources that I needed. From my very first day in the lab, she expressed great interest in fostering and developing the skills needed for my future career. With Dr. Reid’s mentorship, I have expanded my knowledge of the process of program evaluation and research. I now have the skills to conduct a proper literature review, fill out observation reports, and to collect and analyze data that I have obtained through procedures such as interviews. My time with Dr. Reid has given me many of the tools I will need as I pursue my aspiration of becoming an industrial-organizational psychologist. Dr. Reid’s kindness has been the true highlight of my experience as her mentee. Initially, being the youngest and most inexperienced person in our lab was highly intimidating. Regardless, Dr. Reid has always created an environment where I did not have to be afraid to share my lack of knowledge but instead encouraged me to ask questions and to grow. Her kindness has truly helped me grow more confident in my abilities and embrace the potential that I have. I firmly believe that you will not find another person like Dr. Reid who is welcoming and willing to help those who are as inexperienced as I was... She has left a very special mark on me during my time as an undergraduate student and I know she will continue to do so for many others.”

-Caraline Malloy '23

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Early Career (pre-tenure): Dr. Chris Wahlheim, College of Arts and Sciences, Psychology

Dr. Chris Wahlheim is a cognitive psychologist with expertise in memory, metacognition, and cognitive aging. He teaches undergraduate courses in cognitive psychology and human memory, and graduate seminars in everyday cognition, and memory and aging. He directs the Memory and Cognition Lab, which examines human episodic memory including research in episodic memory updating, beliefs and memory in fake news corrections, exercise effects on memory acuity, and age differences in memory organization. His work, which is carried out with collaboration from graduate and undergraduate students, appears in top journals in his field, such as Psychological Science, Journal of Experimental



Dr. Chris Wahlheim

Psychology: General, and Proceedings of the National Academy of Sciences. Dr. Wahlheim mentors McNair scholars and MARC U STAR fellows and guides them in taking an active role in the research lab. Undergraduates become immersed in the research environment through frequent meetings with Dr. Wahlheim and graduate students, and they are supported in their work on sponsored projects and honors theses.

“What I loved the most about him as a mentor was that he allowed room for independent work while providing a moderate amount of structure. For instance, I had the opportunity to not only work independently by preparing IRB documentations and building the program for my Honors Thesis through modeling after previous lab experiments but also work collaboratively with Dr. Wahlheim to design the study and formulate hypotheses. Along the lines of collaborative work, it is very important to me as a mentee to have a mentor who welcomes different opinions, even if those of the mentee diverge from their own, and who listens intently when the mentee shares their opinions. Dr. Wahlheim effortlessly accomplished this: various opinions I provided on the project during our meetings were always seriously considered and were often incorporated to the study design and protocols. If my proposed idea wasn’t something

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that was achievable, he always explained why and how we could modify that idea to make it achievable... Joining Dr. Wahlheim's lab was indeed a pivotal moment in my undergraduate career. Under his mentorship, I was able to develop rigorous scientific skills that are foundational to conducting research as well as grow further as a junior scientist, who now has the potential to conduct more complex experiments through the acquisition of a well-rounded and comprehensive research background."

-Ei (Crystal) Thinzar '20

"When I first began working in the Memory and Cognition Lab (MAC lab), I was really nervous about conducting research and all of the processes that went into keeping track of records and important information. Dr. Wahlheim, graduate students, and other lab assistants were very patient as I was still getting into the swing of things. I first knew that Dr. Wahlheim cared about my success as a student when on my second day there he asked me, 'What do you hope to gain from working in my lab?' I very plainly answered that I was interested in just gaining research experience in general. He then proceeded to ask questions to get more at what kinds of projects I would want to be working on. I really appreciated that conversation on my second day because I could tell that he wanted to make sure that I gained experience that was most beneficial to me. The mentorship that I received from Dr. Wahlheim really grew once I was inducted into the Ronald E. McNair Scholars Program. The purpose of this federally-funded program is to prepare underrepresented undergraduate students for graduate school studies. Being a part of this program allowed me to gain even more research experience with Dr. Wahlheim during the summer of 2017. During that summer my relationship with Dr. Wahlheim grew as he was constantly showing me tips and tricks to guide me through the entire research process. Something that really stuck out to me was his patience with me as I was learning many new techniques and software. When I would do something incorrectly he was never quick to criticize negatively. Instead, he would always use things as a learning opportunity so that I never made the same mistake again. Another thing I appreciated about him as my mentor was his honesty. I remember there were many summer days while conducting research that I would get frustrated with any and everything. He could always tell when I was frustrated and he would always say, 'The research process is a labor of love.' That phrase stuck with me and is still with me today, as I am now in graduate school and conducting a research project. Lastly, the thing I appreciate about Dr. Wahlheim the most was his ability to be relatable with me. We come from different backgrounds but when we sat down and had a one-on-one talk about graduate school preparation, he was very open and real about his experiences and things I should consider and avoid when searching for graduate programs. That conversation made me realize that we had more in common than not."

-McKayla Bohannon '19

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Career (post-tenure):

Dr. Sharon Morrison, School of Health and Human Sciences

**Dr. Sudha Shreeniwas, Public Health Education and Human Development
and Family Studies**

For 10 years, Dr. Morrison and Dr. Shreeniwas have worked together to apply a transformational approach to their classroom teaching and mentoring economically and ethnically diverse UNCG undergraduates in research. Their practices align with the School of Health and Human Services (HHS) mission to “prepare new generations of professionals, leaders, scholars, and entrepreneurs [to] enhance the quality of life of individuals, families, and communities.” As teachers and community-engaged scholars, they focus on the health and empowerment of diverse marginalized refugee and immigrant communities, where key contexts include families, ethnic/racial diversity and socioeconomic inequality. Under their guidance student researchers gain exposure to research through their signature programs, “Enablers of HIV testing and prevention in Latinas (NIH funded)”, “The Montagnard Hypertension Project” (family and chronic disease in refugees), “The Montagnard Population Count Project; Refugee Older Adults Needs Assessment” and their individual projects, “ARTmail participation and health of older adults” (Shreeniwas; NEA funded), “Minority and Refugee/ Immigrant Community COVID-19 Response” (Morrison; BCDI funded.) They anchor these programs in principles of community-based participatory research (CBPR), emphasizing communities as co-researchers, and reciprocity by capacity-building for community empowerment.



Dr. Sharon Morrison

Dr. Morrison received the UNC Board of Governors Teaching Excellence Award in 2017, as well as the UNCG HHS Community Engagement Award in 2014, which Dr. Shreeniwas also received in 2017. Their CBPR and student engagement was recognized by the International Association for Research Service Learning and Community

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Engagement's (IARSLCE) inaugural Community Outcomes and Impacts Award in 2019, enhancing UNCG's Carnegie classification as a community-engaged institution.

"I was fortunate to hear about the hypertension research project when Dr. Sudha and Dr. M. visited and spoke about the work at a Montagnard church. Some weeks later, I saw Dr. Sudha in the corridor of Stone Building at the University of North Carolina at Greensboro (UNCG) and asked about the project. She invited me to join the student research team. She and Dr. M. were training and sending out students to do community-based research. They organized trainings in biological and survey data collection, database management, data entry; and planned and did educational outreach for Montagnards. They found funding through their grants to financially support me as student researcher and coordinator. They really respected my experience as a leader among the next-generation Montagnard youth. This



Dr. Sudha Shreeniwas

allowed me to use my language and cultural skills to effectively do behavioral survey data collection on hypertension with adults and at the same time coordinate and educate student research teams so they would be culturally sensitive and respectful when they entered Montagnard homes, neighborhoods and churches. One of the most important aspects of my work was to make connections with Montagnard adults who had completed our survey and have them hear about the different findings from our work. I was able to talk to many of my elders about the importance of prevention but also about understanding why it is important to seek primary care even when they think they feel okay. Dr. M. and Dr. Sudha went the extra mile as professors because they worked with students from UNCG and other colleges in Greensboro, and Montagnard community interpreters and professionals to organize free flu shots and free blood pressure screenings for our church congregations. We worked together to plan health fairs at a school and a neighborhood park that involved local doctors and nurses; biology, nursing, health education and nutrition students from UNCG, NC Agriculture and Technical State University (NC A&T), and Guilford College; social service

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providers; college recruiters; local housing and immigration advocates. We had fun games and activities for children. We had our elders playing Montagnard musical instruments to educate the crown about our cultural traditions. We distributed fresh fruits and seeds for Montagnards to plant gardens. I also benefited from doing presentations about my research to classmates and at community events. I traveled to Canada and co-presented at the Society for Applied Anthropology on a panel organized by Dr. M., Dr. S. and our community advocate, Mr. Andrew Young. I spoke with confidence to an international audience about Montagnards, their culture, resiliency and health, and our partnership with university professors who care and do research about hypertension and other challenges in our community. I am proud also to be one of the authors on the first community-based research paper about our Montagnard Hypertension project.”

-H’Yua Liana Adrong

Story assembled by Susan Kirby-Smith, University Communications

Photography by Martin W. Kane, University Communications, and courtesy of Aileen Reid, Chris Wahlheim, Sharon Morrison, and Sudha Shreeniwas

ABSTRACTS

The Ethics of Pornography

Student Author(s): Sarah Abell, Sophomore (Kinesiology)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College), Will Dodson (Ashby Residential College)

An argument for the use of tube sites and how they single handedly are destroying the porn industry as well as the lives of performers.

The pornography industry has taken the world by storm since the 60's making it one of the most productive and popular forms of adult entertainment. Nevertheless, the pornography industry has also caused many corrupt problems with entertainers and viewers. Entertainers have suffered several issues throughout the making of films such as but not limited to; Communicable diseases, drugs, body enhancements, nonconsensual sex acts, risk of physical trauma, mental health risks, and lack of finances in the industry. Using an article from Rolling Stone Magazine, "Pornhub Upended the Porn Industry. Now New Changes Could Destroy Sex Workers' Livelihoods." I inform readers of the serious issues with popular tube sites and piracy. I also explain how pornography changes not only the minds of performers. This topic is important to me because although sex work is seen as taboo, it is still work for thousands of people. No one should struggle because of one company.

Seasonal Variation in Tolerance to Metabolic Stress in a Brainstem Circuit from Bullfrogs, *Lithobates catesbeianus*

Student Author(s): Sasha Adams, Senior (Biology) Nikolaus Bueschke, Post-Bac (Biology)

Faculty Mentor(s): Joseph Santin (Biology)

Most neural circuits require a constant supply of oxygen to function properly. Yet, within a species– even within the same group of neurons– the duration in which neuronal activity proceeds under hypoxic conditions varies from minutes up to an hour. The sources of this variation remain unclear. Using a rhythmic *in vitro* brainstem preparation and extracellular nerve recording, we recently found that the neurons that produce breathing in frogs fail after 5-10 minutes during severe hypoxia when experiments were performed in the summer of 2019 (Adams *et al.*, 2020). However, when experiments were repeated on animals in the winter of 2020 under the same experimental conditions (Jan.-Feb.), networks produced rhythmic output for 44±10 min. Potential sources of experimental variation that explain this difference across seasons were ruled out (*e.g.*, solution flow rate bathing the tissue, investigator who performed the experiment, duration of acclimation to vivarium). To verify a seasonal effect, we performed experiments again in summer 2020 and found that networks fail after 6±4 min of severe hypoxia, consistent with summer 2019. To obtain two full years of data we performed another series of experiments in winter 2021 in which the network was silenced after 48±20 min under hypoxic conditions, consistent with winter 2020. In

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sum, our data point to seasonal variation in the hypoxic response of the amphibian brainstem. These results have two important implications: First, a seasonal phenotype of the hypoxic response persists despite laboratory acclimation under constant temperature and light conditions for 3-4 weeks. We are unclear if the seasonal phenotype reflects an endogenous circannual rhythm or a plastic response to the environment during shipping (*e.g.*, warm in summer, cold in winter). More importantly, these results demonstrate that control/treatment experimental designs must be performed within the same season to avoid potentially erroneous conclusions regarding cellular mechanisms that alter hypoxia sensitivity.

Understanding Different Cultural Perspectives: The Importance of Body Modifications in Non-Western Cultures.

Student Author(s): Ioana Anghelescu, Junior (Arts)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Body modifications should be looked at culturally and should not be seen as mutilations of the body or seen with negative connotations. They have a purpose in different cultural contexts. Different cultures use an array of body modifications in order to meet and communicate a variety of meanings; from beauty to social status and ranking. Body modifications have been accepted in many Non-Western cultures. Westerners are quick to judge individuals based on appearance and have not accepted body modifications as widely as other cultures. Negative connotations and assumptions have been made about modified individuals both in Western cultures as well as Non-Western cultures. Using sources starting with Sinah Theres Kloß's book *Tattoo Histories: Transcultural Perspectives on the Narratives, Practices, and Representations of Tattooing*, I would like to inform readers of the importance of body modifications in different cultural contexts. I will also explain how body modifications are used within their cultural context as well the history behind them, their meaning within an array of cultures as well as the stigmas and downsides associated with them. In doing so I hope to open up a different perspective for individuals within Western cultures and a better understanding of Non-Western practices.

Political Segregation

Student Author(s): Imani Badiabo, Sophomore (Communication Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

I'm arguing that different factors develop one's political stance and conspiracy theories deepen the political divide in America.

Politics are the methods and tactics used to run a government or an organization. We can argue that since the 2016 Election, politics have become more divided. The battle between the liberals and conservatives, and democrats and republicans. On the left, they're fighting for democracy, human rights, and equality. On the right, they're fighting for a "stolen" election, limited government, and for former president Trump. Lately, a right-wing group on the rise called Qanon has introduced conspiracy theories. These theories

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are baseless claims with hardly any facts and they widen the gap between the left and right. I'm interested in this topic because of what I witnessed from the Election to the attack on the Capitol. I'm showing what factors already contribute to how people develop their political stance but also how conspiracy theories are not facts and shouldn't be spread as such. Using sources such as the study *Developmental Antecedents of Political Ideology* and media posts including CNN and Fox News. My research will give readers something to consider and to see how America got to this point.

[Psychological trauma presented in members caused by the manipulation of several church leaders](#)

Student Author(s): Shirley Baltazar, Sophomore (Psychology)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Members of various churches experience manipulation from the church leaders and, as a result, have psychological trauma. The members are vulnerable because they're seeking God, and the leaders abuse their title of authority to get anything from them. The tactics used by church leaders are twisting the scriptures to their convenience. The purpose of this is to confuse the members, and if they don't follow orders, the leaders threaten that God will punish them. To understand why a religious leader, who claims to be "God-sent," partakes in these actions of spiritual abusing their members, investigating their motives is the initial move. The amount of damage they do to their members is out of one's mind. As an ex-member and seeing things as an outsider, church leaders have malicious ways to get around their members. The following journal article, "*Thou Shalt Not: Treating Religious Trauma and Spiritual Harm With Combined Therapy*," helps to prove that there's a link between religion and mental health. Along with other articles and books, I inform readers of the types of abuse leaders and who they mainly target. This research will discuss the psychological damage that was caused by the church and the importance of getting psychological help.

[Dialects from Digital to Deutschland: an Exploration of Communication through Five Solo Bass Clarinet Works](#)

Student Author(s): Taylor Barlow, Senior (Music Performance, Arts Administration)

Faculty Mentor(s): Andy Hudson (Music)

Germany has been the home and birthplace of many significant composers throughout history, creating a rich historical music scene. As they traveled, their works have spread all over the world. This dissemination of ideas, culture, and the arts is important to understanding and interacting with people from around the world. Through the channel of music, this program of solo bass clarinet works, including a new work by Anian Wiedner, will share German and Appalachian dialects through music, explore the effect of technology on communication, and highlight the similarities between dialects and Jazz.

Program:

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Automaton – Pierce Gradone
If I was only halfway home – Ledah Finck
Von der Deutschen Sprache – Anian Wiedner
God Bless the Child – Eric Dolphy
Chips Off the Ol’ Block – Eric Mandat

"Von der Deutschen Sprache" translates to "About the German language." Anian Wiedner elaborates on the diversity of the German language through the four movements in *Von der Deutschen Sprache*. Each section is contrasting in character but connected through melodic and rhythmic elements. Weidner states, "this piece does not try to imitate the German language or any of its variations, it merely shows its principles in a virtuosic bass clarinet piece."

Origin of Dragons & How They Came to Be

Student Author(s): Caroline Beers, Sophomore (Biology)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Dragons have long been a part of the world’s culture. They are found in books, television series, movies, and art from all over the world and have existed for centuries. However, dragons were not always the massive, winged beasts we see today, in fact, there is much that remains unknown about where these monsters came from and why they appear the way that they do. Some have argued that the idea of dragons came from large serpents who were later exaggerated into the creatures of imagination we are familiar with. Others have argued that dragons came from misidentified fossils that people claimed belonged to ancient dragons. Using sources such as Juliette Wood’s book, *Fantastic Creatures in Mythology and Folklore: From Medieval Times to the Present Day*, and an article from the *Journal of Folklore Research*, "Snake to Monster: Conrad Gessner’s *Schlangenbuch* and the Evolution of the Dragon in the Literature of Natural History", I will inform readers of the history behind dragons and propose an explanation for why dragons look the way they do today. As someone who has always had an immense appreciation for dragons, I hope to learn more about these mystical creatures and how they came to be.

Biological Sex Mediates Cancer Cachexia Muscle Autophagy

Student Author(s): George Blackburn, Senior (Kinesiology)

Faculty Mentor(s): Traci Parry (Kinesiology)

Cancer cachexia, a catastrophic wasting disorder which affects roughly 80 percent of cancer patients, is characterized by the excessive catabolism of fat and muscle for energy. Unfortunately, cancer cachexia can cause irreversible damage to the body, decrease survival rate, and cause significant decline in quality of life. Therefore a great need exists to better understand the underlying mechanisms of cancer cachexia. Emerging evidence indicates that cancer cachexia also presents in a sexually dimorphic

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manner. Therefore, the purpose of this study was to determine the underlying mechanisms of sex-mediated mechanisms in cancer cachexia. Male and female LC3 Tg+ mice and sibling-matched wildtype mice implanted with tumors (T; 1×10^6 LLC cells in flank) or remained non-tumor (NT) for 3 weeks. In this dual tagged LC3 Tg+ autophagy reporter mouse model, early phase autophagosomes appear yellow (GFP+RFP) while late phase autolysosomes appear red (RFP only). Confocal analysis revealed that tumor bearing (T) resulted in a significant increase in late phase autolysosomes in the hearts of both sexes compared to NT hearts ($P < 0.05$). However, males T hearts exhibited significantly greater early phase autolysosomes compared to female T hearts ($P < 0.001$), while female T hearts exhibited significantly greater late phase autolysosomes compared to male T hearts ($P < 0.05$). This coincided with increased inflammatory protein IL-1 β in female T hearts compared to female NT hearts ($P < 0.05$). In skeletal muscle, tumor bearing led to significant increases in both early and late phase phagosomes in both sexes compared to NT skeletal muscles ($P < 0.05$). However, female T skeletal muscle exhibited significantly greater early phase autophagosomes compared to male T muscles ($P < 0.05$), while male T muscle exhibited significantly greater late phase autolysosomes compared to female T muscles ($P < 0.05$). Interestingly, this coincided with increased inflammatory proteins IL-1 β ($P < 0.01$) and NF- κ B ($P < 0.05$) in male T skeletal muscle compared to male NT muscle. Therefore, it is possible that inflammatory pathways mediate cancer cachexia associated autophagy in a sexually dimorphic manner. Such data are critical in elucidating how cancer cachexia variably presents and progresses by biological sex, and in the identification of therapeutic targets aimed at muscle wasting in a sex specific manner.

"Night Wings" IoB Advanced Drawing Project

Student Author(s): Timothy C Boardman, Senior (Arts Administration & Drawing and Printmaking)

Faculty Mentor(s): Mariam Stephan (Arts)

This particular work is my project for the Industries of the Blind public banner project which I did during my Advanced Drawing class with professor Stephan. I had the honor of working with Donald Weaver, an employee at the Industries of the Blind, who I interviewed and talked with through multiple sessions. I was tasked with creating a piece that captured the Industry of the Blind, my partnered employee, and the message they shared, and I created this work, titled Night Wings. A powerful glowing eagle, flies overhead, acting as a beacon of light in the darkness, I got to know these people, and see how they touched, and guided our class in creating inspiring works of art from their stories. Each of them genuine, authentic, and one of a kind, wise beyond their years. I wanted to share their independence, strength, and resilience

Green Curation: Plants as an Element within Exhibitions.

Student Author(s): Timothy C Boardman, Senior (Arts Administration & Drawing and Printmaking)

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Faculty Mentor(s): Jennifer Reis (Arts Administration)

This project focuses on how green curation, and the incorporation of natural elements such as plants, can be utilized in a decorative, aesthetic, and/or process oriented way within both an artist's practice and within exhibition spaces such as galleries and museums. The project focuses on the effects of light, humidity, and plants on both people, and the artworks and strives to find a balance which would allow for green curation to become a more viable option, both within the spaces of an artist's own gallery, in an experimental exhibition space, as well as under the strict preservation guidelines of a museum. Ideally, this project will bring to light potential solutions for each area in question, and offer ways in which green curation can expand and grow as a contemporary curatorial form, offering unique benefits and advantages when compared to others, such as salon style and white cube. This project is a combination of a research paper, exhibition plan, and artworks.

Environmental Planning

Student Author(s): Izaiah Bowling, Sophomore (Geography)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Environmental plans should be a staple of every governing cities' Urban plan equal or better than Greensboro's own.

By using information from other scientists we can see that Carbon is one of the most abundant gasses in the atmosphere that is the cause of global warming, so learning the whereabouts of the main causes and when can help us squash this issue and overall maintain our beautiful green planet. I am greatly interested in this topic because the Earth is very important to not only me but lots of other people and animals everywhere, I want my research to be able to help others spread awareness of Global warming and pollution we all make on a regular basis and take responsibility. Some sources that I'm going to use in my research are scientific data that has already been collected over the years as well as my own findings. One source is the Sustainability Action For Greensboro, for it has information on Greensboro's plan for environmental health and community support. I would like my research to also push surrounding areas to also create a plan as thorough as this.

Mental Health Crisis in the African-American Community

Student Author(s): Trevion Brailsford, Junior (Communication Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

The mental health crisis in African-Americans is something that needs to be further addressed.

In the African-American community, it is evident that we don't talk about our mental health. We don't talk about it enough to be quite honest. Whether it's depression,

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schizophrenia, bipolar disorder, anxiety, etc. There is no talk of how to cope or deal with these mental health issues. Also, there is contributing factors that cause these mental health issues to occur within the African-American community. What causes African-Americans to experience problems with our mental health? Things like racism, environmental factors, and even this ongoing covid-19 pandemic has caused an increase in problems pertaining to our mental health. By using a source like the article “Mental Health Disparities Among Black Americans During the COVID-19 Pandemic” it expresses how African-Americans are ten times more likely to be impacted by the covid-19 pandemic than it has for white people. In another source, a book called “In and Out of Our Right Minds: The Mental Health of African American Women” it talks about how black women go through distress and depression. I conclude that the African-American should not be neglected when it comes to their mental health.

Crying in Deep Space: a Short Film

Student Author(s): Ethan Brain, Senior (New Media & Design)

Faculty Mentor(s): Christopher Thomas (Arts)

Crying in Deep Space is a short film which was created in connection with the Lloyd International Honors College Artist in Residence Program. The film is a surrealist commentary on the human experience, dealing with topics such as existential philosophy, psychological pressures, and therapeutic methods of immersive imaginative outcomes. During the creation of the film, German expressionist cinema became a major source of inspiration as well as the works of visual artists such as Zdzisław Beksiński, Stanisław Szukalski, and H.R. Giger.

Crying in Deep Space details the life of Jack Ransom and the imaginary radio station he hosts, which exists immersively in his head. In this radio station, Ransom interviews his alter ego and deceased version of himself. This alter ego details the tragic descent of Ransom’s life in the form of interview commentary and interspersed abstract visuals. Jack Ransom uses imaginative worlds as a way to escape depressed isolation and his fear of death (imaginative outcomes).

There are three parts to the film; live action, 3-D Animation, and sculptural performance art. All sculptures, filming, animations, and technical production were created by a single artist, Ethan Brain. The film runs for 15 minutes and can either be presented as an exhibit link or performance link with added commentary and discussion.

Sankofa: Reaching Back to Move Forward in the Search for Belonging

Student Author(s): Leighann Brooks, Senior (Teacher Education & Higher Education), Tamarah Davis, Senior (Education)

Faculty Mentor(s): Beverly Faircloth (Teacher Education & Higher Education)

The focus of our project was to complete an extensive literature review about the sense of belonging in classrooms. We discovered that the intersection of culture and belonging

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was as diverse as the cultures that appeared in the search in the literature review. After looking specifically at Black, Indigenous, LatinX, Immigrant, Refugee, English language learners, and LGBTQ+ students, we recognized the need for additional research in education about the intersectionality of culture and belonging. The *sankofa* is a metaphorical symbol, generally depicted as a bird with its head turned backward taking an egg from its back. It expresses the importance of reaching back to knowledge gained in the past and bringing it into the present in order to make positive progress. The *sankofa* image reminds us to leverage multiple resources in order to help students move forward. This culturally relevant pedagogical concept functions as an instructional opportunity for belonging that reaffirms marginalized students in their personal identity.

A Dimensional Characterization of Associations Between Schizotypy and Context Processing

Student Author(s): Ayana Brower, Senior (Psychology)

Faculty Mentor(s): Christopher Wahlheim (Psychology)

Schizophrenia has well-established deficits in episodic memory, but these deficits have been shown to be differentially associated with the subtypes of the illness. Individuals high in subclinical schizotypy symptoms have similar but less severe psychological experiences to people with schizophrenia and serve as a more accessible model for these deficits. Previous work has shown episodic memory deficits associated with negative but not positive or disorganized schizotypy symptoms. The present study aimed to extend these findings by examining the relationship between schizotypy symptom subtype and the ability to discriminate between similar memories. Participants learned two lists of word-pairs per trial and recalled from one list. Critically, some of the pairs changed between the lists. Consistent with previous studies, preliminary analyses show that only negative schizotypy score is associated with poorer memory performance. This suggests deficits in the use of contextual information for memory encoding, search, and retrieval. By using a paradigm not previously used in the study of schizotypy, our study contributes a novel characterization of the associations between schizotypy subtypes and context processing.

Lethal Food and Medicine Culture

Student Author(s): Cemyia Bullock-Roman, Junior (Public Health Education)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Currently, there is an underrated issue of common illnesses and top killers being associated with poor diet and harmful medications. It is starting to become apparent that these illnesses can present themselves physically, mentally, and emotionally. There are links between peoples' diets and illnesses; for example, depression, diabetes, mood changes, high blood pressure, general tiredness, and more. Likewise, for the side effects of medications. Many medications (prescribed and over the counter) have side effects

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ranging from extremes like minor headaches to death. However, many are unaware of this knowledge because no one is teaching them. Nevertheless, I am looking into our food and medicine culture to figure out why our foods and medicines contain unhealthy, harmful chemicals? Additionally, how and why our food department knowingly allows the selling of foods and medicines with harmful chemicals in them? I'm using three books called, "Naturally Dangerous: Surprising Facts About Food, Health, and the Environment", "Towards Safer Food: Perspectives on Risk and Priority Setting," and "Food Toxicity..." as my primary sources. Additionally, adding information from articles on google scholar and from my observational fieldwork. Therefore, we can understand how to better protect and prevent food and medicine-associated illnesses.

Connecting The Big Five Personality Traits to Website Development

Student Author(s): Davares Burnett, Senior (Psychology)

Faculty Mentor(s): Aileen Reid (Educational Research Methodology), Ayesha Boyce (Educational Research Methodology)

The Big Five personality traits (extroversion, agreeableness, openness, conscientiousness, and neuroticism) tend to occur with people in their everyday life (Orchard and Fullwood, 2010). Studies have found that people who ranked high with openness which are the traits of being curious, having novel experiences, and embracing new things tend to spend more time observing a website, while people who rank high with extraversion which relate to the traits of sociability and assertiveness are attracted to bold colors and up-front information to keep them observing certain websites. Less is known about how other factors of websites interact with Big Five personality traits. This study begins with a critical review of literature related to Big Five personality traits and internet usage. Next, researchers develop a theoretically based evaluation tool that can be used to develop new and improve existing websites. This evidence-based instrument provides innovative ways for website developers to attract individuals based on Big Five personality traits.

Men's role in the Me too movement

Student Author(s): Destinee Carter, Sophomore (Psychology)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

It is extremely important that men realize how they play a part in the me-too movement, or the continuous issue of sexual violence in society. Women are often sharing their survival stories online or with peers, families, or people that they trust. On the internet, you can see comments of positivity congratulating them for their bravery or hoping that they are safe. Most cases that I have witnessed, you see men questioning their stories. Asking questions such as 'are you sure it happened?', 'did you say no?', or 'where is the proof?'. This can be extremely damaging to those that are trying to recover and open about their experience, and how survivors may view men, who are commonly known to be the attacker. I argue that men have a strong influence on sexual violence today. They

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can help prevent these sexual violence's from occurring through speaking out more and becoming allies, holding men or attackers accountable for their actions, and stressing the seriousness of these crimes. This topic interest me because I am a woman myself and as a woman, I am at risk. It is important that we help inform men about their role in sexual violence, and how they can help prevent it. By using my sources that include, *the little #Metoo book for me* book by Mark Green, peer review articles, and blog sites, I will be able to conclude that men have a significant role in how sexual violence can change today.

Interactive Activism: Game Design as Advocacy Writing

Student Author(s): Alyssa Cavalieri, Senior (English), Lady Carlin-Rojas, Junior (English)

Faculty Mentor(s): Heather Adams (English)

In collaboration with a team from the Public Health Education department, we, a Rhetoric and Writing Studies team, are designing an interactive narrative experience that addresses stigmatizing practices, policies, and structures related to people with a substance-exposed pregnancy. The goal of this digital tool is to educate practitioners and policymakers on how stigma is embedded and thus operational in everyday practices and institutional policies. Interactive narratives immersive stories that allow the reader to choose outcomes akin to a digital choose-your-own adventure. Studies have shown that interactive narratives are capable of reducing prejudice towards marginalized groups when the reader assumes a place among them over the course of the narrative through the use of a character whose journey is representative of the issues frequently faced by the marginalized group. In this presentation, we discuss analyzing various interactive narratives and researching game design to contribute to our full-team story writing project.

The Resistance Project

Student Author(s): Kesia Cedeno- Ballard, Junior (Dance), Azaria Gadson, Junior (Dance)

Faculty Mentor(s): Duane Cyrus (Dance)

The Resistance Project highlights Black women artists, scholars, organizers and activists with empowered artwork and events. This is done through community engagement, performance, and development workshops. Through the Resistance Project led by professor Duane Cyrus, we were able to conduct research of Black women activists and scholars such as Ida B. Wells, Harriet Jacobs and Anna Julia Cooper. To connect our contemporary voices to the past and to those historically influential women. Our research led us to two creative outcomes; a short film based on research surrounding Anna Julia Cooper and her struggle at the intersection of being a Black woman, activist and scholar. As well as a virtual performance with visual art aspects based on research of Harriet Jacobs agency. Dance is at the foundation of this multidisciplinary project, along

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with poetry, digital art, visual art, and film. This performance presentation will include discussion from students outlining the trajectory of their research.

The Effects the Bee decline have on our ecosystem

Student Author(s): Kathleen Cheek, Sophomore (Media Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College), Jessica Abell (Media Studies)

The effect the bee species has on the environment as it is dwindling down in population is an economic cataclysm that will in fact not only the ecosystems, but also every other species around it, especially that of the human species. With population of the human species becoming more and more uncontrollable, there are other species that share this Earth alongside us that are suffering. While we may acknowledge this suffering, we do nothing about it until it is possibly too late to do anything about it. One of these species is the bee species, which is one of the most important species there is into everyone's survival but is also one of the most endangered.

Two of the most interesting pieces that I have found to help me with my project would be the literary work of *A World Without Bees* by Allison Benjamin and Brian McCallum who travel the world documenting the decline of bees and how they are affecting not only America but also other countries as well. Another interesting work is the *Beekeepers Lament* by Hannah Nordhaus, which tells the story of John Miller who has made a school to help the bee decrease epidemic by going around the globe with his own bee farm to places in need of pollination and renewed crops. My Hope is that with all of this research, that both I and the people reading this will come to understand that we are not the only ones we have to think about when it comes to our world. There are other beings that this world is also a home for. It makes you wonder why it is so true when it is said "Humans are the only species that if we cease to exist, nothing would miss them and the Earth would prosper."

How Does Women's Health in Prison Differ from Women's Health in General?

Student Author(s): Donajah Cherry, Sophomore (Biology)

Faculty Mentor(s): John Sopper (Grogan Residential College)

It is vital that women receive proper care, however many women in prison do not. In my research project I focus on women's reproductive health. Under this topic I investigate the differences between women's reproductive health in the general population versus women's reproductive health in the prison world. From this focus I was able to devise my research question, How does women's health in prison differ from women's health in general? Through this research, I investigate how healthcare is provided to women in prison. I examine the different approaches taken on issues usually faced in women's reproductive health such as pregnancies, abortions, and supply of feminine products. In my research I find information that stresses how women in prisons' health is at a higher

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risk possibly due to lack of supplies, healthcare workers, and even attention. Considering other factors as well, such as the difference in environments, I find that the approaches to specific treatments are very different from that of the general population. Finally, in my research I look for outcomes in which we can work to face these issues and grant the proper care needed for women's reproductive health in prisons and ultimately women all around.

Institutionalized Racism throughout the HealthCare System.

Student Author(s): Chinoyerem Iheagwara, Sophomore (Human Development & Family Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Equality in terms of Healthcare and how individuals are approached within it is a very important thing to be aware of. Living in the midst of a pandemic and relying on people working in the healthcare system to keep us functioning and well, grants us the exposure many people have been oblivious to in terms of unequal treatment. Institutionalized Racism is an experience that fortunately not everyone can speak upon. People of color are targeted in this act but mainly Black Women are mistreated or their health concerns aren't taken as seriously than those of a white woman. I personally am interested in this topic because I am a proud African American young adult that plans to pursue a profession in the medical field. Potential primary and secondary sources could be census data referring to racial inequality in care, and a scholarly article on the subject of eradicating racism in the healthcare system. A reference I found helpful in particular would have to be a synopsis Marcos Paulo de Lucca-Silveira wrote on the book *The Health Gap: The Challenge of an Unequal World* by I hope for this piece to reach individuals that are oblivious to this mistreatment and try to make a change in terms of structure in the health field.

Food Mentality: Americas Failure to Commune

Student Author(s): Joseph Clark, Junior (Anthropology)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

The solitary eating habits of Americans has adversely impacted our mental health when compared to those of other countries.

For decades the "get-up and go" mentality of Americas has eroded the very foundation of our communities and cultures. In no place else is this better exemplified than at the dinner table. For years Americans have been eating more and more meals alone, and this has correlated to a stark rise in mental disorders amongst children and adults alike. The genesis of this topic first came to me when I saw dozens of single partons in the UNCG cafeteria. Coupling this with general knowledge on the rise of mental health problems in America, I saw a connection that warranted exploration. By using sources such as Jean Baudrillard's *America*, news articles, scientific journals on mental health,

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and Michael Carolan's *No One Eats Alone : Food As a Social Enterprise*, I will prove that if the trend of solitary eating is reversed there will be an improvement in the collective American psyche. This research will discuss how a simple change in American society may have compounding effects to the benefit of many Americans.

Health and Racial Disparities Among Black Women in the Healthcare System

Student Author(s): Shelby Clay, Sophomore (Social Work)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

The healthcare system in the United States is embedded in racism and discrimination. Historically, Black women suffered from horrible experiments, painful procedures, and a lack of proper care. Nowadays, Black women still experience disparities in the healthcare system but not because of their socioeconomic status or education but rather from structural racism. I am interested in this topic because I want to advocate for the underrepresented Black women in the United States. I will pursue this by using sources such as *The Ethos of Black Motherhood in America: Only White Women Get Pregnant*. This book explains the historical context of the racial disparities as well as personal experiences from Black women. I will also use sources like *The Health Care System and Racial Disparities in Maternal Mortality*. This article explains that African American women are four times more likely to die from childbirth than white women. I conclude by stating its significance, which is to inform others of the health and racial disparities in the U.S. and to bring awareness of the historical systems of oppression. This research will explicate the reproductive health issues among Black women, which I argue were stimulated by historical misconceptions.

Hindu-American Political Thought in 2020

Student Author(s): Laura Comino, Senior (Political Science)

Faculty Mentor(s): Ashlee Andrews (Religious Studies)

Considering the pandemic, the social changes, and the political unrest that happened in 2020 in the U.S., this research explores the recent and unique shifts in Hindu-Americans cultural and political identity with three given issues. First, it studies the nomination of Vice President Kamala Harris, and how this new Indian and Hindu representation in the White House disturbed some patterns of identity in politics for Hindu-Americans across party lines. Next, it observes the changing role of U.S. temples and how these places, particularly central to Hindu culture and to communal political ideas, have had their impact reshaped by social distancing. Finally, among the civil and racial unrest of the past year, this study looks into the political link between Hindutva (Hindu nationalism) and white supremacist ideals in the far-right in the U.S. Altogether,

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it aims to answer the question: “How has Hindu-American political thought changed in 2020?”

Why is American society scared of dead bodies and their handling?

Student Author(s): Shawna Connor, Sophomore (English, Secondary Education)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Home Funerals are falling into the shadows as the culture around death is changing. Home Funerals used to be commonplace in American Culture. While it is common knowledge *that* it is changing, this research project will explore *why* it is changing. This project will hopefully sway readers into opening their options up in the midst of a global pandemic. Often we forgo grieving when the body is with us. American consumerism has caused the rapid decline and disgust in home funerals. This thesis is influenced by my long interest in mortuary science, and my values of the cyclical nature of nature. I am using organization pages, such as orderofthegooddeath.com, and peer reviewed dissertations on mortuary history. Using these resources will validate or disprove my theory. Either way, this issue needs to be explored. Further researching this will hopefully reveal the benign truth of home funerals, and dispel misconceptions about handling the dead.

Coping Style as a Mediator between Social Support and PTSD Severity

Student Author(s): Myranda Cook, Senior (Psychology), Cameron Pugach (Psychology)

Faculty Mentor(s): Blair Wisco (Psychology)

The relation between posttraumatic stress disorder and social support is well established in recent literature: social support negatively correlates with PTSD. However, there is little research to date exploring possible constructs that may mediate this relation. Coping strategies may mediate the relation between social support and subsequent PTSD symptoms. For the current study we hypothesize that there will be a negative correlation between social support and PTSD symptoms, which is consistent with current literature. In addition, we proposed two mediational models. We hypothesize that there will be indirect effects of pre-trauma social support on PTSD symptoms through engagement and disengagement coping strategies.

Consistent with our hypotheses there was a significant mediation of pre-trauma social support on PTSD symptoms through use of disengagement coping strategies, $\beta = -.25$; $SE = .14$; 95% CI $[-.59, -.03]$. However, there was no significant mediation of pre-trauma social support on PTSD symptoms through use of engagement coping strategies, $\beta = -.25$, $SE = .14$; 95% CI $[-.13, .13]$. Clinical implications of these findings indicate that individuals who have low levels of social support may be more likely to use disengagement coping strategies, which may in turn increase their PTSD symptom severity.

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Assessing Trauma History Using Self-Report: The Misclassification of Trauma Exposure Status

Student Author(s): Myranda Cook, Senior (Psychology), Dane Rivers, Senior (Psychology)

Faculty Mentor(s): Blair Wisco (Psychology)

Exposure to a Criterion A traumatic stressor, defined as “actual or threatened death, serious injury, or sexual violence” (APA, 2013, p. 271), provides the foundation for the assessment and diagnosis of Posttraumatic Stress Disorder. Trauma exposure is often assessed using checklists such as the Life Events Checklist for *DSM-5* (LEC-5; Weathers et al., 2013), which screens for exposure to 17 potentially traumatic events. When participants endorse multiple events, respondents are asked to identify the single event that they consider the worst; this is the index trauma participants reference when reporting on PTSD symptoms. Recent work has shown that the “worst event” method for assessing trauma exposure leads to considerable misclassification of trauma exposed populations. The purpose of the current study was to replicate this recent work and extend them by examining trauma characteristics such as trauma type, means of exposures, and time since trauma.

Young adults ($N = 476$) provided data on trauma history assessed using a revised version of the LEC-5 that asks participants to provide follow-up information for *each traumatic event endorsed*, not just the event rated as worst. Of 476, 138 reported a secondary event that did meet Criterion A (“secondary Criterion A” group) but were not categorized as trauma exposed due to the lack of a “worst event” that met for Criterion A. Findings raise questions regarding the efficiency and accuracy of the worst-event method to determine trauma exposure status via self-report. Results suggest that these methods may compromise the validity of trauma group classification.

Meditation Within Different Cultures

Student Author(s): Ayanna Cooper, Senior (Marketing, Entrepreneurship, Hospitality and Tourism)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Meditation is a practice that involves shifting a person’s cognitive dissonance, this means to change a person’s thoughts, beliefs, and attitudes from a psychological unbalance state to a more balanced state. Meditation is used to lower stress, improve the mental state, cope with life hardships, heal emotionally and physically, and to increase overall well-being. Although these things have been proven by scientists and psychologists of today, meditation has been a practice used for thousands of years within different cultures. There are many forms of mediation used throughout these cultures, some of which involves increasing our physical health along with mindfulness. I believe meditation practices are accurately useful, and that if more knew of how long it has been used and how broad the practices are, more would consider this form of healing or coping method. Using the book, *The Meditative Mind: The Varieties of Meditative Experience* by Daniel Goleman and journal articles, I inform readers of the

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different origins of meditation and the types used within religions and societal groups in history. This will reveal to readers where meditation of today is inspired and of meditation practices, they could potentially have the interest of practicing.

The Outcomes of Textile Waste: Slow Fashion Brands vs. Fast Fashion Brands

Student Author(s): Kerry Cope, Sophomore (Consumer Apparel & Retail Studies, Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

My research question is “What are the outcomes of textile waste with fast fashion brands vs. slow fashion brands?” This project serves to bring awareness to the environmental problem of textile waste. This project’s purpose is to also identify the difference between fast fashion and slow fashion brands and the outcomes of textile waste between both. Some of the findings I present are: A majority of consumers buy a lot of clothing each year because they have the mindset that they need new clothing every 2 weeks, instead of rotating clothes in their current closet. With COVID-19, companies are having to rethink their processes a lot, therefore, reducing the amount of waste they produce; Slow Fashion is a way to reduce waste in the fashion industry because they are mostly sustainable; One way that anyone can do to reduce textile waste tremendously is by refashioning (form of reusing or recycling), and/or collecting textile scraps to use for a different purpose; Reusing textile and clothing products results in energy savings since the amount of energy required for collecting, sorting, and reselling second-hand garments is 10 to 20 times less than for the production of the same products from virgin materials.

What is the Economic impact of DACA in the U.S?

Student Author(s): Brenda Corado, Sophomore (Sociology)

Faculty Mentor(s): John Sopper (Grogan Residential College)

During the Obama administration, a new immigration policy known as DACA allowed for immigrants who were brought here as a child to have the opportunity for a better life here in America. However, many American citizens do not consider the benefits to having this immigration policy. Some believe that DACA has a negative economic impact on the US economy, and therefore should be ended. For this reason, I decided to investigate the question “What are the economic impacts of DACA in the U.S?” With the help of US government databases and scholarly peer reviewed articles and data analysis, I investigate what percent of DACA recipients are receiving a college education, what percent have a job, and the amount of taxes that goes towards the government from DACA recipients. I also look into the negative impacts of removing the policy as a whole. I expect to find that DACA has an overall positive impact on the economy in the

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U.S. With discovering these answers, Americans have a better understanding of the positive impact that DACA has on the U.S and the negative outcome of disposing of it.

Overexpression of bacterial Glycolate Dehydrogenase for improving photosynthetic efficiency and yield

Student Author(s): Austin Cotten, Post-Bac (Biology)

Faculty Mentor(s): Ayalew Ligaba-Osena (Biology)

Photorespiration is a phenomenon that occurs in plants when oxygen binds to Rubisco, the enzyme that initiates the Calvin Cycle. In most cases, carbon dioxide binds to the enzyme which produces two molecules of 3-phosphoglycerate that can then continue through the remaining reactions that take place during the Calvin cycle producing sugars. In the case of photorespiration, one molecule of phosphoglycerate is produced in addition to a molecule of phosphoglycolate. The latter molecule is unable to continue through the cycle and must first undergo a series of oxidation reactions so that it can still be used for carbon fixation. As a result of these oxidation reactions, some of the carbon is expelled from the cell, thus decreasing the efficiency of photosynthesis. Glycolate Dehydrogenase is an enzyme that is normally expressed in *E. coli* and is able to metabolize phosphoglycolate. Previous research has shown that expression of the gene in potatoes lead to higher yields and carbohydrate synthesis (Noike et al., 2014). In this project we hypothesized that expression of the glycolate dehydrogenase in cassava will increase yield. Expression cassette of the glycolate dehydrogenase was introduced in to friable embryonic calli of cassava using *Agrobacterium*-mediated transformation. Transformed cells are being selected on a media containing antibiotics. We expect to generate transgenic lines which will be phenotypically and genotypically characterized using standard techniques.

[A look into the effectiveness of whey protein, creatine, and fish oil on subjects who are weightlifters looking to gain muscle.](#)

Student Author(s): Johnathon Cottingham, Sophomore (Information Systems and Supply Chain Management)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Supplementation is a crucial aspect of weightlifting for anyone who is looking to gain muscle mass. This is due to the benefits that most supplements have on the body. An example is whey protein, which when used increases protein synthesis within the body, allowing users to recover quicker while also increasing the growth of lean muscle. These benefits lead many to adopt supplementation early in their weightlifting career. This mindset can cause some problems early on if you do not understand the differences of each supplement. Understanding your supplements is an important part of your weightlifting regiment says Ernie Frantz, professional bodybuilder in his book, *Ernie Frantz's Ten commandments of powerlifting*. He specifically explains the role of incorporating supplements into your diet in chapter eight, "The Diet". Using other source like an article published by Canadian Science Publishing and another article published by Elsevier Science Ltd, I will help my readers to understand the importance of incorporating supplements into their workout routine/regiment when trying to build

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or gain muscle. This topic is of great interest to me as I consistently use supplements with my weight training and am very passionate about achieving my lifting goals.

[Social Stigmas on the Culture of Cosplay: Limitations on Creativity and Freedom of Expression](#)

Student Author(s): Katherine Craib, Senior (Biology)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Cosplay is an artistic form of self-expression through costume creation used to display love for a character, story, or creativity in general; yet, as is any social construction, cosplay has been increasingly afflicted by social stigmas both from fellow participants and outside observers. There are developing adverse views that cosplay must be created, worn, and displayed in specific ways that contradict the inherent individualism and originality of the culture. I argue that these social stigmas impose social conformation, limiting the freedom of expression that cosplay culture inherently values. Through the use of sources, such as an article from *Fashion Theory: The Journal of Dress, Body & Culture*, “‘Cosplay’: Imaginative Self and Performing Identity” and books, such as Thèresa Winge's *Costuming Cosplay: Dressing the Imagination*, I familiarize readers with the societal pressures imposed upon cosplayers as well as the impact of these constraints. As a cosplayer of seven years, who participates for the sole sake of creative enjoyment, I plan to explore the social restraints that others have placed on cosplayers, especially fellow participants. This research will examine various social stigmas impacting cosplay culture, explain the reasoning behind them, and analyze the positive or negative influences on the culture.

[A Visual Improvement to the Pedagogy of Introductory Logic](#)

Student Author(s): Larry Joshua Crotts, Senior (Computer Science), Ali Altamimi, Senior (Computer Science), Harinderveer Badesha, Senior (Computer Science), Christopher Brantley, Senior (Computer Science), Nadia Doudou, Senior (Computer Science)

Faculty Mentor(s): Minjeong Kim (Computer Science)

Formal logic is considered by many philosophy majors to be challenging to overcome, exposing students to cumbersome symbols, rules, axioms, and other concepts that resemble mathematics and computer science. We have seen students struggle with formal logic as a result of its conjectural and abstract nature, as well as its prolific and esoteric use of conceptual thought-processing. Figures or images (e.g., walking through the steps to solve a problem) frequently accompany textbooks and other sources when the need to demonstrate a problem or example arises. However, these often leave a lot to be desired - some concepts come easier than others, such as truth tables versus proof-based natural deduction, and it likewise depends on the person and their major/interests. Certain programming languages and websites exist that serve similar purposes but frequently do not provide user-friendly solutions to non-programmers and

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those that are not already experts at the material. Our current work is focused on building a visually appealing aid and tool to complement the traditional textbook and lecture pedagogy that provides beginner to intermediate students with a digital canvas to explore formal logic definitions, rules, and tools at their own pace in attempts to improve their overall comprehension.

Topological Signatures in Music Theory

Student Author(s): William Cruse, Senior (Mathematics & Statistics)

Faculty Mentor(s): Yu-Min Chung (Mathematics & Statistics)

Music theory is a collection of various patterns and observations that have accumulated throughout history. Musical compositions can be broken down into structures such as scales, keys, and rhythms. These structures are constantly passed down and improved on by composers as time moves forward. The structural nature of music theory implies that music can be observed from a geometric standpoint. Topological Data Analysis is an exciting field in which geometric observations can be made from a data set with or without the need for a metric. Topological Data Analysis can be used in a metric space to study geometric features in a data set. In this work, we use a recently developed algorithm in TDA field called ballmapper. By using the ballmapper algorithm, a geometric interpretation of a musical composition can be created and observed. By using the ballmapper algorithm to test various radii, a geometric interpretation of a musical composition can be created and observed.

Sankofa: Reaching Back to Move Forward in the Search for Belonging

Student Author(s): Tamarah Davis, Senior (Teacher Education), Leighann Brooks, Senior (Teacher Education)

Faculty Mentor(s): Beverly Faircloth (Teacher Education & Higher Education)

The focus of our project was to complete an extensive literature review about the sense of belonging in classrooms. We discovered that the intersection of culture and belonging was as diverse as the cultures that appeared in the search in the literature review. After looking specifically at Black, Indigenous, LatinX, Immigrant, Refugee, English language learners, and LGBTQ+ students, we recognized the need for additional research in education about the intersectionality of culture and belonging. The *sankofa* is a metaphorical symbol, generally depicted as a bird with its head turned backward taking an egg from its back. It expresses the importance of reaching back to knowledge gained in the past and bringing it into the present in order to make positive progress. The *sankofa* image reminds us to leverage multiple resources in order to help students move forward. This culturally relevant pedagogical concept functions as an instructional opportunity for belonging that reaffirms marginalized students in their personal identity.

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[Bidirectional associations between physical activity and pain among older adults](#)

Student Author(s): Tyler Davis, Junior (Kinesiology)

Faculty Mentor(s): Jaclyn Maher (Kinesiology)

Between 60%-75% of older adults report some persistent feeling of pain which detracts from quality of life. Physical activity is viewed as a potential lifestyle factor that can mitigate pain. Unfortunately, older adults often cite pain as a major barrier to engaging in physical activity. Bidirectional relations between physical activity and pain over a short period of time need to be studied to determine how pain serves as an antecedent and consequence of physical activity in daily life. We hypothesize that on occasions when older adults are more physically active than is typical for them they will subsequently experience less pain, and that on occasions when older adults report higher levels of pain than is typical for them, they will engage in less subsequent physical activity. Older adults (N=104) participated in a 10-day study in which they used mobile phones to report feelings of pain at 6 random times/day and wore an activPAL monitor to continuously measure physical activity. Multilevel modeling will be used to test the hypotheses outlined. This work is necessary as it will inform efforts to promote physical activity and improve quality of life among aging populations.

Representation and Accessibility in Art

Student Author(s): Kristen Dixon, Sophomore (Arts)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

I am researching the disparity and disconnect that lies within people of color (POC) and people with disabilities (Disability Community) and how it relates to support and involvement in arts venues and communities, specifically in "Fine Art". In the past people of color and people with disabilities have been treated differently from historically white able bodied people, society, specifically in America, has been built around these thoughts and ideals. The Arts weren't free from this modeling either, in museums African Art is separated with the artifacts regardless of what time period the art was created in, "Fine Art" is delegated to predominantly white, western artists. Being a disabled woman of color I know where I stand in society. Being an artist, I know my history. Being a museum lover, I'm never represented. By looking at responses to surveys and using scholarly sources like Joni Boyd Acuff's *Multiculturalism in Art Museums Today* I plan to highlight these statistics and provide examples of what accessibility in art or "De-Westernizing Art" looks like in America.

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Perceptions and Misconceptions of German Nationalism in the 21st Century

Student Author(s): Eleni Econopouly, Senior (International & Global Studies)

Faculty Mentor(s): Kathleen Macfie (International & Global Studies), Will Zang (International & Global Studies)

What causes rising nationalist and anti-immigrant sentiment? It is no fluke that the recent rise in global migration movements coincides with a rise in nationalist sentiment in destination countries around the world. However, it is less straightforward whether such migration movements have a causal effect on nationalist sentiment, although this has become a mainstream perception. Indeed, many scholars believe that migration has indirectly generated greater support for populist and nationalist political parties. My research, however, which is focused on Germany, discusses the rise of nationalism as being largely the result of factors unrelated to migrants themselves. Using a combined methodology of process tracing and critical discourse analysis, I analyze existing research from Germany that demonstrates the importance of other factors in generating support for nationalist and anti-immigrant movements. This approach enables me to examine the legitimacy behind popular beliefs regarding nationalist surges, as well as to consider and propose alternative explanations for rising nationalism. In particular, these two methodologies allow me to analyze the way in which simplified notions of causal relations between immigration and rising nationalism have become embedded in the media and public opinion. The alternative causes that I will be covering are centered on the German media's negative portrayal of migrants and the asylum process, and the skill of far-right parties in using similar rhetoric to garner support for their anti-immigrant platforms. I suggest that popular perceptions of a directly causal relationship between increasing migration and rising nationalist sentiment fail to consider other important drivers of nationalism, while also serving to blame migrants themselves for the xenophobia they experience in their host countries.

Weight of a Nation: Are we Making Progress?

Student Author(s): Kaden Edgeston, Sophomore (Kinesiology)

Faculty Mentor(s): John Sopper (Grogan Residential College)

In 2012, the cable tv network HBO collaborated with the CDC and NIH to produce the documentary *Weight of a Nation* to highlight health disparities in America with particular focus on the obesity crisis. Said Health disparities were drastically increasing at the time *Weight of a Nation* was broadcast. There was also the implication that the distribution of wealth affected the overall health of Americans and especially obesity. My research investigates where we are today, eight years later. I ask how obesity rates in children and adults vary across different socio-economic groups in America today and whether those rates have improved, remained the same, or gotten worse. My research looks at poverty, food accessibility, and physical activity to evaluate the current weight of the nation.

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[African/African Immigrant college-aged youth response and resilience to COVID-19 crises](#)

Student Author(s): Princess Ejindu, Junior (Public Health Education)

Faculty Mentor(s): Sharon Morrison (Public Health Education)

Quite often minority health disparities data and issues impacting African immigrant populations are subsumed under the African American or Black demographic category. This creates a need for more detailed information on emergent health issues such as the COVID-19 pandemic and its impact on individuals belonging to diverse African origin populations. This qualitative study involved key informant interviews with college youth who were African nationals or belong to African immigrant households and attended a higher education institution in North Carolina. The goal was to gather viewpoints about the pandemic, and document responses to living, learning, working/recreating and socializing within the COVID-19 crises. I will discuss the analysis and findings within a resiliency framework and highlight coping strategies applied to traumatic situations.

[How does computer-based learning impact the cognitive and social development of school-age children?](#)

Student Author(s): Anna Eplin, Sophomore (Teacher Education & Higher Education)

Faculty Mentor(s): John Sopper (Grogan Residential College)

As technology develops, schools have been integrating it into their classrooms, particularly in regard to the internet and computers. However, as the outbreak of COVID-19 has made it unsafe to be in schools, students are now forced to have a virtual education. Parents often restrict a child's use of iPads, iPhones, and computers in order to go outside and play more, which might have an impact on the way that the child develops. Teachers and parents need to know the answer to my research question of how computer-based learning impacts the cognitive and social development of school-age children in order to make sure that their child is developing the way they would deem healthy or normal. I examine surveys of how many hours a child was allowed to use the internet and how social and academic those children were, and to do this I look at test scores. I look at articles that explain how children's brains would develop without increased internet use versus increased internet use and compare. I find that increase internet use inhibits development, but I also distinguish the ways that the internet use versus no internet use is better or worse.

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Colonial Reverb: A Postcolonial Study of Prostitution Policing and Criminal Justice in the United States of America and New Zealand

Student Author(s): Maria Esch, Senior (International & Global Studies, Women's, Gender, & Sexuality Studies)

Faculty Mentor(s): Kathleen Macfie (International & Global Studies)

Today, police violence against people of color, especially Black people in the United States, is garnering more public attention than ever before. For many, it poses the question: why is our criminal justice system so flawed and how can we fix it? Through a process-tracing-based methodology I plan to conduct an exploration of prostitution laws in both the United States and New Zealand. For the United States and New Zealand, two nations with similar rankings on the human development index as well as sharing histories as settler colonies, their legal relationships with prostitution vary greatly, making them an ideal pair for comparison. My research works to explore modern social injustices within the two carceral systems and connect these injustices to British settler colonialism. The policing of prostitution, legally or socially, in these two nations disproportionately targets racial and gender minorities, and I aim to use postcolonial theory to explain the colonial roots of this phenomenon and contemporary work on decolonization to propose a path forward. An examination of the colonial roots of racism, homophobia, criminal justice, and modern policing will contribute to a greater conversation about how criminal justice systems in former British colonies can be broken down and rebuilt as justly as possible.

Blue collar versus white collar: How do children view intellectual and physical labor.

Student Author(s): Tatyana Farrow, Senior (Psychology)

Faculty Mentor(s): Shaylene Nancekivell (Psychology)

Drawing inspiration from visible divisions in American society, we explored when in development are children sensitive to stereotypical divisions in labor. We conducted our experiment by telling a story to children about a faraway place called Zolly. In this story, we showed children two types of people, one who lived at the top of the hill (high status), and another who lived at the bottom of the hill (low status). Children were then asked which "type of person" was more likely to be the builder of a novel product and which was more likely to generate new ideas related to it. Older children (10-12 years), judged that high-status people would be thinkers, but not necessarily builders. Surprisingly, the reverse pattern was found in younger children (6 & 7 years). An analysis of their explanations revealed children were basing their judgments on perceived differences in resources (higher status = better stuff to build with), whereas older children seem to base their judgments on the Zollians' access to opportunity (higher status = more choice of job). Our findings provide evidence that children of different age groups consider different factors when reasoning about others' economic

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status, and that this difference influences everyday judgments like those about occupation.

[Creating a Diverse Online Music Learning Community for Young Musicians](#)

Student Author(s): Gabriel Figuracion, Junior (Music Education), Triston Broadway, Senior (Music), Maguette Seye, Junior (Biology), Damien Miles (Music Education)

Faculty Mentor(s): Rebecca Macleod (Music Education)

The purpose of our community-engaged research was to increase access to diverse role models for young students interested in learning string instruments. Students identify more strongly with role models who are similar to them. Characteristics such as age, race/ethnicity, and gender all impact motivation and student sense of belonging. In an effort to increase diverse role models, we created a musical resource that students and teachers alike could visit to find mentors from diverse backgrounds and cultures. Team members filmed individual teaching and playing videos throughout the 2020-2021 school year. These videos were combined using audio editing software (Reaper) and video editing software (DaVinci Resolve) to create violin, viola, cello, and bass instructional videos. To date, we have recorded and released 11 videos: Open String Blues (4), Open String Blues Call and Response (2), Boil Dem Cabbage (1), Sunflower (1), and We Shall Overcome (3).

These videos have impacted our immediate community, including students enrolled in the Lillian Rauch Beginning Strings Program and the Peck Alumni Leadership Program. On a larger scale, the videos have gained 4,073 views on YouTube as of February 23, 2021.

[An Argument on how Artists Create Emotions in Their Artwork to Connect With the Viewer](#)

Student Author(s): Brenda Fonseca-Martinez, Sophomore (Arts)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

As an artist, we create a world full of emotions when we paint. When viewing the painting, people do not quickly understand the message we are trying to convey. In my research, I want to find out how artists create emotions by painting and point it out to the viewers. Artists open a new door to create work based on what they feel or can connect with. I'm interested in this topic because growing up I was always into painting. The more I entered the world of art, I had questions about the artist regarding their work and how people viewed it. In the book *Art and Emotion*, Derek Matravers talks about how colors can cause people to react emotionally to a work of art, often using the color red to describe negative emotions. I hope to learn more about different types of artists and how they can express their own emotions, which can open the eyes of viewers. I hope this will help me grow as an artist by connecting more with my art as well, which can ultimately impact fellow artists.

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[How is Generalized Anxiety impacting college students since the start of the pandemic?](#)

Student Author(s): Miriam Frunza, Sophomore (Social Work)

Faculty Mentor(s): John Sopper (Grogan Residential College)

The number of college students with anxiety is dramatically increasing within our society, especially since the beginning of the COVID-19 pandemic. There are many types of anxiety that impact people's life, but I focus specifically on the most common form of anxiety, Generalized Anxiety Disorder or GAD. As young adults, your brain is still developing and learning new things. Since the pandemic hit, college students with anxiety learn to adapt to a new way of life. Therefore, how is Generalized Anxiety impacting college students since the start of the pandemic? By examining recent scholarly work on anxiety among young adults during the pandemic, I investigate college students with GAD to determine if, and how they might be struggling with the transition to the zoom classroom. I expect to find how young adults are affected and how one might work around these issues and turn it into something positive.

[Democracy Tables: Encouraging Critical Community Conversations](#)

Student Author(s): Jeremi Fulmore, Senior (Media Studies)

Faculty Mentor(s): Jenni Simon (Communications, Advancement Marketing, Alumni Relations, Events), Spoma Jovanovic

Public deliberation and discourse create space for “public discussion in civil society, leading to citizens organizing to promote wider discussion of the problem and ways for the government to address it” (Young, 2002, p. 3). Democracy Tables—a joint project hosted by the Greensboro History Museum in collaboration with UNCG’s Department of Communication Studies—is a new way for Greensboro residents to meet, connect, and share their hopes for the city in an intimate and informal setting. The project launched in fall 2020, with the intent to reach into different parts of the city to invite residents, (especially those from traditionally underrepresented communities) to share experiences and concerns through creative dialogue. The initial meetings asked city residents to discuss with one another the importance of voting. Using Zoom, participants met virtually, a change to original face-to-face plans prompted by COVID-19. At three separate sessions across a week-long period, a total of 70 people took part in one or more of the three conversation tables. Residents moved from large gatherings into small break out rooms to discuss their visions of promoting democracy in our city. The university-community team developed questions, inspired by the Living Room Conversations model, designed to prompt story telling. Volunteer facilitators, including students and community members, guided the discussion. Follow up surveys revealed participants are most concerned with policing and affordable housing. Those topics in turn became the focus of subsequent Democracy Tables. Democracy Tables provided an inclusive space to share different perspectives, experiences and concerns.

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[The History of Hair Discrimination in the workplace](#)

Student Author(s): Kristina Gamble, Sophomore (Consumer Apparel & Retail Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Discrimination based on hair in the American workplace is just as easy as realizing personal prejudices and realizing that hair comes in various textures, lengths, heights, and shapes. Realizing and solving workplace discrimination based on hair will help many people see that racism is rooted in many fibers of America. They can see the subtle and not so subtle ways that it is portrayed in the average workplace. Historically hair discrimination in this country dates to slavery, when black women were forced to cover their hair in public. And now the country is slowly changing by creating laws such as the CROWN Act to battle discrimination. As a black woman I shouldn't have to conform to "beauty standards" that make it seem like my hair is unnatural when I wear it as it grows from my scalp. I also don't want to be discriminated because of my hair especially if it doesn't pertain or cause any harm while I am working. By using sources such as What the Hair: Employment Discrimination against Black People Based on Hairstyle I will be able show how it still exists, and suggest ways the average person can help get end hair discrimination.

A Suicide Letter and a Love Note

Student Author(s): Claire Garner, Sophomore (Public Health Education)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

There are forums on the internet dedicated to writing about self harm and suicidal ideation. This is encouraged by dramatic elements in the media, which is misrepresented and under examined. And one of the biggest audiences for this topic are adolescents. From internet challenges to popular TV shows such as Netflix's "13 Reasons Why", people are speaking about suicide and mental health. In raising this awareness about mental health we have taught a generation of young people not only how to hurt themselves, but to want too. I would like to explore this phenomenon and deconstruct its elements in order to provide clarity on my own experiences with these communities and decentralised best practices and accountability in the media. Using sources such as "Mental Disorders: a Glamourous Attraction on Social Media" by El Habbal Jadayel, R., Medlej, K., & Jadayel's, J. J. I will uncover the misconceptions about how to handle tragedy and suicidal ideation, explore the negative impacts of media on mental health, and offer alternatives to this representation.

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Alcohol Drinking Guidelines

Student Author(s): Abraham Gebreselassie, Sophomore (Economics)

Faculty Mentor(s): Jeremy Bray (Economics)

Most developed countries have drinking guidelines set based on epidemiological evidence assessments of absolute or relative health risk but none consider the association between drinking and health related quality of life (HRQoL). Research suggests that low to moderate levels of alcohol consumption are associated with increased HRQoL, suggesting that current guidelines may miss an important dimension of the connection between alcohol use and health. This paper will estimate the relationship between HRQoL and four dimensions of drinking behaviors: the typical quantity of alcohol consumed in a day, the frequency with which this typical quantity is consumed, the maximum quantity consumed in day, and the frequency with which this maximum quantity is consumed. Using these results, we then derive the pattern of drinking that maximizes HRQoL. Our results can inform future guideline development and highlight the tradeoff between length and quality of life that drinkers face.

Why financial education should be taught in college

Student Author(s): Michael Greer, Sophomore (Business Administration)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Financial education should be a requirement for every college curriculum. While others might feel that college students are too young to learn about money. College students need to learn to manage their money to prepare to transition to their adult life. Financial education is the one thing that is lacking in our current education. As students, we learn about math, science, history, and English. We go over and over the same topics to ensure the information sticks in our heads. Yet this information isn't applicable to most people in their everyday lives. Most people can say they don't use a lot of the information that was taught in school. Our education up to college is very broad in a good way to make us more well-rounded individuals. What could be added that everyone will need is financial education. Most people don't understand the rat race the school education system puts us in. This is mentioned in my source *Rich Dad Poor Dad*. This topic interests me a lot because I love learning about financial education, and I think this information is very important. I want to learn how implementing financial education in school can help create more financially responsible adults.

Effects of grandparental Embryonic Bisphenol A Exposure on the Liver of Grandchildren of Medaka Fish

Student Author(s): Julia Godwin, Senior (Biology), Sourav Chakraborty, Post-Bac

Faculty Mentor(s): Ramji Bhandari (Biology)

Bisphenol A (BPA) is a plasticizer used in products like plastic bottles. However, it has been shown to mimic endocrine hormones, disrupting normal physiological functions.

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These adverse health outcomes include reproductive impairment, obesity, and metabolic syndromes. Accumulating evidence suggests a role of BPA in the development of adverse liver outcomes, like non-alcoholic fatty liver disease (NAFLD). NAFLD is a condition of excess fat accumulation in the liver of animals and humans. Since all observed adverse liver health outcomes are based on only direct exposure to BPA, there is a research gap in determining whether grandparental BPA exposure can lead to NAFLD in grandchildren who are not exposed to it. To address this, the livers of the medaka fish (*Oryzias latipes*) whose grandparents were exposed to environmentally relevant concentration of BPA (10 ug/L) during their first 12 days of embryonic life were histologically examined along with the expression of genes significant to lipid metabolism. Results suggest that grandparental BPA exposure induces NAFLD in grandchildren and that grandparental BPA exposure during their embryonic development leads to transgenerational liver disease in the grandchildren even without direct exposure to BPA.

Understanding the Alliance Between Water, Poverty, and COVID-19

Student Author(s): Shekinah Gonzales, Sophomore (Anthropology)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Water insecurity can be measured by surveying access to adequate amounts of safe and affordable water. As an anthropology student, I have learned that understanding water insecurity and its alliance to poverty can help to better understand the inability to properly fight off the COVID-19 disease and the disproportionate rate of infection seen in lower-income communities. It can also make clear the patterns from which a community's response to a crisis in terms of water can be predicted. While highlighting the long-lasting effects of water insecurity, I will reference water as a "total social fact" as advised by the authors of *Water Sustainability: Anthropological Approaches and Prospects*. Such a perspective will further expose the political and economic elements that have been assigned to the distribution of water and disease prevention. I will conclude that our nation's most vulnerable communities are more susceptible to viruses because of poverty that has resulted in unequal rights and retrieval of clean water.

An Argument for the Necessity of Historically Accurate Costume within Contemporary Film and Television

Student Author(s): Tabitha Goodman, Sophomore (Consumer Apparel & Retail Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

There is a plethora of historical costume inaccuracies in contemporary film and television, and I would argue that this affects the validity of the information being presented; the film industry often dramatizes and alters events and costumes in time-period films and tv-series to appeal to present-day audiences, which makes their depictions unreliable and dubious. This in turn can alter how society views historical

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figures, their dress, and their life-events. Using sources such as Maria Hayward's book *Dress at the Court of King Henry VIII*, this paper seeks to inform readers of the importance of historical accuracy in film and television and provide explicit examples of the true dress of King Henry VIII, in relation to his depiction in the Showtime television series *The Tudors*. The film industry should be taking advantage of its ability to show audiences true depictions of history, so that society may have a better more accurate understanding of the dress worn and the events that took place.

Legume-rhizobia symbiosis: how do plant traits influence number of nodules in the Longleaf pine

Student Author(s): Sarah Gora, Post-Baccalaureate (Biology)

Faculty Mentor(s): Sally Koerner (Biology)

Historically, the longleaf pine (*Pinus palustris*) ecosystem was dominant in the Southeastern United States. Today, this gorgeously biodiverse ecosystem is now endangered with a mere 3% of its original habitat remaining. Members of the legume family or *Fabaceae*, comprise up to 10% of the vascular plants in the longleaf pine ecosystem. The legume-rhizobia symbiosis is a unique, biological interaction between legumes and nitrogen-fixing bacteria. I hypothesized that plant traits may play a role in the number of nodules (plant organs that house rhizobia) and the amount of nitrogen fixed for the legume host. For this study, plant trait data was collected from two dominant legumes, *Lespedeza hirta* and *Galactia regularis*. Aboveground measurements of plant traits were taken in the field while belowground traits were collected in-situ. Bacterial nodules were carefully harvested from legume roots. Calculations of root area and nodule percent pink were recorded using Photoshop software. Regression analyses were used to identify the strength of the effect that plant traits have on nitrogen fixation rate. Understanding the legume-rhizobia symbiosis is of particular importance in fire-dependent ecosystems like the longleaf pine, where frequent burning can result in a decrease of significant amounts of organic nitrogen in the soil.

Memory and Emotions

Student Author(s): Laci Gray, Senior (Psychology)

Faculty Mentor(s): Rosemary Nelson-Gray (Psychology), Peter Delaney (Psychology)

Borderline personality disorder (BPD), found in approximately 1.6% to 5.9% of the population¹, is a mental disorder heavily characterized by negative perceptual biases, especially in evaluating the character of others, themselves, and situations². So, one with BPD may tend to view things in a negative light. Research suggests that BPD may affect

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the way that people with the disorder remember (and forget) certain information³. For example, if I ask someone with BPD to forget a negative experience they've had, it would be very hard for them to let it go. In my study, I used the directed forgetting method to try and understand how and if BPD can affect one's memory functions. The directed forgetting method is where participants are shown words on a screen one at a time, each word being directly followed by an instruction to forget or remember. They are then asked to write down any words they can remember, regardless of the instruction for each word. The words in my study are either extremely salient to BPD, negative but not salient to BPD, or neutral. This measures their ability to forget a word if asked to. This study is attempting to clarify previous findings from previous studies⁴.

[Evening the Playing Field: Women of Color and Their Challenges in Higher Education](#)

Student Author(s): Antoinette Gregory, Sophomore (Library and Information Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Since women were allowed into formal higher education, they have faced many obstacles that their male peers don't. Women of color (WOC), however, face these gendered issues compounded by issues due to their race. This issue is extremely impactful on the experiences on WOC as they go throughout various levels of higher education. I argue that this issue is one that should be addressed and acknowledged by institutions as well as discuss the ways in which this gendered racism impacts these women and how it is that institutions could go about approaching solutions. These challenges bar women of color being on an equitable level with their non-people of color colleagues and impact the success and levels of education that WOC reach in higher education. Through the utilization of sources such as the book *Disrupting The Culture Of Silence: Confronting Gender Inequality And Making Change In Higher Education*, I will conclude that women of color experience challenges such as tokenization by institutions and degree programs, feelings of isolation and lack of representation, and experience consequences of hegemonic system that enables and encourages oppressive behaviors all of which make higher education an inequitable experience for women of color due to their race.

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Because of Her

Student Author(s): Katherine Grischow, Senior (Music Performance and Arts Administration)

Faculty Mentor(s): Erika Boysen (Music)

As orchestras were becoming a more common and coveted source of entertainment in the eighteenth century, they harbored almost exclusively male performers. Beginning in the late 1800s, women were allowed to play keyboard instruments and harp in ensembles because they were able to maintain their “feminine grace.” Woodwinds, such as the flute, were not acceptable to be played by women because they required a specific formation of the face, which was deemed unfitting at the time. It was not until 1952 that a female flutist held a principal position in a major American orchestra. Doriot Dwyer served as the principal flutist of the Boston Symphony for nearly forty years. Before winning this position, Dwyer was refused several opportunities citing her gender. Because of her perseverance and precedent, other women have been able to pursue and achieve professional music careers. In this performance, I will honor the accomplishments of Dwyer by performing an original composition for flute and looper pedal. This piece was written using fragments of pieces that Dwyer premiered or were dedicated to her.

What are the different outcomes comparing music therapy to drug treatment among individuals with ADHD?

Student Author(s): Erica Haire, Sophomore (Psychology, Music)

Faculty Mentor(s): John Sopper (Grogan Residential College)

My project is about how music therapy should be the preferred method for ADHD. While drug therapy for ADHD does work it does have a lot of negative long and short-term effects from chemically disrupting how the brain naturally works. My research question is "What are the different outcomes comparing music therapy to drug treatment among individuals with ADHD?" I investigate current peer-reviewed scholarly articles and journals from government or educational resources and dive deep into the challenges behind being diagnosed with ADHD. I reference from the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition to find the clinical diagnosis of ADHD. I focus on the difference between music therapy and drug therapy, which uses psychostimulants, by analyzing their negative and positive effects. I also evaluate case studies and interviews to get a more personalized investigation of the contrasting treatments. I find that music therapy has more positive effects and can treat ADHD at a healthy and non-extreme pace. Music therapy gives an opportunity to gain skills in guided attention, behavioral and cognitive skills as well as social and self-awareness skills. I further expect to find that music therapy holds more positive and beneficial effects than drug treatment.

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[An Argument for More and Better Female Representation in Comics.](#)

Student Author(s): Beth Hall, Sophomore (Media Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

When it comes to female representation in superhero comic books, the industry has had a rough history. Whether women are being overly sexualized, depicted using racist stereotypes, or being killed or depowered for the sole purpose of causing a male character pain, they are often highlighting the sexism that is inherent in the genre. Of course, this is not the whole history. If one took the time to dig a little deeper as I did, they would find there are actually many examples of strong, independent, and complex women to exist in the history of comics. It is these women that have led me to argue that comic's, though often considered sexist, could be a perfect vehicle for the push of strong female characterization if used correctly. I will be referencing excerpts from the book *Many More Lives of the Batman*, in conjunction with other scholarly texts on women in comics, and comic runs like *Ms.Marvel(2014)* to make my case. As a woman and an avid comic reader myself, I believe that this research can help us to understand why comics have been so misogynistic for so long and how we can break this trend.

[How Will New Technology Change What Physical Therapists Do?](#)

Student Author(s): Makayla Hargrove, Sophomore (Kinesiology)

Faculty Mentor(s): John Sopper (Grogan Residential College)

I am a Kinesiology major with a concentration in physical therapy and a minor in Business. I will be talking about my Capstone Project which is focused on how technology impacts physical therapy treatment for patients. This topic does not get the necessary acknowledgement that it deserves, and I wanted to learn more about the impact that technology has on the recovery process. My research poster has the intent of teaching future physical therapists what knowledge they will be gaining, but also gives them the mindset on how they can use their own brains instead of technology help. My project highlights how in today's society we are so dependent on technology that we cannot do anything without it. I made sure that my project has a mixture of why technology is helpful, but also the downfall of technology in the physical therapy occupation. The importance of technology is explained in my project in regard to making sure that the patient is relaxed, and the atmosphere is just how they imagined it. Learning more about my future occupation and the tools that I will be using gives me knowledge that I want to pass on to other students, professionals, and patients who have to get treatment. Technology is a hard topic for me to write about because there is a lot of new technology being brought into this occupation, but my research helps to look back on how physical therapists worked prior to the introduction of these

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[Social Controversy within Social Media](#)

Student Author(s): Kiara Harris, Sophomore (Media Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Social Media Controversy allows us to put the 1st Amendment to good use. In this essay, I will be speaking on the positive effect of people having social media within the world because it allows people of all ages to have a platform where they are allowed to put their opinion out there, while also educating themselves on certain issues that they didn't know much about. I'll bring up the history of social media and how it's improved people's honesty on their ideal. I will also talk about the negatives of social media because, for the longest time, I always thought social media was negatively affecting the world, but after doing research it definitely opened my eyes and showed me the positives of social media which is why this topic interests me. For example, *Mapping Controversies with Social Media: The Case of Symmetry* in the *Sage Journals* hits on many issues that the internet has talked about and argued about and its effects. By the end, I hope to show people that social media actually benefits people by giving them a place and support to discuss issues while receiving feedback and also maybe educating themselves with the other side's perspective.

The Repercussions of "Bad" Sex Education

Student Author(s): Erin Hartley, Sophomore (English)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Abstinence only sex ed is harmful to students as its uninformative, creates a shameful environment surrounding sex, and increases rates of stds/teen pregnancy. Sexual education for American students has long been criticized for its uninformative and shaming qualities. At best, it teaches kids how to use contraception. At worst, kids learn to abstain from all. My project aims to explain the cons of uninformative sexual ed and elaborate on a more open minded system. My reasons for choosing this topic: Firstly, I went through bad sex ed and had to educate myself after the fact. Secondly, I think it's important to protect our youth by teaching them about sex. Most of the sources I'm using are primary; they look directly at sex ed programs throughout the US. One of my sources, *The Sex Education Debates*, researches how homosexuality is addressed in sex ed. I'll work that into my project, homophobia in the sex ed needs to be addressed. I hope this project can inform upon harmful sex ed and why we need to fix it. I also want to learn what can be done to de-stigmatize sex in general.

[Gender and the Effect of a Romantic Partner's Success on Self-Esteem](#)

Student Author(s): Heather-Christina Hawkins, Senior (Psychology)

Faculty Mentor(s): Ethan Zell (Psychology)

Previous research indicated that men's implicit self-esteem was lower after experiencing partner success than partner failure (Ratliff & Oishi, 2013). For women, however,

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implicit self-esteem did not differ across conditions. Additionally, partner success had a strong impact on men's implicit self-esteem when the success implied that their partner was superior to them. The present study is a replication and extension of prior research examining the effect of partner success on men's self-esteem. First, relationship satisfaction will be assessed. Second, participants will describe a time when their romantic partner succeeded or failed. Whereas some participants will simply describe a time when their partner succeeded or failed (non-comparative prompt), others will describe a time when their partner ranked superior or inferior to them (comparative prompt). Third, participant's explicit self-esteem, implicit self-esteem, and level of self-expansion will be measured. Across writing prompts, men's implicit self-esteem is expected to be higher after a partner failure than success. Further, men's implicit self-esteem is expected to be even higher after partner failure and even lower after partner success in the comparative conditions than the non-comparative conditions.

“Myth: On Human Folly and Faith”

Student Author(s): Carolina Herrera, Senior (Music)

Faculty Mentor(s): Erika Boysen (Music)

This project consists of 5 short, originally composed pieces for flute, trombone, voice, and electronics with corresponding original poems. This project will produce sheet music and digital recordings of these five movements as performed by myself and my collaborator, Keegan Evans. These five moments each correspond to a different myth and/or culture that I felt were underrepresented or not at all touched upon in flute/chamber music literature. The five myths this musical work deals with are the Abduction of Persephone, the Chupacabra, Mothman, the Lost City of Atlantis, and the Goddess and the Coqui. This project aims to thematically and culturally expand the repertoire for flute and chamber music, as well as expand the body of interdisciplinary chamber music literature. This project was inspired by my love of mythology and what each myth represents in regards to universal human experiences across cultures. This project also fulfills the requirements for completion of the 2020-2021 Lloyd International Honors College Pubnatz Artist-In-Residence program.

The Development of African American Children in Kinship Care

Student Author(s): Kiara Hickman, 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 to better understand

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the impact of kinship care families on children's social, academic, and behavior outcomes (ages 5-12). The first aim will use quantitative methods to identify specific family-level factors that mitigate risk to children's social and academic competence and behavioral problems (Quantitative Phase I; N=200). The second aim will use qualitative methods to explore and interpret the results obtained in phase I (Qualitative Phase 2; N=30). Results from the study will inform better prevention and intervention services to interrupt the negative trajectories of these areas that are typically experienced by children in kinship care.

Rosso's Artistic Journey: Changing Locations and Changing Styles

Student Author(s): Malanah Hobgood, Senior (Art History)

Faculty Mentor(s): Heather Holian (Art History)

This research focuses on the stylistic changes in the artworks by early Mannerist artist Rosso Fiorentino. I argue that Rosso's stylistic changes were prompted by his personal relationships through family and other artists as well as his professional connections, rather than contemporary stylistic trends or solely requests from patrons. Rosso claims his place in history with his original style and innovative approach to ecclesiastical subject matter. I analyze the years from 1518 through his time in Rome where the changes in his style were most pronounced. I begin with an analysis of Rosso's familial background and its links to his training and his first commission for the Assumption of the Virgin at Santissima Annunziata. Next, I conduct a close examination of Rosso's time in Piombino at the court of the Appiani family in relation to his distinct style change in the Deposition from the Cross produced in Volterra. Then, heading back to Florence, I analyze Rosso's relationship with the Ginori family and artist Baccio Bandinelli regarding the commission of the Betrothal of the Virgin at San Lorenzo. To conclude my research, I focus on Rosso's time in Rome and the influence of artists around him on his commission, Dead Christ.

Through Our Eyes: Reclamation of the Black Body

Student Author(s): Malanah Hobgood, Senior (Art History)

Faculty Mentor(s): Emily Voelker (Art History)

My research focuses on 19th century early photographic practices and issues of representation of African Americans. Sojourner Truth and WEB du Bois subverted the misrepresentation of African Americans in early photographic practices by using photography as a tool to advance African Americans after being enslaved rather than the previous use of photographs that continued oppression. Sojourner truth used her self-portrait to support abolitionist ideologies while WEB du Bois used photography to create an counter archive of American Black life in the south. Before Truth and Du Bois' photographic endeavors, the main images in circulation were those for ethnographic studies. These photographs for the scientific gaze still place enslaved people as objects taking away their humanity and identity. Sojourner Truth was able to add worth back to the sitter by having the agency to capture her own self-image and use it to her own ends and aims. By doing so she was able to support herself and continue to teach others about

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abolition of slavery and rights for women. Du Bois' photographs showed the sitter identity even though using the same photographic practices used for ethnographic photography subverting the format.

An Argument for the Importance of Decolonizing Our Understandings of Transgender Identities Beyond Western Colonial Ideals

Student Author(s): Demya Holland, Sophomore (Recreation and Parks Management)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

What we would today consider transgender identities, have existed among many groups before notions of what it means to be a man or a woman by western standards. As we strive for a more equitable society, we must reconsider the things we know about transgender identities and their relation to the western gender binary. Because our society, consciously or not, views gender and gender performances as inherently part of the human condition, transgender people's existence causes a rift in that understanding. Thus, people cling harder to that colonial interpretation, which often manifests into transphobia-driven acts of violence. My curiosity in this topic stems from having a vested interest in seeing this understanding of gender eradicated, being an agender person in community with other transgender people who are harmed and oppressed by the preservation of this mode of thinking. By using sources such as Leslie Feinberg's *Transgender Warriors: Making History from Joan of Arc to Dennis Rodman*, I inform my audience of the history of transgender identities that have existed pre-western colonization and persist today. With this research, I hope to encourage a better understanding of transgender identities and the importance of not defining them by western notions of gender.

COVID-19 and the Local Food System in the Piedmont

Student Author(s): Mia Hoskins, Senior (Anthropology)

Faculty Mentor(s): Susan Andreatta (Anthropology)

Small, local farms are vital to communities; they are a primary force in the fight for food security, health, biodiversity. While the US prioritizes agricultural legislation and assistance, policies passed both federally and locally are not always drawn with small farms in mind. Commercial farms had greater access to farm aid during the Covid-19 pandemic making it challenging for small farmers, like those in NC Piedmont communities, to keep going. This paper highlights the importance of diversified and local farming and how legislation is not created in a way that supports them. Through Covid-19 and the challenges it has brought, the inequities in farming policies have never been more evident and the small farmers have never been more at risk.

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Upregulation of Anaerobic Glycolysis in a Remarkably Hypoxia-tolerant Neural Circuit

Student Author(s): Min Hu, Post-Bac (Biochemistry)

Faculty Mentor(s): Joseph Santin (Biology)

Disruption of the delivery of oxygen and glucose causes dysfunction and damage to the brain in most animals. In contrast, our lab has found that the American bullfrog can maintain normal function of neurons in the brainstem for approximately 30-fold longer once they emerge from hibernation, potentially offering clues into how to improve tolerance to energy stress in common neurological disorders. We hypothesize that glucose import and anaerobic glycolysis are upregulated after hibernation. We tested this hypothesis by measuring the gene expression of glucose transporters and the rate limiting enzymes for glucose metabolism. In contrast to our hypothesis, we found that the mRNA levels of glucose transporter 8 (GLUT8) and one phosphofructokinase isozyme were reduced in the spinal cord of hypoxia tolerant animals, while the other genes remained the same. Interestingly, the proteins coded by these two genes are typically expressed in cellular compartments without active electrical signaling (cell body and perinuclear space). We, therefore, suggest that metabolic tolerance may arise from conserving glucose use in the cellular compartments that have a lower energetic burden compared to dendrites and axons, rather than globally upregulating anaerobic metabolism.

Identifying Growth of Rhizobial Bacteria from Legume Root Nodules in a Controlled Environment

Student Author(s): Kinza Hussain, Senior (Biology)

Faculty Mentor(s): Sally Koerner (Biology)

Rhizobia are bacteria that fix atmospheric di-nitrogen into bioavailable forms that legume plants can utilize for growth. The use of inoculations to promote the symbiosis between legumes and their rhizobia mutualists is a common practice used in order to promote legume growth and productivity. With the aim of studying rhizobial growth rates, our experimental questions are, (1) do all rhizobia grow on yeast mannitol agar, (2) do some rhizobia grow at a faster rate than others, and (3) do rhizobia growth forms differ? In our research project, we will be looking the growth of rhizobia bacteria harvested from previously preserved legume plant root nodules that rhizobia inhabit. These bacterial nodules were harvested from legumes in the fire-dependent longleaf pine (LLP) ecosystem and preserved in silica beads in the fall of last year. From this saved plant material, the bacterial nodules will be plated on Yeast Mannitol Agar (YMA) agar and growth monitored as photographic data is documented which will provide evidence of whether the nodules exhibit growth or not. Legume-rhizobia symbioses are

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significant in LLP ecosystems and increasing our knowledge on rhizobia growing capabilities, will inform future rhizobial inoculation practices.

Fitness, Cognition, and Brain Functional Connectivity in Identical Twins from the Human Connectome Project

Student Author(s): Shena Hutcherson, Senior (Chemistry & Biochemistry)

Faculty Mentor(s): Derek Monroe (Kinesiology)

Better physical fitness is associated with better cognition, suggesting that fitness-related behaviors change the brain in ways that change cognition. The purpose of this study was to estimate the effect that these behaviors have on a relationship between brain functional organization (connectivity) and cognition independent of genetic factors. Eighty-four identical twin pairs (55 female pairs; 22-35 y.o.) completed tests of fitness and cognition and underwent brain imaging as part of the Human Connectome Project. We selected twin pairs ($n = 42$) that exhibited the greatest differences in fitness. Brain functional organization was defined by correlations between relative blood oxygenation as measures of connectivity. A multivariate analysis was used to reveal a pattern of differences in connectivity that reliably predicted differences in cognition. Increased connectivity within and between visuospatial processing networks and the somatomotor network predicted worse language comprehension and better executive function and processing speed in the fitter twin ($p=.0192$). In a sample of twin pairs, behaviors that led to differences in fitness changed the way that brain connectivity gave rise to specific types of cognition.

What are the stressors minority college students face that lead to anxiety and depression and what can be done to decrease these stressors?

Student Author(s): Opeoluwa Idowu, Sophomore (Biology)

Faculty Mentor(s): John Sopper (Grogan Residential College)

Mental health has been a common discussion among college students for the past few decades, but we also must consider students who identify as minorities and their mental health. The reason behind my research project is to address the question of “What are the stressors minority college students face that lead to anxiety and depression, and what can be done to decrease these stressors?” By analyzing peer-reviewed articles as well as government and other databases, I investigate the common stressors minority students might be facing and the effects these stressors have on students’ mental health. I also investigate potential ways to decrease stress in minority students. I find that there are unique stressors that minority students face, but there are also steps minority students can take to support their mental health.

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Predicting Species Range Expansions Using New Integrative Datasets and Species Distribution Modeling

Student Author(s): Leo Ivey, Junior (Biology)

Faculty Mentor(s): Bryan McLean (Biology)

Understanding how anthropogenic activities affect species distributions is critical for predicting spread of non-native species and negative impacts on native species. The goal of this project has been to test if models can accurately predict movement of a species, in this case the Fox squirrel (*Sciurus niger*), over the past century in the western United States and Canada. Fox squirrels are ideal for this, as they are common, widespread and have had a very dramatic range shift in the U.S. within the last 100+ years. We first assembled a large dataset of georeferenced occurrence records from museum specimens and the citizen science platform iNaturalist. We split the data by decade, constructed distribution models, and asked if these models could predict *S. niger* spread in subsequent decades. We also compared the predicted and actual spread of this species in a spatial context. With increases of human activity and climate change impacting species spread in modern years, studies like ours are critical for creating reliable, realistic models that predict species movements currently underway.

Pretty Privilege: How Society's Beauty Standards Affect Lives and Influences How People Perceive Themselves In Media In The U.S

Student Author(s): Tishana Jackson, Sophomore (Library and Information Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College), Jennifer Whitaker (Strong Residential College)

Pretty privilege may be a term not a lot of people have used yet, but probably have heard. It is the fact that looking “pretty” can get you places in life and open doors for you that may not have been there had you not looked a certain way. This research will show what is considered to be pretty, and how lives can change over it. The goal is to spread awareness and love to any and everyone despite their physical appearance. Time to dig deep and see what’s on the inside. It will talk about how it’s shaping society in everyday people's lives. I’m interested in this topic because it is something that has bothered me for a long time. So many times people get cancelled out because of looks, or become a stigma for what someone of a certain race, shape, size, or ethnicity should look like. I will be pulling in sources such as *Beauty PAYS: Why Attractive People Are More Successful*, published by Princeton University Press, as well as surveys, peer reviewed articles, and blogs.

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Invasion effects on insect diversity in grasslands

Student Author(s): Ashley Jolin, Senior (Biology), Morgan Frost, Post-Bac (Environmental Health Sciences)

Faculty Mentor(s): Sally Koerner (Biology)

Invasive species harm the biodiversity of ecosystems around the world, including grasslands. Specifically, in the grasslands of Montana, invasive grass species substantially dominate the landscape, but the effects of invasion across trophic levels are not well understood. This work is part of a larger project studying how invasive *Bromus arvensis* is affecting multiple trophic levels in the ecosystem. Specifically, I am examining how *B. arvensis* impacts the diversity (number of insect families/plot) and relative abundances of insects in grasslands. I hypothesize that higher invasion will decrease the level of insect diversity. In the summer of 2020, insects were collected from plots ranging in gradients of invasion (low to high). In the lab, we sorted through plant debris and identified the insects to Order and Family. We then combined all insects within each plot by Order and weighed the biomass. We also individually weighed all Orthopterans. All figure creation and data analysis will occur in R. This study will aid in the research regarding how invasion negatively affects insect diversity and how this could cause a domino effect in the overall biodiversity and sustainability of the grassland ecosystem.

Robustness of Graph Sparsification to Adversarial Attacks

Student Author(s): Andrew Kawabata, Senior (Computer Science)

Faculty Mentor(s): Chunjiang Zhu (Computer Science)

Graph sparsification is a powerful tool to reduce the number of edges and/or the number of vertices in an arbitrary network while retaining certain graph properties such as the shortest distance or graph spectrum. It has been used to improve the computational cost of machine learning over large-scale networks. However, there exists no known study of the robustness of graph sparsification algorithms to adversarial attacks. We fill this void by showing that adding or removing a small amount of carefully chosen edges to the graph could result in a significant degradation in the sparsifier's effectiveness in preserving graph properties. Further, we plan to study defense algorithms by exploiting the observations that the perturbed graphs usually have different properties including graph eigenvalues and the rank of related matrices compared to the input graphs. We will perform extensive experiments under different real-world networks to confirm the effectiveness and efficiency of the proposed algorithms.

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[Where to start being financial stable and secure?](#)

Student Author(s): James Kearns, Sophomore (Accounting & Finance)

Faculty Mentor(s): John Sopper (Grogan Residential College)

There is an increasing amount of people who are in poor financial standing that have been on the low-income side of the economy generationally. These people weren't given good financial advice growing up, had to help their family out, didn't have the resources to build wealth and even have been denied the chance to build wealth throughout their family. This is the reason why I am answering the question, Where can families, that have struggled financially generationally, start to get the tools and resources to become financially literate to acquire wealth? I look through the U.S. government databases to find the amount of people that are in low-income situations and the demographic of the population. I examine case studies that show how low-income individuals make decisions about their financial affairs. Through my research I expect to find solutions, tools, and resources through government data, financial books, case studies, and interviews/personal stories that these low-income individuals and families can use to find financial stability to raise their social economic status.

[What's the Distinction between "Spirituality" and "Religion" in the context of African-American Christianity?](#)

Student Author(s): Marcus Keith, Sophomore (Communication Studies)

Faculty Mentor(s): John Sopper (Grogan Residential College)

In the Afro-American community, one of the most driving forces has been our faith in God and the unity of the Black church. But a lot of contemporary Afro-Americans say "The White Man's religion" when referring to Christianity. Why do so many Afro-American believers leave "the church" today? Why are so many believers not in church? Why is being "religious" looked somewhat down upon in the Afro-American community today? How has it come to this from the unity we once changed the world with? These questions are the focus of my research. To answer them, I first investigate the history of Afro-American religion in North America, focusing on the tension between the formal institutions of a "black church" and the informal expressions of spirituality since slavery. I also examine contemporary discussions among younger Afro-Americans about how they express their spirituality, and about their relationship to the traditional black church.

[Incorporating the Visual & Performing Arts in Education Can Benefit Childhood Brain Development and Student Success in K-5](#)

Student Author(s): Bethany Kessinger, Sophomore (Arts Administration)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College), Rachel Briley (Theater)

Including the visual and performing arts in elementary education aids in the social, emotional, and cognitive development of the young brain, as well as overall student

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achievement. Visual and performing art classes are often the first to be cut or underfunded when schools run into financial struggles to save money and raise test scores in core subjects. I argue that as a future arts administrator, the visual and performing arts are just as important to curriculum especially in elementary schools. Involvement in the arts has been shown to increase proficiency in core subjects and enhance skills such as critical thinking, communication, concentration, creativity, and much more. By using sources such as the book *Coming to Our Senses: The Significance of the Arts for American Education* and an article from the award winning magazine *The School Administrator*, "How the Arts Develop the Young Brain", I will inform readers of the educational value of the visual and performing arts in schools and the positive impact they have on students inside and outside of the classroom. This research will discuss how participation in the visual and performing arts such as storytelling, craft making, and singing wires the brain for a successful learning experience.

Use It or Lose It? Maybe Not: Enhanced excitability and fatigue resistance in breathing muscle after a month-long apnea in frogs

Student Author(s): Sky Kihuwa-Mani, Junior (Biology)

Faculty Mentor(s): Joseph Santin (Biology)

Skeletal muscle requires ongoing activity to maintain healthy physiological properties. This is clear in several clinical scenarios, such as mechanical ventilation, spinal cord injury, and bedrest, whereby muscle structure and function degrades due to muscle disuse. The motor system that produces breathing in American Bullfrogs is unique because breathing muscles are inactive during underwater hibernation. In contrast to other animals, frogs do not experience observable changes to breathing behavior after months of inactivity, which is surprising because highly active skeletal muscles typically atrophy rapidly in most other vertebrate animals. Using *in vitro* muscle force assessments, we tested the hypothesis that skeletal muscle involved in breathing from hibernating frogs resists atrophy. To test this hypothesis, we measured function of a breathing muscle of the lower jaw in control and hibernating frogs to determine the extent of atrophy. Preliminary data suggest that hibernating muscle contracts easier and recovers from fatigue faster than most controls, although force output at physiological length seems to decrease. Preliminary evidence of improved fatigue recovery is remarkable since this muscle has been unused for several weeks. These results suggest a diverse set of physiological and biochemical compensatory mechanisms that ensure breathing resumes appropriately when animals emerge from hibernation. Overall, we aim to uncover the mechanisms that allow this muscle to maintain function despite inactivity, which may uncover new insights for muscle disorders in humans.

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Indigenous Pedagogies of Native American Communities in (What is Currently Known As) North Carolina

Student Author(s): Simone Watkins, Senior (Nutrition), Sky Kihuwa-Mani, Junior (Biology)

Faculty Mentor(s): Laura Pipe (Kinesiology)

Representation is essential in the classroom for student's academic success, increased self esteem, and closing the equity gap. Native students from UNCG worked to educate faculty and staff about Indigenous cultures and pedagogies of the Southeast, focusing on tribal communities local to NC. They did this by speaking with elders and community members, holding conversations with students from diverse backgrounds about traditional knowledge and epistemologies, and through engaging with faculty on rethinking and redesigning course experiences.

In this work, the two Native student investigators found that Indigenous students feel more disconnected from themselves and the learning process when their knowledge systems were undervalued and not represented in the classroom. They also found rich stories and parallels between Indigenous epistemology and pedagogy, and efficacious western models, especially outlining how Indigenous people have, by necessity of developing sustainable lifeways, always engaged in analogous thought to western science.

The two Native students who headed this project and their faculty mentor hosted a Indigenous Pedagogy workshop in the Fall 2020 semester where they presented their findings to faculty. They also presented virtually at the Professionals On Development (POD) conference.

Understanding the Role of the Baculum in a Rapid Evolutionary Radiation of Tree Squirrels

Student Author(s): Charlotte Kohn, Senior (Biology and Communication Studies)

Faculty Mentor(s): Bryan McLean (Biology)

Squirrels are a diverse and charismatic group of mammals found on all continents besides Antarctica. One of the most rapid instances of diversification in this group is in tree squirrels of Central and South America, beginning roughly 6 million years ago. However, many lineages still conform to a conservative, "prototypical" tree squirrel body plan, suggesting that other non-ecological traits could play more prominent roles in the speciation process. We are interested in forging new connections between the highly variable male genital bone (the baculum) and how bacular variation among species and across the landscape relates to evolutionary reproductive isolation, possibly

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via sexual selection. We performed CT scanning of bacula and collected a suite of 12 linear measurements on baculum samples from 136 samples within the genus *Sciurus*, using the MeshLab software. This morphometric data was analyzed using principal components analysis, and the variation was visualized within a phylogenetic context. Future work will focus on further analyzing samples with respect to geographic location and patterns of evolution due to gene flow from one species to another.

Montagnard Refugee Older Adult Experiences with U.S. Health and Social System: An Oral History

Student Author(s): Melina Ksor, Senior (Public Health Education), H'Thu Nie, Senior (Human Development & Family Studies), Princess Ejindu, Junior (Public Health Education)

Faculty Mentor(s): Sharon Morrison (Public Health Education), Sudha Shreeniwas (Human Development & Family Studies)

Montagnard immigration to the United States first occurred during in the 1980s. Since then, ethnic community based non-profit organizations like the Montagnard Dega Association (MDA) were created to partner with government agencies to work with this community. However, this indigenous refugee-origin community remains disproportionately affected by systemic barriers that limit access to and experiences with community health and social services. These have been especially difficult for Montagnard older populations--which we identify as those aged 50 years and older. We used the oral history approach to allow older Montagnards to express their own voices and viewpoints about experiences with these systems, especially concerns related to unmet needs. We also collected testimonials related to immediate needs and experiences associated with the COVID-19 pandemic. Our analyses revealed that Montagnards' cultural values and lived experiences demonstrate a range of perceived and actual needs. Also, despite suffering socio-economic disadvantages in the U.S., i.e. having limited formal education, food insecurity, and lack of access to language, health and social resources, oral histories reveal that older Montagnard adults are likely to express being more content with their current situation in the United States when they compare and reflect on difficult lived experiences within political, health and social systems in Vietnam and life before immigration.

Informing young adults about benefits of self regulation so they understand alternative mental health interventions(meditation)

Student Author(s): Alayia Kubuanu, Sophomore (Social Work)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Meditation is a technique used to help improve your awareness. Meditation has been said to ease the mind and help you relax. In my own experience I felt very calm after. Meditation has a positive effect on self regulation and overall health in general. The goal in every session is to clear your mind and relax. By using sources such as the peer review journal article "Self-compassion, meaning in life, and experiential avoidance explain the

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relationship between meditation and positive mental health outcomes” and the selected chapters from “In Focus Meditation Your Personal Guide”, I will conclude that meditation is beneficial mental health alternative for self regulation. I’m interested in learning more about meditation as an alternative intervention for mental health because I want to find out more information for myself and my peers. Mental health is not a topic talked about in my community. I want the conversation about mental health to be normalized.

Constitutive expressing of *Picrophilus torridus* Superoxide Dismutase (PtSOD) in tobacco

Student Author(s): Peyton LaBonte, Senior (Biology)

Faculty Mentor(s): Ayalew Oseno (Biology)

As the climate is changing, it is essential that crops are equipped with protection mechanisms. The gene *PtSOD* which is isolated from the organism *Picrophilus Torridus*, found in harsh environments of both extreme heat and acidity, has the potential to allow crops to survive in conditions of high abiotic stress. This gene codes for a superoxide dismutase enzyme which eliminates reactive oxygen species that can be dangerous to the cell. In this study, we hypothesized that expression of *PtSOD* in plants will protect plant cells from oxidative stress. Expression cassette of *PtSOD* was generated in pSAT modular vector pSAT1. Then the cassette was inserted into the binary vector pPZP for plant transformation. The pPZP vector containing the gene of interest was then transformed into *E. coli*. Successful insertion of the *PtSOD* cassette into pPZP was confirmed by colony PCR and restriction enzymes. Once the binary vector was characterized, the vector was introduced into *Agrobacterium* LBA4404 for transformation into tobacco (*Nicotiana benthamiana*). Transgenic lines have been generated and are being characterized by PCR using genomic DNA as a template. Successful insertion of *PtSOD* into tobacco has been confirmed in a few transgenic lines, and more lines are being screened. The next steps will be advancing the T0 line to T1 progeny and subjecting the plants to heat treatment. We expect to identify heat tolerant transgenic lines.

Alcohol Consumption and the COVID-19 Pandemic

Student Author(s): Collin LaButte, Sophomore (Economics)

Faculty Mentor(s): Jeremy Bray (Economics)

The COVID-19 pandemic that began in early March of 2020 has had a major impact on the health-related quality of life (HRQoL) of the worldwide population, and research has shown that alcohol consumption in the United States has risen substantially during the pandemic. This research explores three aspects of the relationship between alcohol consumption, HRQoL, and the pandemic. First, it estimates the health-related quality of life (HRQoL) for the population of the United States during the pandemic. Second, it estimates the relationship between alcohol consumption and health-related quality of life (HRQoL) during the pandemic and compares that to pre-pandemic estimates. Third,

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it explores self-reported changes in alcohol consumption from before the pandemic and their relationship to HRQoL during the pandemic while controlling for six other pandemic-related impacts related to school closure, job loss, social distancing, income loss, respondents' health, families' and friends' health. Data for our analysis will be obtained through three rounds of survey data collection on alcohol consumption, COVID-19 related factors, and HRQoL. Regression analysis will be performed on alcohol consumption and HRQoL while controlling for COVID-19 related factors.

Understanding these relationships is important because it explores how alcohol consumption, stress, and HRQoL are related and how the COVID-19 pandemic is affecting those factors.

Blackfishing: The Modern Day Blackface and its Impact

Student Author(s): Mikaela Lewis, Sophomore (Sociology)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Thanks to the recent popularity of the Black Lives Matter Movement, discourse on the treatment of Black people in America has been at an all time high. While there are forms of racism that are easily recognizable and condemned such as slurs or disproportional rates of police brutality, acts like cultural appropriation are still being debated. This project specifically focuses on blackfishing in the social media modeling/influencing space and its negative impact on black women. Blackfishing, a term popularized by Paper Magazine's Wanna Thompson is described as non-black women purposely using features to look black, mixed or racially ambiguous.

I believe my research will find that women who participate in blackfishing will receive a mixed reaction- criticism from a small portion of people that condemn their actions and praise and attention from those who don't understand the harm of blackfishing. There are also going to be people that don't realize that they are being "blackfished". Because opportunities are mostly awarded to social media influencers according to their looks, blackfishing takes opportunities away from Black people and rewards people posing as black. While it is already harder to gain attention and jobs as a Black influencer, white women garner positive attention using features that are thought of as undesirable in Black women. These features include hairstyles like box braids or afros, darker tans and the use of African American Vernacular English.

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What is Womanism and why it is important for women of color, vs Feminism?

Student Author(s): Camillia Ligon, Sophomore (Womens & Gender Studies, African and African American Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

When thinking about fighting for women's rights, Feminism is normally what comes to mind. However, Feminism has not fought for equality of all women and other genders/sexes. Womanism was first defined in Alice Walker's In Search of Our Mothers' Gardens: Womanist Prose. She described the idea of Womanism by saying, "womanism is to feminism as purple is to lavender". Womanism was created to focus on the perspicuous struggles of women of color, specifically of African descent with intersectionality serving as principle practices of the ideology but has also expanded to include the queer agenda, etc. I am interested in this topic because it is important for women of color to know who has our best interest, especially in today's society. I am arguing that Feminism was not designed to give women of color equal opportunities. It was created by white women for white women. Using sources like Zoe Kaplan's blog "Womanism Is On The Rise - Here's How It Differs From Feminism." I allow my readers to acknowledge how Womanism and Feminism compare and contrast within race, principals, and its practices. This research will discuss the significance of what is Womanism and how it compares to 3rd wave Feminism.

How do aspects of modern American schooling, such as school resource officers, zero-tolerance policies, and inadequate resources set students of color up for prison?

Student Author(s): Alexandria Little, Sophomore (English)

Faculty Mentor(s): John Sopper (Grogan Residential College)

When one thinks of education, one expects an environment that nurtures and fosters students' growth. However, modern American schooling is utilizing a structure that does anything but: the school-to-prison pipeline, a system that specifically victimizes students of color. This gives rise to the question of how these institutionalized structures target students of color. Drawing from current peer-reviewed sources, I investigate the impact on students of color of specific policies in American schools, such as school resource officers, zero-tolerance policies, and inadequate school resources in order to find connections between these approaches and the school-to-prison pipeline. I also examine the history surrounding the school-to-prison pipeline and its implementation in schools today. Furthermore, I investigate alternative solutions based on the suggestions of experts in the field and I review legislation surrounding the training of school resources officers. I expect to find that the current training of resource officers, lack of resources in schools, overcrowding, and overworked teachers lead to students being more vulnerable to the pipeline, as they are more likely to "fall through the cracks."

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[Fasting Enhances Dopamine Release and Restores the Rate of Dopamine Uptake, Slowed by a High Fat Diet](#)

Student Author(s): Madison Loudermilt, Senior (Nutrition), Connor Wallace, Post-Bac (Nutrition)

Faculty Mentor(s): Steve Fordahl (Nutrition)

Diets high in saturated fat promote obesity and dampen dopamine neurotransmission in the nucleus accumbens (NAc), a brain region that integrates food reward and helps communicate satiety to the hypothalamus. Our study explored whether fasting changed dopamine neurotransmission in male and female mice fed high fat. Six-week-old male and female mice were given diets with high or low saturated fat for six weeks. We then used fast scan cyclic voltammetry to measure dopamine neurotransmission in the NAc. In non-fasted mice, the high-fat diet significantly reduced the dopamine uptake rate in male, but not female mice. Reduced uptake rate is thought to interfere with satiety signaling from the NAc to the hypothalamus, causing overeating in high-fat fed mice. Conversely, a 12-hour fast enhanced dopamine release and uptake rate in high-fat fed males and females, but only low-fat males had elevated dopamine release and low-fat females had elevated dopamine uptake. Overall, our data shows that fasting enhanced dopamine neurotransmission in the NAc, which may promote food seeking when mice are hungry. Our data support the hypothesis that a diet high in saturated fat disrupts dopamine in a way that impairs satiety signals when fed, but does not impact food seeking when fasted.

[Why are divorce rates within African American/Black families increasing?](#)

Student Author(s): Salah Lucas, Sophomore (Communication Studies)

Faculty Mentor(s): John Sopper (Grogan Residential College)

Statistics show that the divorce rates of African Americans/Black couples are really high and continue to rise every day. In my research, I investigate why this is happening. Why are divorce rates within African American/Black families increasing? Drawing from current research studies, peer-reviewed articles, and government agency data bases, I investigate the different trends in the divorce rate among heterosexual African Americans, and I consider the factors that contribute to divorce among these families. My findings show that finances and environment play a huge role in the divorce rates. I also found that the surrounding environment can cause strain on the relationship as well. Instead of focusing on the health of the relationship, individuals focus on the environment that they live in and how to leave said environment. My findings make it clear that if these factors aren't improved then the high divorce rates won't improve either. This is a huge problem, and as a black women in today's society, I will make sure that this issue gets addressed. The happiness of the African American/Black community matters and we deserve long lasting marriages.

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[Overexpression of Arabidopsis thaliana PSY gene in cassava for enhanced carotenoid biosynthesis](#)

Student Author(s): Jade Lyons, Senior (Biology), Kaleigh Roe, Post-Baccalaureate (Biochemistry)

Faculty Mentor(s): Ayalew Ligaba-Osena (Biology)

Cassava is an important staple crop in tropical countries where it is mainly cultivated for its starchy tuberous roots. However, it is poor in vitamins, proteins, and minerals content. In this study, we are proposing to improve the nutritional quality of cassava by increasing the β -carotene content through overexpression of Arabidopsis phytoene synthase (AtPSY) and ORANGE (AtOR) genes. PSY is an enzyme that catalyzes the first step in plant carotenoid biosynthesis, and its expression has been shown to be regulated by OR, a protein that enhances carotenoid biosynthesis. Expression cassettes of the genes were generated in modular vectors pSAT1 under the control of root-specific promoters. The cassettes were then assembled in binary pPZP-NPTII vectors. Single construct of the AtPSY has been introduced into cassava Friable Embryogenic Calli via *Agrobacterium-mediated* transformation. Transgenic lines will be characterized using molecular and biochemical techniques. We expect to see an increase in carotenoid biosynthesis in transgenic tubers. Vitamin A enriched bioengineered cassava has great potential to address global issues related to malnutrition, health, and food security.

Novel Computational Methods for Jet Detection in Heavy Ion Collisions

Student Author(s): Aidan Lytle, Senior (Mathematics & Statistics)

Faculty Mentor(s): Ron Belmont (Physics & Astronomy)

In Heavy Ion Collisions, a droplet of matter that is roughly congruous to the first moments of the universe is formed. This object of study (the Quark-Gluon Plasma, or QGP) is composed of flow and non-flow states. Flow is a collective behavior described by a complex fourier series, and to study this state, we must separate the non-flow. One salient feature of non-flow in the QGP is the suite of phenomena called jets, which must be subtracted in order to determine the flow coefficients. In this work, we propose novel computational methods for subtraction of jets from the QGP.

[Comparing the biographical framework of various works from Gregory of Tours and Vita Patrum Jurensium.](#)

Student Author(s): Savanna Maddox, Senior (History)

Faculty Mentor(s): Robyn LeBlanc (Classical Studies)

This presentation investigates similarities in the biographies of the 5th c. AD leaders Agrippinus and Childeric I, as recounted by two 6th century writers. The first is an unknown author of Vita Patrum Jurensium, a collection of saints' lives. The second is Gregory of Tours, a bishop considered by scholars as an important source for the transition between late antiquity to the early medieval period, who wrote Historia Francorum and Vitae Patrum. Agrippinus was one of the last magister militum per

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Gallias in the Western Empire, and Childeric I was the father of Merovingian king Clovis. The similarities between these men are oddly peculiar, particularly concerning the accounts of their time spent in exile, which included their redemptions through the intervention of an elite married woman, their return signaled through a coin, and the role of Aegidius as a successor of both men's domains. This presentation will compare these similarities as told in works by Gregory of Tours and the unknown author of *Vita Patrum Jurensium*, which are accounts written decades apart. It also considers several possibilities for these similarities, including confusion and overlap between the two leaders in the source material, Tours' own biases, and the possibility of reusing a biographical framework.

She's Not My Boss Unless She's a Mother: The Potential Benefits of Being Both Agentic and Communal in Roles Traditionally Held by Men

Student Author(s): Caraline Malloy, Senior (Psychology)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

In traditionally male job positions, hiring decisions are greatly dependent on one's perceived competence, capability, and assertiveness. Such traits are usually only associated with masculinity. Thus, women are told to embody masculine traits to be considered hireable. However, this has often led to discrimination against women for lacking feminine traits. I argue women's behavior in the workplace must convey both traditionally masculine and feminine attributes to buffer negative evaluations and to garner success. Using academic sources such as, "Why Are Women Penalized for Success at Male Tasks?: The Implied Community Deficit" and "The Trials of Women Leaders in the Workforce: How a Need for Cognitive Closure can Influence Acceptance of Harmful Gender Stereotypes," I inform readers on the "backlash" effect women face for being "too" agentic in the workplace. I also share how the display of communality can act as a buffer against such evaluations. Ultimately, this research will provide readers with recommendations for agentic women on how to avoid discrimination in the workplace.

Defining and Measuring Diversity, Equity, and Inclusion in Advanced Technological Education (ATE) Contexts

Student Author(s): Caraline Malloy, Senior (Psychology), Aundrea Smith, Junior (Psychology)

Faculty Mentor(s): Ayesha Boyce (Educational Research Methodology), Aileen Reid (Educational Research Methodology)

The Advanced Technological Education (ATE) program encourages principal investigators (PIs) of ATE projects at two-year colleges to "strive for equity, diversity, and inclusion of STEM students and instructors by providing equitable opportunities for access and success." (National Academy of Sciences, 2018, p.2). This study researches how these actions can improve the assessment of diversity, equity, and inclusion (DEI). PIs' and evaluators' survey data in response to: "*how are ATE external evaluators and*

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principal investigators defining and measuring DEI in their projects and evaluation practices?,” was analyzed using descriptive statistics. Qualitative responses were coded and analyzed for alignment with the NAS definitions of DEI. Evaluators’ responses to diversity questions were more well-aligned to the NAS definition than equity and inclusion. PIs’ diversity and equity responses were more aligned with NAS definitions than inclusion. Diversity was more often measured than inclusion and equity. Suggestively, equity and inclusion should be emphasized and measured just as diversity.

The Ritual Use of Animals in the Wari Empire

Student Author(s): Joshua Malloy, Senior (Anthropology, Religious Studies)

Faculty Mentor(s): Donna Nash (Anthropology), Charles Egeland (Anthropology)

An elite strategy for keeping social inequality in many archaic complex societies was using animals either as culinary delicacies or ritual offerings. The Wari Empire’s occupation of southern Peru’s Moquegua Valley during the Middle Horizon (600-1000 CE) provides an example of this phenomenon. The Wari Empire extended 800 miles across modern Peru. In this valley lies Cerro Baúl, a provincial or high-level administrative center. The elites who lived here had access to diverse and expensive cuts of meat. The Wari expanded their control and subjugated local groups that practiced their own traditions. There is evidence at Baúl and elsewhere for the symbolic consumption and ritual sacrifice of animals such as llamas. Some ritual sites took the form of pit offerings. At least 137 animals from 25 taxa were found within the Baúl offering sites. This project’s data shows that there were calorically and symbolically valuable animal portions consumed and deposited in pits, affirming the theory that Wari elites used conspicuous consumption to assert authority over the people they were ruling.

Comparing arthropod diversity differences in two arthropod sampling methods

Student Author(s): William Mann, Senior (Biology)

Faculty Mentor(s): Sally Koerner (Biology)

All organisms within an ecosystem play a part in keeping the community alive and thriving, even some of the smallest organisms like arthropods. Arthropods consume large amounts of plant matter, and contribute in this way to keep the community healthy. To understand how arthropods will affect an ecosystem, it is important to take accurate samples of the arthropod community. When sampling you must understand what type of arthropod you are selecting for. There are two common arthropod sampling methods that likely select for different species. Determining what sampling method to use is key to generating accurate and reliable data within that sample. Sweep net sampling is more likely to produce flying arthropods, while the modified leaf blower method is likely to collect ground-dwelling arthropods. However, this hypothesis needs to be tested to allow for greater accuracy in the future when selecting for specific genera.

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In this project, I identified and weighed all arthropods within mixed-grass prairie samples collected using both collection methods. I then analyzed and determined the differences in the sampling methods to discover what types of arthropods may be collected using each sampling method, and found any notable difference in expected data.

[My Brother's Keeper](#)

Student Author(s): Abigail Marshall, Sophomore (Dance)

Faculty Mentor(s): Clarice Young (Dance)

“My Brother’s Keeper” is a choreographic work that is an examination of Christianity and the Christian culture that has been created specifically in the U.S. My primary sources of inspiration are my own experiences with the church and those of my peers, both negative and positive and also the memory of a prayer my dad used to say over my siblings and me before bed. That prayer was originally the sole focus of the piece since I had forgotten much of it and wanted to examine the implications of such a formative memory being forgotten. As I began working and creating movement based on what I remembered of the prayer, more and more of it came back to me and the original purpose of the piece became less relevant. What I now intend to get across with the piece is the complex duality of the wonderful blessing my faith is to me, and the devastating impact much of Christian culture has had and continues to have on many of the communities it impacts, as well as what my role and responsibilities are to help repair my community.

[Mitigation of Glyphosate-Induced Developmental Defects in Medaka Fish](#)

Student Author(s): Arianna Mathewson, Senior (Biology), Drake Weidman, Senior (Biology)

Faculty Mentor(s): Ramji Bhandari (Biology)

Glyphosate-based herbicides are the most universally used herbicides worldwide. Glyphosate, an active ingredient in RoundUp®, has been known to induce oxidative stress in animal cells, including fish. Antioxidants, such as ascorbic acid (vitamin C) can reduce oxidative stress by donating an electron to stabilize the reactive oxygen species. Our previous studies have demonstrated that environmentally relevant concentrations of glyphosate can affect developing medaka fish embryos, but less is known about potential methods to reduce the negative effects of glyphosate exposure on embryo development. In this study, medaka fish, *Oryzias latipes*, embryos were exposed to 15 mg/L glyphosate, 10 mg/L ascorbic acid (vitamin C, vit-C), and a combination of 15 mg/L glyphosate and 10 mg/L vit-C for 15 days and their development was monitored under a microscope. Each treatment was run in triplicate to validate the collected empirical data and observed results. Embryos were examined 6-8 days post-fertilization (dpf) stages, as well as at 15-dpf stage to determine if their development was affected by exposure. During the two weeks of monitoring, mortality rate and phenotypic changes, mainly hatching rate, spinal curvature, enlarged yolk sac, uninflated swim bladder, and greying of yolk sac were recorded and analyzed. Hatching success rate was reduced by

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glyphosate exposure and vit-C co-treatment mitigated these defects. Similarly, a higher mortality rate was found in the glyphosate group, which was mitigated by vit-C co-treatment. Similarly, vit-C co-treatment tended to decrease yolk sac graying and spinal curvature defects in embryos ($p < 0.06$ to < 0.09). The study demonstrates that vitamin C, an antioxidant, can have an ameliorative effect on developing fish embryos exposed to glyphosate.

Visualizing the Wari Palace at Cerro Baúl, Peru

Student Author(s): Jay Mayfield-Loomis, Senior (Archaeology)

Faculty Mentor(s): Donna Nash (Archaeology), Stephen Skorski (Interior Architecture)

In Peru, before the Inca Empire came into existence, another empire spread across the Andes mountain range. This empire is now known as the Wari, and they lasted about 500 years, from 600 CE to 1100 CE. This Andean culture spread from their capital, Huari, from which it gets its name, to the very south of Peru, where Cerro Baúl lies. When studying the structures past cultures have left us, it can be difficult to imagine how they may have once stood, especially after walls have crumbled and only ruins remain. For this project, we are interested in gathering data to solve this issue, and visualize a fallen palace. Information gleaned from maps and pictures of the archaeological site, as well as colored plaster remains collected from excavations are applied to the program SketchUp to create a visual representation of what the palace at the Wari site of Cerro Baúl may have looked like. Heights from the walls at other Wari sites are being collected and averaged to estimate how tall the walls of the palace may have been, as the walls during excavation stood a meter or less. Many of the rooms in the palace held debris from fallen roofs. Ceramic models of Wari buildings are considered as examples to create a 3-D rendering of the excavated spaces. Using this data, we may be able to create a visual interpretation of what the structure may have looked like. This type of project is valuable in visualizing the past, and studying cultural structures to create a better understanding of people's lives in the past.

Assessing the Calcium and Chloride Requirements of Photosystem II during Photosynthetic Oxygen Production

Student Author(s): Monica McDaniel, Junior (Chemistry)

Faculty Mentor(s): Alice Haddy (Chemistry and Biochemistry)

Photosystem II (PSII) is the light-absorbing protein complex of plants and cyanobacteria that produces essentially all the oxygen in the atmosphere. In this study, the calcium and chloride requirements of PSII were studied by measuring the effects of NaCl, CaCl₂, and NaF on oxygen evolution rates and the Tyrosine Z (Tyr Z) radical. Tyr Z, which transfers electrons in PSII, shows an increase in its radical form after illumination when electron transfer is inhibited. Using electron paramagnetic resonance (EPR) spectroscopy, it was found that the Tyr Z radical signal at 77 K (temperature of liquid nitrogen) increased in the absence of calcium which shows that electron transfer was inhibited. In the presence of fluoride, an inhibitor of oxygen evolution, the signal

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also increased. In the presence of CaCl_2 , the Tyr Z radical signal did not increase, as expected for active PSII. Measurement at 77 K is a useful and relatively easy way to capture the Tyr Z radical signal. In conclusion, this method shows that calcium (Ca^{2+}) is required for electron transfer as well as oxygen evolution.

Empirical Study of Simplex Algorithm using Classic Pivot Rules

Student Author(s): Matthew McGilvary, Junior (Mathematics & Statistics), Juan Quiroa, Senior (Mathematics & Statistics)

Faculty Mentor(s): Clifford Smyth (Mathematics & Statistics)

The Simplex Algorithm is regarded as one of the most important algorithms ever developed. It has found numerous applications in business, transportation, and research. In implementations of the simplex algorithm, different pivot rules are used to determine the output for the next iteration of the algorithm. There is no one pivot rule that will outperform all other pivot rules in performance for all examples. Even after being known for over seventy years, theoretical studies have yet to determine which pivot rules are optimal for particular problems. This empirical study looks at performance of three classic pivot rule's: Dantzig's Rule, The Greatest Increase Rule, and Bland's Rule on polytopes with the unit sphere tangent to all facets and polytopes with a deformed unit sphere tangent to all facets in 3-dimensions and higher dimensions.

How do you find your center in life?

Student Author(s): Parker Melson, Sophomore (Management)

Faculty Mentor(s): John Sopper (Grogan Residential College)

My project is about how to find people's center in life. Some people go through life with hardships and do not know how to deal with those problems which makes them unbalanced in life. They struggle to “find their center” and achieve “happiness”. In my research, I investigate what do “center” and “happiness” mean. I also investigate if happiness can be affected through therapy and psychological studies. I look at scholarly sources based on psychology to determine how these psychological methods define “happiness” and attempt to support individual’s efforts to find their center and maintain happiness in their lives.

Sound Documentation

Student Author(s): Fabiola Minerali, Senior (Interior Architecture)

Faculty Mentor(s): Stephen Skorski (Interior Architecture)

Physical and acoustic characteristics of both the natural and man-made environments are in a constant state of transformation. These changes are an important aspect of our history and understanding them is critical to the planning of our future. Records of the physical changes are often documented by means of photographs, videos, and 3D models. In contrast, acoustic characteristics are rarely recorded. When sound

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documentation does take place, it is typically a byproduct of a video and no detailed sound information is captured. The goal of this project is to develop a holistic method for documenting and archiving environmental acoustic characteristics. The UNCG campus will serve as a test location for the proposed methodology.

For this pilot study, sound data is collected and archived using high-definition recording and measurement equipment along soundwalk paths. Continuous recordings are gathered through in-ear microphones connected to a digital sound recorder.

Additionally, individual sounds of significance are measured with a sound level meter.

Lastly, physical site data is collected using maps, photographs, and video. Collected data will be presented in a variety of formats including sound recordings, 2D imagery and graphs showing acoustic frequency data over time.

A Brewery Design Restoration in a Former Tobacco Warehouse

Student Author(s): Fabiola Minerali, Senior (Interior Architecture)

Faculty Mentor(s): Asha Kutty (Interior Architecture)

This design project consists of restoring and repurposing an old tobacco warehouse into a brewery and taproom. The site is Industry Hill, Winston Salem, a gentrifying neighborhood which once had deep roots in the tobacco industry and its largely African American workers. The project involves two stages: the research and the design.

Research will explore the history of Industry Hill, specifically the demographic and economic transformations. The time focus will be the tobacco boom in North Carolina which led to a series of events that shaped the demographics, economy, industry, and infrastructure of the state from 1800s until the present.

The next step will be the integration of the research into the brewery design. Inspiration will be drawn from the curing process in the tobacco barns, where the major characteristics will be analyzed and translated spatially. The design will be integrated with a specific program that draws from Southern African American culture of dancing and drinking in juke joints.

The goal is to restore the warehouse into a brewery that pays homage to the historic past and enriches the experiences of the community through beer and dance. This project attempts to curb some of the forces of gentrification by appealing to an inclusive demographic patronage.

A Historical Examination of the Extent to which Aethelflaed is Accurately Portrayed in The Last Kingdom

Student Author(s): Chloe Mitchell, Junior (Elementary Education, Special Education Services)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College), Jennifer Whitaker (English)

As society's fascination with medievalism grows, period dramas such as *Vikings* are released. Because series have dramatized historical events to engage the audience, historians worry that the line between fact and fiction is blurring (Jones et al.). An

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analysis of the impact made by production on a series' plot and the audience's ensuing understanding is, therefore, justified. The portrayal of Aethelflaed in *The Last Kingdom* will be evaluated for its accuracy and its effect on character development and plot progression using content analysis. Despite anticipated historical inaccuracies, *The Last Kingdom* is expected to sufficiently portray Aethelflaed and the happenings in her life. Details from the show will be compared with historical information from sources such as *Founder, Fighter, Saxon Queen: Aethelflaed, Lady of the Mercians* by Margaret Jones. This comparison will not only emphasize how including fictional details affects a show, but also the benefits of conducting independent research to unearth what is founded on historical fact.

A Moment in Time: A Collection of Poetry

Student Author(s): Rawan Mohamed, Sophomore (Psychology)

Faculty Mentor(s): Jennifer Whitaker (English)

This project is a collection of poetry that I have been working on since high school. I have expanded and refined over the past few months. This project is important to me because it's the first step towards my lifelong goal of publishing a book of poetry. It is something that I've wanted since middle school; I am determined to make this goal come to fruition. I hope that people will read or listen to my work and be affected by it in the same way that the beautifully written musings of other, more talented writers have touched me. I love hearing poetry as a writer intended and want to share that experience with my peers. Art, and for me, writing and drawing specifically, are critical parts of expression; the feelings I have now and have had in the past are something that I wish to share because the bond that people have over emotions is unbreakable and should always be cherished. With this project, I seek to share my journey through writing, rewriting, and rewriting once more.

Mythology vs. the Mainstream: The Curious Case of Japanese Mythology

Student Author(s): Carvis Moncrief, Sophomore (Media Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

This is a research exploring Japanese mythology in media. As many different media companies branch out from their region of origin to international audiences, a piece of their culture follows them on the occasion. An easier example of this is seen with the film *The Book of Life* which takes inspiration from Mexican culture especially Día de los Muertos (Day of the Dead). However, did you know that some Pokémon are based on creatures in Japanese Mythology? In the game *Pokémon Red and Blue*, the Pokémon Vulpix is based on the Kitsune (Nine-Tailed Fox)? Japanese Mythology is fascinating and yet, not enough people go out of their way to learn more. It's a shame as I find Japanese Mythology more interesting compared to other mythologies like Greek Mythology. I see Mythology as a gateway to interesting worlds ripe with ideas that are asking for unique interpretations. Using sources like *Yokai: Visualizing the Supernatural* to explore some aspects of Japanese Mythology I

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will use them to cover the purpose of my assignment. That purpose is to dive into media influenced by Japanese Mythology while giving people a chance to look at pieces of media through a different lens.

[Is There Such a Thing as a Black ‘Model Minority’?](#)

Student Author(s): Korrey Monroe, Junior (Public Health Education)

Faculty Mentor(s): Hewan Girma (African American Studies)

In this paper, we use the divisive concept of ‘model minority’ to investigate the similarities and differences between Black ethnic groups in the US, namely African Americans, Afro-Carribeans, and Continental Africans. A model minority, a concept generally applied to Asian Americans, is a supposed demographic group whose members are perceived to have achieved a higher level of success based on criteria such as education, income, family stability and low criminality. Based on twenty seven in-depth interviews with young Black folks who identify as part of the three main Black ethnic groups in the US (African Americans, Afro-Carribeans, and Continental Africans), we discuss the moral dilemma and ambivalence around the concept of a Black Model Minority. While some respondents perceived Caribbean and/or African immigrants as the Black Model Minority, most rejected the concept as a divisive dichotomy, racial wedge or more specifically as anti-African American racism. Rather, they advocated for the importance of Black unity and personal achievement, especially in an era of Black Lives Matter.

[Early Analgesics in Antikamnia and Bromo-Seltzer: The Chemical Compositions of Two Proprietary Headache Remedies](#)

Student Author(s): Dylan Morris, Senior (Biochemistry)

Faculty Mentor(s): Alice Haddy (Chemistry & Biochemistry)

This research project is a study of pharmaceutical history about the early over-the-counter analgesics that were widely available during the late nineteenth century and early to mid-twentieth century. During this time, proprietary headache remedies were becoming increasingly available on the market and were composed primarily of two analgesics. Prior to the advent of acetaminophen (Tylenol) and acetylsalicylic acid (Aspirin), two major drugs known as acetanilide (Antifebrin) and acetphenetidin (Phenacetin) were widely prescribed by physicians and taken by the general public. This research provides a case study of how these early analgesics were used in two of the leading proprietary headache remedies at the time: Antikamnia and Bromo-Seltzer. Chemical analyses found in the historical literature and information on product labels were utilized to track the chemical compositions of these remedies from the late 1800s through the early 1930s. It was found that acetanilide and acetphenetidin were used in both remedies, and that their chemical compositions changed over time with the influence of major historical events, such as the Pure Food and Drug Act and World War

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I. Both remedies initially used acetanilide, but Antikamnia eventually substituted this analgesic for acetphenetidin, while Bromo-Seltzer continued to contain acetanilide well into the twentieth century.

[An Enduring Image of the Pythia: Embedded in Art History](#)

Student Author(s): Emily Moser, Senior (Classical Studies, Art History, Painting)

Faculty Mentor(s): Michiel Van Veldhuizen (Classical Studies)

The oracle of Apollo at Delphi, the Pythia, has a historic reputation as a raving, manic woman rattling off deceptive riddles. The source of her manic state today has commonly been accepted to be fumes of the earth, rising up from a chasm in the earth below. Despite a lack of evidence, however, this summation of the Pythia's image has been romanticized and dramatized throughout its history. In turn, her image- notorious for its mystery and lore- has been crafted by a number of interpretations. In this paper, I outline the Pythia's literary and artistic origins and highlight two 19th-century artworks which contribute to her persistent image. I show how the Pythia's image of being high on fumes from the Earth *and* in a raving and possessed state has been perpetuated by John Maler Collier's *Priestess at Delphi* (1891) and Adèle d'Affry's *Pythian Sibyl* (1869-70). I not only compare these artworks to ancient accounts of the Pythia but also demonstrate how the works are symptomatic of the artist's contemporary moment and setting. I conclude by explaining how these artworks construct an enduring, complicated portrait of the Pythia to our contemporary audience today.

[Understanding the Beneficial Effects of the Flavonoid Naringenin in the Treatment of Breast Cancer](#)

Student Author(s): Caroline Nelson, Junior (Biology)

Faculty Mentor(s): Yashomati Patel (Biology)

Breast cancer impacts one in every eight women. Central to tumor malignancy is the Warburg effect, which is characterized by an increase in glucose metabolism, and the production of lactate in the presence of sufficient oxygen to perform aerobic respiration. The majority of breast cancers are estrogen receptor positive (ER+), and are dependent on the hormone, estrogen for proliferation. Tamoxifen, a popular drug used to treat breast cancer is a selective estrogen receptor modulator and has been an effective treatment for patients that have ER+ breast cancer. However, many patients develop a resistance to the treatment. The flavanone naringenin has been found to alter cellular metabolism in a way that is beneficial for normal cells, but harmful for tamoxifen resistant breast cancer cells. The elucidation of the mechanisms through which naringenin produces its effects are a preliminary step to finding a therapeutic use for the compound in the treatment of breast cancer. Though the mechanism through which naringenin produces its effects are not yet fully understood, we hypothesize that the flavanone produces its effects through further inducing lactate production thereby

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diverting needed resources away from cellular proliferation and survival. Our studies aim to analyze the expression of estrogen receptors and other key proteins that are critical to the metabolic processes of cancer cells. Our experiments thus far have found that naringenin modulates the relative concentration of many metabolic proteins. This could be an indication of an over-stimulated Warburg effect, and supports the potential use of naringenin as a therapeutic agent.

Investigating Beliefs About Learning Styles

Student Author(s): Owen Norton, Junior (Psychology)

Faculty Mentor(s): Shaylene Nancekivell (Psychology)

The learning style myth, endorsed by a considerable amount of students and educators, is the unsubstantiated theory that individuals learn best through a certain modality, often related to a bodily sense. We investigated how learning style information influences adults' and children's attributions of intelligence and athleticism. Attributions were measured using scales ranging from not very smart/sporty (0) to really smart/sporty (3). Learning style information affected children's and adults' judgments of smartness more than sportiness. Namely, adults and children judged hands-on-learners to be less smart than visual-learners. There was no significant difference among children's sportiness judgments, but there was a difference among adults' (hands>visual). These findings demonstrate that, by at least 6 years old, many people view those described as hands-on-learners as less intelligent than those described as visual-learners. This suggests learning style information included in descriptions of students' learning may be sending unintended messages to some parents and children.

Media and Strain Study for Enhanced Production of Cis-enone Resorcylic Acid Lactone

Student Author(s): Jennifer Obike, Junior (Biochemistry)

Faculty Mentor(s): Nicholas Oberlies (Chemistry & Biochemistry)

Resorcylic acid lactones (RALs) are a class of fungal secondary metabolites that exhibit a wide range of biological and pharmacological properties. RALs have gained a growing interest for their inhibitory effect of various protein kinases, which play a vital role in cell division, aging, apoptosis, and survival. Hypothemycin and 5Z-7-oxozeaenol, in particular, showed a potent inhibitory effect against TAK1 enzyme. However, a large and continuous supply of these two compounds is needed to further investigate their structure-activity relationship. Herein, we identified three fungal species (i.e. MSX78495, MSX63935, and MSX45109) as the main producers of hypothemycin and/or oxozeaenol. Then, we investigated the effect of different media (i.e. rice, oatmeal, and cheerios) on the biosynthesis of these compounds. The fungal cultures were allowed

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to grow for two weeks before extraction. The relative abundance of these compounds among the obtained extracts was measured using the UPLC-HRESIMS technique and showed enhanced production of hypothemycin by the fungal strain MSX78495 grown on an oatmeal medium, while oxozeaenol was produced by the fungal strain MSX63935 grown on rice medium. Further fractionation and purification techniques, such as flash chromatography and HPLC, will be used to obtain pure hypothemycin and oxozeaenol from the extracts that showed the highest abundance. The use of resuspension and centrifugation to purify both hypothemycin and oxozeaenol yielded more than 94% purity. This was time-efficient and required less solvents when compared to other purification techniques, HPLC.

Why is there a lack of comprehensive and accurate Native American history courses in the United States' education system?

Student Author(s): Ray Omabu Okafor, Sophomore (Media Studies)

Faculty Mentor(s): John Sopper (Grogan Residential College)

In the current U.S. education system, students are offered the barest minimum when learning about Native American History. Recent studies by researchers at Pennsylvania State University show that 87- percent of content being taught about Native Americans includes only a pre-1900 context and does not address contemporary Native American issues and culture. Additionally, 27 states currently do not have individual Native Americans identified by name in their history standards. These findings beg the question, why is there a lack of comprehensive and accurate Native American history courses in the United States' education system? In order to answer this question, I examine scholarly articles that delve into the obstacles that contribute to the lack of creation of a rigorous Native American curriculum. I examine other articles that expound on the narrative of American history being one sided regarding the experiences of the indigenous peoples and the absence of the contributions of Native Americans. Finally, in my research, I look for ways to introduce a very informative Native American curriculum to the United States education system.

Analysis of Gravitropism in Natural Populations of the Plant *Arabidopsis thaliana*

Presenting Author(s): Melika Osareh, Junior (Biology), Alexandra Settle, Senior (Biology)

Faculty Mentor(s): John Kiss (Biology)

Growing plants in space, on the Moon, or Mars, could allow for prolonged space missions by providing astronauts with fresh food, oxygen, and psychological benefits. However, plants grown in altered gravity conditions may suffer from reduced growth due to gravitational stress. Our project aimed to find genotypes of *Arabidopsis thaliana* plants resistant to this stressor. To simulate gravitational stress, we used a clinostat, a device that randomizes the gravity vector. To test 133 natural genotypes, seedlings were

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rotated on a 2D-clinostat or grown vertically, as a control, for seven days. For each genotype, several parameters were compared among the two treatment groups including shoot length, main root length, and number of root hairs.

Most of the 53 analyzed genotypes showed reduced shoot and root growth under clinorotation. However, genotypes Col-0 and CIBC-5 showed no difference or increased growth across all parameters and thus may adapt better for growth in microgravity. Five genotypes showed an increase in total root-length and may be of interest for further study. Future plans include identifying genes that are involved in developing gravitational stress-resistance in plants. These genes could then be engineered to produce plant varieties that will grow well in space.

The History and Significance of Splatter Films: Why They Were and Continue To Be Made

Student Author(s): Abigail Ostbye, Sophomore (Music, English)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Introduced in the 1960's, Splatter has quickly become one of the most controversial subsections of cinema due to its grotesque visuals, convoluted or lack of messages, and exploitative nature. Also known as Gore, *Giallo*, or Torture Porn, Splatter films aim to send a message through things like body horror and general mutilation. These messages can be political, personal, or not even messages at all, as some would think. Much of the general public considers these films to be unnecessary violence made only for shock value. Some critics don't even consider Splatter "real" cinema, seeing them as nothing but faux Snuff films and leaving them out of general film discussion. The fact that Splatter films are hardly ever included in discussions of cinema intrigued me, and after watching some of them and doing research on them, I realized that it's not only a genre I quite enjoy, but a genre that has a very interesting history. All of this begs the question: If Splatter films bring nothing to the table, at first glance, at least, why do they continue to be made? And why were they made in the first place? Using sources such as *Spectatorship, embodiment and physicality in the contemporary mutilation film* by Laura Wilson, and various reactions and reviews, both from the past and the present, I will educate the readers on the history of this controversial topic, why it was made, and why it continues to exist as a sub-genre today.

Why is the major of nursing common for people of Filipino descent to pursue in the U.S.?

Student Author(s): Julianne Paras, Sophomore (Family & Community Health, Nursing)

Faculty Mentor(s): John Sopper (Grogan Residential College)

Both of my parents are immigrants from the Philippines are working nurses. Most of my aunts, uncles, cousins, etc. are in nursing school and/or are nurses. This project is discussing the situation and reason why we see a large number of Filipinos working in hospitals, clinics, etc. Therefore, the question that I am answering is why is the major of

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nursing common to pursue for people of Filipino descent in the U.S? I investigate nursing schools in the Philippines and why there is a high amount of nursing students. Also, I am conducting research on online databases to find migration patterns of the Filipino's. I am specifically looking for push/pull and external factors for what influences Filipino nurses to come work in the United States. I am finding historical context on what caused the influx of Filipino nurses such as the shortage of medical workers during world wars. This information is being found in scholarly websites and articles. I look to see if the factors involved are cultural or are due to other factors such as socioeconomics.

Identifying and Characterizing a New Gene Involved in Sister Chromatid Cohesion in *Drosophila*

Student Author(s): Sarah Pellizzari, Senior (Biology), Sean Thornton, Senior (Biology), Nikolas Soetermans, Senior (Biology), Chamodya Denuwara (Biology)

Faculty Mentor(s): John Tomkiel Dean (Biology)

Meiosis consists of two divisions by which diploid cells produce haploid gametes, termed meiosis I and meiosis II. In meiosis I paired homologous chromosomes segregate to opposite poles to halve the number of chromosomes per daughter cell. To accomplish this, replicated copies of each homolog, known as sister chromatids, remain connected and attach to a single pole of the meiosis I spindle. In meiosis II, sister chromatids attach to opposite poles and separate, allowing segregation of a single chromatid to each daughter cell. Sister chromatid attachments are regulated by the cohesins, and the attachment to a single pole is regulated by monopolin. Components of these complexes have been identified, but it is unclear how they are assembled and regulated. Here, a novel gene (*CG30383*) is described that disrupts the meiotic segregation of sister chromatids in the fruit fly *Drosophila melanogaster*. Genetic tests of chromosome segregation in *CG30383* mutants revealed errors at both meiosis I and II. Fluorescent *in situ* hybridization indicated precocious sister chromatid separation, and segregation of sister chromatids to opposite poles in two-thirds of meioses. As cohesins have also been implicated in the control of recombination, we also examined crossing over. Recombination was dramatically reduced, similar to effects reported in mutants for known cohesins. These results indicate that *CG30383* is a newly identified regulator of sister chromatid behavior, and further study may provide new mechanistic insights into meiotic chromosome segregation.

The Different Discriminatory Perspectives

Student Author(s): Yisell Pena Ortiz, Sophomore (Media Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Throughout our lives we do not usually experience what other races or groups that get discriminated experience. Many of the stories and information we receive come from the media and the news in which sometimes could only present a portion of the story. Being able to be open about learning on the injustices that affect people's lives and being

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aware and educated on them can help us as people to move forward with these issues. When it comes to the topic of discrimination we need to keep in mind that discrimination comes in layers and not just a whole. With this research I can listen to stories in which have never been brought to light and learn about a new perspective that is not my own. There should not have to be an unfortunate event for someone to educate themselves about other people's struggles but we should keep in mind about the different lives we live in in this society. There are so many different perspectives people have on this world due to the discrimination that they receive and that we do not experience or have to get educated because we do not have to worry about that occurring or affecting our lives. With this research, there will be issues that will be brought to light and educate us on the different perspectives there are in our society and why it is important to be educated.

Black Immigrants' Perspectives on the Black Lives Matter Movement

Student Author(s): Shelby Pennix, Senior (Sociology, African American & African Diaspora Studies)

Faculty Mentor(s): Hewan Girma (African American Studies Program)

Black Lives Matter is a social movement that was formed in response to the unjust killings of unarmed Black people in America in recent years. The murders of Trayvon Martin in 2012, Michael Brown and Eric Garner in 2014, George Floyd and Breonna Taylor in 2020 at the hands of police or armed vigilantes has sparked mass civil unrest and a sustained social movement for racial equality. While the message of Black Lives Matter echoed around the US and beyond, generating lively discussions and policy changes on systemic racism, racial inequality and racial profiling, it predictably provoked a fierce backlash demonizing protestors and misrepresenting their essence. Based on sixteen interviews with young Black folks, the objective of this paper is to probe the opinions of African Americans, Afro Caribbean descendants, and new continental African immigrants on the Black Lives Matter movement. Our findings suggest that while the majority of our respondents support the movement, there's no consensus on the role Afro-Caribbeans and Continental Africans (ie: Black immigrants) are supposed to assume within the movement.

Reimagining Main Street, North Carolina: Design for Social Distancing in Downtown Historic Districts

Student Author(s): Katherine Perez Nunez, Senior (Interior Architecture), Alexander Nguyen, Post-Bac (Interior Architecture)

Faculty Mentor(s): Travis Hicks (Interior Architecture)

The emergence of COVID-19 impacted small businesses throughout North Carolina as many were forced to close at the start of the pandemic and then continued operating in a limited capacity. With help from the North Carolina Main Street Program, towns have the opportunity to receive grants to revitalize outdoor spaces to aid their commercial

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districts. As student fellows with the organization, we began to develop a framework for how to approach pandemic design in historic districts. Using the Main Street approach of designing with historic preservation guidelines and research on the pandemic's impact on small businesses, we were able to design a variety of spaces to aid historic commercial districts in revitalizing their economy. Our research focused on a case study approach to developing designs for different towns that concentrated on fulfilling the needs of the surrounding businesses with regards to COVID-19 health guidelines. The result was the extraction of similar characteristics from the projects that provide a guide for use by future designers and property owners when approaching pandemic design in historic districts.

[Review of Literature on Architectural and Interior Design Features that Foster Creative Thinking](#)

Student Author(s): Katherine Perez Nunez, Senior (Interior Architecture)

Faculty Mentor(s): Asha Kutty (Interior Architecture)

The emergence of new technologies and diverse business practices has created a need for creative individuals in the workplace and is a valued skill by employers. Creativity requires the use of “divergent thinking” - the ability to produce multiple, equally valid responses to a given problem rather than “convergent thinking” - which leads to one identifiably correct answer (Guilford, 1950). The original purpose of the study was to see how Art + Design Incubators function as places of co-creation and to outline the spatial and functional attributes of the incubators and the extent to which they facilitate or disrupt co-creation. The pandemic turned this case study into a literature review to identify the architectural features that foster creativity in learning and work environments. The research revealed different design considerations, like spatial conditions, architectonic details, and interior design products, that help the creative process and encourage divergent thinking. The findings led to the development of a matrix identifying these features, which will aid future research on creativity in work environments and the study on Art + Design Incubators when work can progress.

[Reprogrammable CRISPR-dCas9 method for epigenome editing](#)

Student Author(s): Shaun Pitts, Senior (Biology)

Faculty Mentor(s): Ramji Bhandari (Biology)

Gene-environment interaction induces epimutations within the genome leading to altered health conditions. These epimutations have demonstrated persistence through multiple generations. Currently, there is no method for removing these epimutations *in vivo*. We have developed a reprogrammable CRISPR dCas-9 system to direct expression of Dnmt3aa at a hypomethylated locus effectively inducing epigenetic change. As proof of concept, we applied this method to transgenic fish whose primordial germ cells (PGCs) express green fluorescent protein (GFP). We designed guide RNAs to target the regulatory region of the *olvas* promoter containing CpGs and successfully introduced methylation. We achieved 20% reduction in GFP expression using a single guide RNA.

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These preliminary results suggest that, by targeting multiple CpG sites within a promotor region with multiple guide RNAs, gene expression can be suppressed through induced methylation. In the next step, we will expand the application of our CRISPR dCas-9 system to introduce histone methyltransferases and deacetylases in coordination with DNA methyltransferases in an effort to achieve robust and specific suppression of PGC expression. Our long-term objective is to remove EDC-induced transgenerational epimutations (epigenetic memories) from medaka. If successfully developed for use *in vivo*, this method will have a wide range of applications from bench to bedside.

The tradition of a college education is decreasing

Student Author(s): Sevoni Pledger, Sophomore (Media Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

This research will help people understand that the world is evolving and making money through social media is the new way of living. People should take advantage of these compelling opportunities when considering furthering an education with college after highschool.

The usage of social media has now become a lifestyle, its purpose is more than just entertainment, people are now able to make a living off social platforms. The notion of college is decreasing because this generation has been giving a multitude of opportunities to make a wealthy living in months instead of years. In today's new-age social media have touched a lot of people in ways that no one would have ever imagined. It is so easy to now make money online that some no longer believe in the value of a college education. In one of my supporting articles "the social media and entrepreneur growth" found in the International Journal of Humanities and Social Science, the statements in this article pinpoint the importance social media contributes to entrepreneurs helping small businesses grow. With all that has been stated Social media is a modern development and has transformed the way the corporate world works, encouraging people to take other paths of living replacing the tradition of a college education.

What we can learn from our heroes and role models and the impact they have on us

Student Author(s): Alyson Price, Sophomore (Management)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

Everyone has a hero or role model we look up to. Either when we were young or currently and they may have changed over time; but what makes us gravitate towards certain individuals? From my research so far, there is a psychological influence other can have on us, but this topic is not heavily researched. However, there have been a couple of studies by credible psychologists that were able to make conclusions similar to the message I want to convey to my audience. I am interested in this topic because I was thinking of the people I have looked up to throughout my life, mainly fictional characters, but I was able to choose four women role models that have great influence in

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their respective cultures. Jane Austen, Frida Kahlo, Michelle Obama and Malala Yousafzai will help explain “the heroine’s journey” and compare their stories to the traditional heroes’ story.

I have researched peer reviewed articles, one by psychologist Philip Zimbardo, who has done two studies surveying people about their perception of heroes to find a correlation. I also have used a couple autobiographies as primary sources to better understand their stories from their point of view. Overall, you will understand the stories of others and how they relate to our own journey.

[How Our Possessions Help Us Cope: A COVID-19 Case Study](#)

Student Author(s): Keiana Price, Senior (Psychology)

Faculty Mentor(s): Shaylene Nancekivell (Psychology)

Although people own many possessions, some of these possessions are special and help them cope with life stress. There are a few different ways a possession might help someone. It might help them by comforting them (emotion-focused strategy) or help them by solving a problem (problem-focused strategy). We used the COVID pandemic as a case study and examined how people (N=400) use their possessions to help them cope with stress. We specifically use a survey method to explore: i) the different types of emotional regulation strategies people use to cope; ii) how the type of possession is related to the kind of strategy they employ; and iii) whether having a childhood attachment object predicts people’s current possession use. So far, we have found that people have been using a variety of possession-based strategies to cope with the pandemic and that these strategies seem to be predicted by the kinds of possession they currently own, and owned as a child. For example, one participant reported that they use a blanket similar to their childhood blanket, because it helps them “feel warm and safe” (emotion-focused strategy), while another reported how their laptop lets them “connect with friends online, play games, and watch movies” (problem-focused strategy).

[Exploring how The Legend of Zelda loosely connects classical epic stories through a loose tale put together throughout the years](#)

Student Author(s): Philip Proctor, Junior (Political Science)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College), Jessica Abell (English)

The Legend of Zelda’s may seem unconnected to some, but it actually tells a broad story of good versus evil. Even though an over arcing story was not originally planned, *The Legend of Zelda* now tells a sprawling epic over its series. I am interested in this topic as it has been a debate among *Zelda* fans for decades and is great example of the style of loosely connected stories that are prevalent in video games. The many primary and secondary sources such as the game *The Legend of Zelda: Skyward Sword* and *The Legend of Zelda: Hyrule Historia* provide many story details that show a clear

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connection between each game and its story. The books on the series also provide articles from the developers and creators talking about the origin and creation of the series and its story. In conclusion, this research can give me a deeper understanding of the story-telling tactics used in *The Legend of Zelda* series and will inform others on the story of *The Legend of Zelda* and possibly other series with similar story formats.

Why Are Malpractice Lawsuits Increasing In Number?

Student Author(s): Christopher Ramirez, Sophomore (Psychology)

Faculty Mentor(s): John Sopper (Grogan Residential College)

Mistakes in any circumstances give rise to problems. When dealing with life and death, as is the case in medicine, it is crucial that no mistakes are made. Understandably, therefore, malpractice has been a problem since medicine consisted of just herbs and tea. But the situation seems much worse today. Worries over malpractice have become normalized to the point where a second opinion is often requested by suspicious patients. This situation gives rise to my research question. Why are malpractice lawsuits increasing in number? To answer this question, I first look at statistical trend lines over the past few decades to show the increase in malpractice cases and to document the types of malpractice cases that are increasing the most. To understand why these trends are happening, I review relevant Ted talks and peer-reviewed scholarly articles. I also look at how the internet has affected the will of a patient to sue, and I review the policies that are in place to reduce these lethal problems. I find multiple strong correlations between the things that I investigate that will give me the answer to my research question.

An Argument for Accurate Representations in the Media of Latine/x Parenting Styles

Student Author(s): Julisa Ramirez Gonzalez, Junior (Human Development & Family Studies)

Faculty Mentor(s): Sara Littlejohn (Strong Residential College)

In the media, Latine/x parents are portrayed with an authoritarian parenting style. While some Latine/x parents living in the United States fall into this stereotype, this is not necessarily true about all Latine/x households. Recently, there have been more representative shows and books where Latine/x families positively play a lead role. The parents in these media sources adopt an authoritative parenting style, which is representative of the community. I am interested in this topic because the media often focuses on the negative aspects of the Latine/x community, which causes people who are not Latine/x to often use stereotypes to describe these individuals. Using Riva Tukachinsky, Dana Mastro, and Moran Yarchi's article, "The Effect of Prime Time Television Ethnic/Racial Stereotypes on Latino and Black Americans: A Longitudinal National Level Study", I can help readers understand the consequences of inaccurate representation of Latine/x parenting styles in the media.

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Food Insecurity and the relationship between poor feeding practices and health disparities among infants

Student Author(s): Isa Ramos-Castillo, Senior (Nutrition)

Faculty Mentor(s): Jigna Dharod (Nutrition)

Breastmilk is the ideal food for infants in meeting all the nutrients requirements, ensuring optimal growth and development. Hence, exclusive breastfeeding is recommended for the first six months of life. The study was conducted with low-income mothers to examine food insecurity and its association with breastfeeding and other infant feeding practices. Preliminary results indicated that initiation of breastfeeding was high, i.e., 90%. However, the majority (72%) of the mothers discontinued exclusive breastfeeding by 2 months of infant's age. Multivariate analyses indicated that food insecurity was significantly associated with breastfeeding cessation even after controlling for sociodemographic variables such as parity, ethnicity, and weight status. Specifically, food-insecure mothers were 1.5 times more likely to discontinue breastfeeding than their secure counterparts ($p < .05$). Results indicate that household food insecurity also affects infants negatively through poor feeding practices. In the future, pathways through which food insecurity affects the discontinuation of breastfeeding is warranted. Especially, it is important to understand how stress and intermittent food shortage in food insecurity affect mothers in their ability to continue to breastfeed. Reducing barriers to breastfeeding, such as food insecurity, can help address health disparities in this country.

Effect of Potassium Perchlorate on developing Medaka Primordial Germ Cells

Student Author(s): Beh Reh, Senior (Biology)

Faculty Mentor(s): Ramji Bhandari (Biology)

Perchlorate is a manufactured chemical compound commonly used in military artillery and equipment. It has been detected in drinking water, air, soil, and breast milk. Human exposure can occur in the theatre of war and areas adjacent to military training grounds. Higher concentrations of perchlorate have been found to affect reproductive system and whether lower environmentally realistic concentrations affect stem cells that produce sperm and eggs, also called primordial germ cells (PGCs), is not clearly understood. In the present study, I examined the effects of 0, 10, 100, and 1000 ug/L potassium perchlorate exposure on PGCs of medaka embryos and expression pattern of the genes that maintain PGC integrity and epigenetic processes. Expression of gene encoding germ cells nuclear antigen (*gcna*) and DNA methyltransferases (*dnmt*) was determined by qPCR. Perchlorate exposure delayed hatching time, reduced heartbeat, inhibited proper migration of PGCs, increased developmental deformities, and reduced body growth of embryos. Expression of *dnmt3aa* and *dnmt3bb* genes increased in PGCs of the 10 ug/L group; whereas expression of *gcna* showed a dose-dependent increase. The results suggest that perchlorate affects germ cell nuclear integrity and epigenetic

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modulators in PGCs and provide insights into possible perchlorate effects on germline stem cells in humans.

[What are the Benefits of Music Therapy on Children with Autism Spectrum Disorder?](#)

Student Author(s): Ashton Reid, Sophomore (Family & Community Health)

Faculty Mentor(s): John Sopper (Grogan Residential College)

Every child on the Autism Spectrum has unique needs and challenges, which can be difficult to deal with especially for a parent or sibling of a newly diagnosed young individual. This is the reason why I am answering the question, “what are the benefits of music therapy on children with Autism Spectrum Disorder?” With the utilization of the most recent peer-reviewed scholarly articles and expert advice, I find that music therapy techniques are proven to aid in behavioral, emotional, and social challenges that children on the Autism Spectrum face on a day-to-day basis. In my research, I examine the physiological effects music has on the brain of children with ASD. I also examine the discoveries and advice that professionals within the field of neuropsychiatry have to offer regarding music therapy and its potential benefits. Revealing the answer to this question will guide families on how to assist children on the spectrum with their challenges, and it will prove to be beneficial for healthcare providers and educators when analyzing a child’s specific needs.

Genderless Makeup

Student Author(s): Jazmin Rivera, Sophomore (Elementary and Specialized Education Services, Strong College)

Faculty Mentor(s): Sarah Littlejohn (Strong College)

For many years humans have worn some form of makeup men and women alike. However, in the 21st century, cisgender men are highly discouraged from wearing makeup due to concepts like toxic masculinity. I came across this idea when having a discussion and realized that men (especially cisgender men) are discouraged from wearing makeup. As a consumer I’ve noticed that a lot of products in our world are genderized, I thought that makeup might be a good place to start. For one I would start by looking into the history behind makeup to understand where the stigma of “makeup is for women” came from, by reading *Beauty imagined: a history of the global beauty industry*. This source talks about the history behind beauty industries from around the world. This secondary source *REACH: impact on the US cosmetics industry?* talks about the impact the beauty industry has on the US. In general, by doing research with both of these sources, (along with some of my other research), my goal is to help readers understand that makeup should be encouraged for everyone no matter the gender.

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Variation in secondary metabolite production among *Aspergillus* spp.

Student Author(s): Chris Roberts, Senior (Biochemistry)

Faculty Mentor(s): Nicholas Oberlies (Chemistry & Biochemistry)

Aspergillus fumigatus is considered a major human pathogen, it is known to cause aspergillosis in immunocompromised individuals. Secondary metabolites contribute to the virulence of *A. fumigatus* infections by inhibiting the immune system and attacking the host. In contrast, *A. fischeri* and *A. oerlinghausenensis*, its closest evolutionary relatives, are not known to express the same virulence. To determine if the variation in virulence is linked to secondary metabolite production, the characterization of the secondary metabolites produced by *A. fumigatus*, *A. fischeri* and *A. oerlinghausenensis* were assessed. It was found that all the species produce gliotoxin and fumitremorgin while the production of tryptacidin, pseurotin, and fumagillin were variable throughout the three species. These data led us to conclude that the two non-pathogenic strains (*A. fischeri* and *A. oerlinghausenensis*) are more closely related in terms of secondary metabolites than *A. fumigatus*.

Examining the Connection: Violence, Coping Mechanisms, and Relationships

Student Author(s): Kiara Rochelle, Senior (Human Development and Family Studies)

Faculty Mentor(s): Jocelyn Smith Lee (Human Development and Family Studies), Erica Payton (Public Health Education)

Black men and young boys are more likely to experience violence throughout their lives. This exposure to violence necessitates the creation of coping mechanism (eg. staying indoors, carrying weapons) for survival. Few studies seek to understand how these coping mechanisms of violence affect the relationships these men have with other people and their families. This study asks: How do coping mechanisms affect young Black men's ability to form relationships after being directly victimized by community violence as opposed to witnessing community violence? Participants for this study were drawn from 3 focus groups of a qualitative study examining the prevalence of violence in Greensboro, NC. 12 participants (Ages 13-31) were recruited and participated in a series of questions regarding how violence has affected their lives. Throughout the cohorts 33% of the men have experienced direct community violence and 66% have indirectly experienced community violence. The focus group interviews suggested that men who have experienced violence in their lives are more likely to struggle to form meaningful relationships with others opposed to those who had witnessed violence.

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Bioengineering Cassava For Increased Vitamin A Expression

Student Author(s): Kaleigh Roe, Post-Baccalaureate (Biochemistry)

Faculty Mentor(s): Ayalew Oseno (Biology and Biotechnology)

Cassava is a very important crop in developing countries and is readily available and consumed. However, cassava is lacking nutritional value. The Arabidopsis AtOR gene is reported to be involved in carotenoid biosynthesis and is known for its ability to express and increase vitamin A levels. Carotenoids are metabolites that contribute to the yellow, red, and orange pigments that crops express. Carotenoids have physiological functions which aid in preventing photooxidative damage. Arabidopsis OR proteins are considered a major posttranscriptional regulator of the phytoene synthase complex (PSY), which plays a role in controlling carotenoid biosynthesis. The purpose of this research is to increase the nutrient levels, specifically, vitamin A in cassava by co-expressing AtOR and AtPSY. Three constructs will be produced, a construct containing AtOR, one containing PSY, and a double construct containing both AtOR and AtPSY. During the first attempts, root specific promoters GBSS and Patatin I were used. Currently we are working on generating constructs with expression cassettes of both PSY and AtOR with a new constitutively active 35s promoter. Single constructs of each gene have been introduced to cassava friable embryogenic calli. Transgenic lines will be generated and characterized. We expect an increase in carotenoids biosynthesis which will increase the nutritional quality of cassava for millions of people in the developing countries.

Composing Structural Stories: Addressing Unmet Substance-Exposed Pregnancy Needs Through Interdisciplinary Research

Student Author(s): Naima Said, Senior (Public Health Education)

Faculty Mentor(s): Tracy Nichols (Public Health Education)

Women with a substance-exposed pregnancy (SEP) experience stigma and the threat of custody loss if they disclose their substance use (Stone, 2015). These fears and experiences of stigma serve as barriers to accessing critical prenatal care, along with addiction treatment and important social services. We propose to develop an innovative tool (a web-based interactive narrative) to educate practitioners and policymakers on both the complexity of the system mothers with an SEP are required to navigate as well as how stigma is embedded and thus operational in everyday practices and institutional policies. Interactive narratives are a genre of immersive storytelling that allows the reader to participate in a story and to choose among multiple options on a decision tree. This project will produce a prototype tool that will allow practitioners and policymakers to understand the implications of stigmatizing institutional policies and practices, including but not limited to provider-client interactions. Using these two available sources, students will conduct a narrative analysis (Coulter & Smith, 2009) to guide storyline development. Narrative analysis includes identifying story elements

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(characters, plot, setting, etc.) from participants' accounts of their experiences. Preliminary findings will be presented from the narrative analysis.

[What are the gaps in the US healthcare system \(including healthcare access, healthcare needs, and medical services\) between different populations that fall along racial, ethnic, socioeconomic, and sexual orientation?](#)

Student Author(s): Kabelo Saint Louis, Sophomore (Biology, Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

Every individual has their own unique medical needs whether it is physical or mental. Therefore, it is very important to provide patients with the personalized and effective care they deserve. However, this is difficult to achieve when the medical system has so many gray areas and misses so many opportunities to help or process the individual correctly. This is especially the case when social and economic demographics are considered. This is the reason why I am answering the question, "What are the gaps in the US healthcare system (including healthcare access, healthcare needs, and medical services) between different racial, ethnic, socioeconomic, and sexual orientation populations?" To address my question, I review United States government databases, scholarly articles, and case studies to find the different healthcare provided to different demographic populations. I find that there are a lot of disparities in each demographic. The interesting thing is that the government has already identified these disparities yet not enough has been done to help close these gaps. During this research process, I further investigate ways of closing the gaps in medical access and care to have every individual in this country receive the care and hospitality any human deserves.

[Design Space for Hypergraph Neural Networks](#)

Student Author(s): Nadia Salou Doudou, Senior (Computer Science)

Faculty Mentor(s): Chunjiang Zhu (Computer Science)

In recent years, graph neural networks have gained great interest and have obtained influential results in various analytical tasks including node classification, community detection, and molecule generations. Although similarity among entities may be represented as pairwise relations in graphs, in many real-world problems it is necessary to model higher-order relations between subsets of objects via hypergraphs. New techniques are being introduced to the hypergraph neural network family in order to effectively perform machine learning over hypergraphs. These algorithms focus on proposing and testing a particular architectural design of hypergraph neural networks for a single task or dataset, but they may not work well for novel tasks or datasets. Instead, we study a more general architectural design space consisting of a Cartesian product of different design dimensions, e.g., the number of layers. In this way, we can automatically search an effective neural network architecture for a given new task and

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dataset. Further, we plan to explore a task space for a hypergraphic neural network that will enable us to categorize related tasks in order to quickly define a model for a new task based on its similarity to previous tasks. We plan to perform experiments to demonstrate the effectiveness and efficiency of the proposed methods in different machine learning tasks.

What effects do Hispanic parents have on their children's career choices?

Student Author(s): Kevin Sandoval-Romero, Sophomore (Biology, Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

The purpose of my project is to help Latin students who have the potential to further their education and pursue a good career, but who choose to go directly to work instead of continuing their education. What I'm looking to find is the percentage of Latin American students that go straight to the work field after high school, and how the parents play a role in influencing them. I also look into a method on how we can influence parents and advisors to help the student. Every student deserves the opportunity to pursue an education, we just need to find a method to make this possible. Finding the answer to this question will open up many opportunities for Latin students and will help those who advise them know how to push them just an extra step. To answer my question, I investigated current data on college attendance rates and employment advancement among Latin American communities in the US. I also examine recent research on the way Latin Americans perceive college, and the reasons why they choose to attend or not to attend. From this I consider steps to take that could increase college attendance among Latin American High School graduates.

Why are anti-vaxxers so strongly against vaccinations?

Student Author(s): Caitlin Scheerer, Sophomore (Psychology, Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

My project is about anti-vaxxers. I ask why they are so strongly against vaccinations. I look into the reasons for being anti-vax and consider why they believe these reasons. More specifically, I investigate whether it is because anti-vaxxers fear that vaccinations will hurt their children, or if it is some form of ableism, or possibly a mix of both. Since what started the movement was the misinformed belief that vaccines caused autism, I mostly expect to find fears brought about by misinformation and/or an unknowing (or possibly knowing) form of ableism.

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Education in the Future: How & What to Teach Students to Ensure Success

Student Author(s): Anjali Sen, Sophomore (Specialized Education Services, Elementary Education, Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

My research expo title is “Education in the Future: How & What to Teach Students to Ensure Success.” This research investigates questions such as what are the skills, knowledge, and attitudes students need for success in the 21st century. It looks at the importance of cultivating a love of learning to support student success. I also investigate whether standardized tests help or hurt when it comes to developing a love for learning and the skills needed for success in the 21st century. I believe through extensive research, I have examined and seen how we can answer these for sure. There are many ways we can go about teaching our students. I have read and explored that we can not only teach them subjects with the necessary skills, etc. but help them find joy in learning and make sure they succeed and achieve their goals as well. Some of my findings were Effective teaching strategies to incorporate in a classroom are to use cooperative learning, professional development, etc. Also, ways to manage stress and succeed in a class are to stay organized, eat healthily, have a good sleep schedule, and more. I believe that it will help students succeed and do well in the future.

Mycology vs. Malaria: The Use of Fungal Natural Products to Battle Malaria-Causing *Plasmodium falciparum*

Student Author(s): Robert Shepherd, Junior (Chemistry)

Faculty Mentor(s): Nicholas Oberlies (Chemistry)

Malaria is one of mankind’s most lethal diseases, killing hundreds of thousands per year. *Plasmodium falciparum* is a parasite that is responsible for the majority of Malaria cases in humans. Artemisinin, a natural product, is one of the main drugs used to treat the disease. Most recently, *Plasmodium* species have developed resistance to key anti-malarial drugs, including artemisinin, presenting an urgent need to find new and more effective therapeutics. Natural products chemistry is the study of the chemical compounds produced by living organisms. To date there are approximately 500,000 known natural products, with 35,000 of them showing strong biological activity, making them excellent candidates for use as therapeutic drugs. Nearly half of these 35,000 bioactive compounds are produced by fungi alone. It is estimated that only 2% of the world’s fungi have been named and described. Consequently, an even lesser portion have been studied for their production of natural products. Thus, there is tremendous opportunity in isolating novel compounds from fungi to be used in drug development. The objective of this project is to isolate, purify, and solve the chemical structure of natural products produced by both terrestrial and aquatic fungi, with hopes that they may become potential anti-malarial drug candidates. This will be done using methods

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pertaining to chromatography, mass spectrometry, and nuclear magnetic resonance spectroscopy.

[The effects of lactate ions on the hypoglossal nerve in the American bullfrog, *L. catesbeianus*, and the subsequent expression of synaptic plasticity genes](#)

Student Author(s): Sara Silika, Senior (Biology)

Faculty Mentor(s): Joseph Santin (Biology)

Lactate is a metabolite that has received much attention over the years for the role it plays in the body, and specifically, the central nervous system. In the present study, we examine the function of lactate on the respiratory system in an amphibian model. Specifically, we look at how lactate ions affect respiratory motoneurons and synaptic plasticity genes. Here we test the hypothesis that lactate ions increase the expression of synaptic plasticity genes that are involved in respiration. We worked with eight synaptic plasticity genes to determine their rates of expression when they were exposed to lactate-exposed hypoglossal nerve of the American bullfrog. In conducting these experiments, we determined that only two of the eight tested genes, BDNF and pcsk1, were significantly expressed. While these findings are useful, they have led us to conclude that there is a major pathway linking lactate ions and synaptic transmission that is still unknown.

[The Vocalises of Marco Bordogni and their Impact on Horn Pedagogy](#)

Student Author(s): William Sizemore, Junior (Music)

Faculty Mentor(s): Abigail Pack (Music)

One aspect of horn playing that is unique to the other instruments in the brass family is the incredible range. Spanning over four octaves, the extreme range of the horn poses unique challenges in how to play in all registers accurately and consistently. One of the etude books common in horn repertoire to develop the low register is the “Melodious Etudes for Trombone- Selected from the Vocalises of Marco Bordogni, Transcribed and Progressively Arranged by Joannes Rochut.” These etudes while great on trombone, however, are not very adept on horn. This project involved transcribing the Bordogni vocalises for horn in a way that offered complete pedagogical approach to the low register specific to horn technique. This collection of etudes modernized an outdated way of learning and performing the Bordogni vocalises. The resulting product adds much needed material to the low horn repertoire thereby providing a positive shift towards updating an existing resource for low horn development and pedagogy.

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Metacognitive Thinking: Creating a Reflective Learning Environment for the Online Choral Classroom

Student Author: Elyse Smith, Senior (Music Education)

Faculty Mentor: Brett Nolker (Music Education)

This project is the third in a series of studies examining the role of training and practice in strategies that promote metacognition in Music Education majors. Metacognition (MC) in its simplest definition is thinking about your thinking. Metacognition is one component of the educational construct of Self-Regulated Learning, or the idea that students who self-reflect and are conscious about their thinking and processes are more successful educators and learners. For the past forty years, the term self-regulated learning (SRL) has included a general educational framework to measure and assess various levels of self-awareness. SRL is an umbrella term containing the ideas of metacognition, cognitive strategies, motivation, and the relationship between all of these elements. Research indicates that metacognitive learning can engage the disengaged learner, the disadvantaged learner, and promote individual leadership within group settings.

College Education in High School Could Save the Planet

Student Author(s): Timothy Smith, Sophomore (Communication Studies)

Faculty Mentor(s): Sara Littlejohn (Ashby Residential College), Jennifer Whitaker (English)

I believe that here in the United States of America, our education system is a fair contributor to killing off our planet. Yes, I know America is just one of countless countries in the world but we're talked about in high standards; from an American's point of view. The education and knowledge that I've learned just as a sophomore in college is way more vast than anything from public education (K-12). At twenty years old, the things that society shows me and has taught me were things that could've been given to me in high school. Young adults are rushed out of childhood and into the big world without knowing any real useful knowledge. If what college students learned from their required general education classes were instructed in public high schools, the world/society would have less issues to solve and more time spent gardening the earth back to life. This "higher knowledge of history" in college would help teenagers grow into adulthood much more open-minded and what we say nowadays as *woke*. This knowledge would provide better choices in a larger time frame for teens; it would also provide better ways of sustainability for our planet.

Why taking care of yourself and physical fitness is important.

Student Author(s): Gabrielle Spence, Sophomore (Kinesiology, Strong College)

Faculty Mentor(s): Sara Littlejohn (Strong College)

I've been deciding on whether I want to present my research in the form of a website or a powerpoint. I've decided on making a website because it's something I've never done before and I'm interested in the process. My current thesis: Obesity is too common among children, they

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have little to no control over what or how much they eat. Developing good and healthy habits now will help you and your future family be healthy. I also want to talk about the things that can happen without exercise.

I'm interested in the human body. It never changes but there are so many cool things that I'll never know. I want to know how to add years onto my life and hopefully I can help my parents out as well. I'm going to use the US Guidelines for Health and Fitness (most recent edition). This will explain the benefits of exercise. I have an article that talks about child obesity. This can help me talk about prevention and treatment. From this project I hope to learn to live a better and more healthy lifestyle. I will be able to implement the information I acquire in the project to my future family.

Drones in the Nagorno Karabakh Conflict

Student Author(s): Jackson Spence, Sophomore (Psychology, Ashby College)

Faculty Mentor(s): Sara Littlejohn (Strong College)

Last year, even as the world battled a deadly pandemic, war erupted between Armenia and Azerbaijan, going largely unnoticed by many. The fighting began in late September when Azerbaijan launched an offensive into the Nagorno Karabakh region, which is ethnically Armenian but lies within Azerbaijan. After over a month of fighting, Armenia surrendered, losing territory to Azerbaijan. I followed the conflict closely, and quickly saw that Azerbaijan was heavily reliant on drones to achieve victory. Drone warfare is something I don't know much about, so I saw this as an opportunity for me to learn about how they were used in the conflict, and make conclusions about the role drones will play in future wars. To gather information, I'll unfortunately have to watch videos of drone strikes. The Azerbaijan Ministry of Defense is a source I'll use, as they maintain an archive of drone strike footage. A number of news articles have been written about the use of drones in the conflict. Upon conclusion of my research, I hope to have gained a greater understanding of how drones allowed Azerbaijan to win the Nagorno Karabakh War, and why this conflict demonstrates the effectiveness of drones in general.

The significant case of nature-connectedness through its impact of breaking down the disadvantages of individualism in the United States of America.

Student Author(s): Asia Spruill, Sophomore (Teacher Education and Higher Education, Strong College)

Faculty Mentor(s): Sara Littlejohn (Strong College)

Nature-connectedness is the deep connection between humans and nature. The effects of nature-connectedness have been studied, showing that nature produces a positive effect by increasing the well-being of those around it. With this increase in attitude, I set to prove that nature-connectedness has the ability to decrease the distressing effects that individualism has on the citizens of the United States. Individualism is a social theory used in the United States, to promote the self-worth of an individual. While this social perspective has its qualities, it certainly has its downfalls. People in individualistic cultures experience effects of selfishness and loneliness. I will be speaking on the views of nature-connectedness and perspectives on individualism. From peer-reviewed

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journals to specialized books. One source I will use is the book, *Exploring Human Nature* by Jana Lemke. Which goes into how nature-connectedness can give humans different perspectives on life, Lemke goes into the emotional aspect of nature-connectedness. Living in a country with a rise of mental health issues, I am driven to shift this state of loneliness in our nation, to a nation of unity. I hope my research displays the quality of nature-connectedness by communities taking on positive change. Becoming more relational and functional.

Compulsive consumerism and its effect on the adolescence of children

Student Author(s): Mary Squires, Sophomore (Psychology, Strong College)

Faculty Mentor(s): Sara Littlejohn (English, Strong College), Jessica Abell (English)

Many people love to buy materialistic items not only for themselves but for their families. Although, is it worth jeopardizing your family's money and your children's childhood? Families have a bad tendency to compulsively consume, especially when it comes to national holidays. I argue that compulsive consumerism has a negative impact on families and their children. By using sources that include research studies, articles on observations, and interviewing people with personal experiences will help me convey my argument. Sources such as *Compulsive Buying*, *The American Journal of Drug and Alcohol Abuse* and *How Parents Stimulate Materialism In Children* will help a lot as well find valuable information. The reason why I am interested in this topic is because I believe more people could benefit from understanding the importance of not spending so much money just because something looks nice or it's a holiday. I want to learn about the effects of the children and how it impacts their upbringing. I want to also go into how compulsive consumerism ties into drug abuse since there are many people that spend all their money for that "fix". This is my research topic.

Volunteering at an Animal Shelter

Student Author(s): Cecilia Stowe, Sophomore (Psychology, Ashby College)

Faculty Mentor(s): Sara Littlejohn (English)

Animal shelters have relied on volunteer work to function for many years. Shelters are understaffed and frequently over capacity, which leads to a sharp decline in animal wellbeing and the overall capability of the shelter to function appropriately. I've always had a soft spot for animals in my heart, and when I heard that my local shelter was looking for volunteers, I couldn't resist helping. While I was a volunteer, I noticed how difficult it was for the main staff to stay on top of work when there were less volunteers available to help. I also learned that very few people volunteer to begin with. I'll be using sources that focus on animal behavior with people and shelter-focused research; the article "Exploring human interaction and diet effects on the behavior of dogs in a public animal shelter" from the *Journal of Applied Animal Welfare Science*, the book "Animal behavior for shelter veterinarians and staff" with editors Emily Weiss, Heather Mohan-Gibbons, and Stephen Zawistowski.

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[An Argument for the Cultural Bias in the United States and how it Affects Laws and Customs](#)

Student Author(s): Jaylen Tanner, Sophomore (Biology)

Faculty Mentor(s): Sara Littlejohn (Strong College), Dorothy Davis (Anthropology)

If culture is a way of life, then cultural bias is the belief that one system of living is better than another. In other words, a group of people believes they are the best. Cultural bias may exist in every country, but it is far more prevalent in a country as powerful as the United States. It is ingrained in American society and learned by citizens. There is bias in our textbooks, courtrooms, and even our homes. History has been revised to fit an American perspective, and our laws reflect a narrative of other cultures. Even customs and habits in daily life result from bias. As Americans learn through an ethnocentric perspective, the trend of bias continues, and it affects our society even greater than before. By using resources such as Brian Fagan's *Clash of Cultures*, By using resources such as Brian Fagan's *Clash of Cultures*, I argue that this bias gives Americans a skewed perspective of the world, and negatively affects our culture overall. This research will discuss the ways that cultural bias exhibits itself in America, and why it should be a focus for change.

[The Construction of Fear, and the Development of Madness](#)

Student Author(s): Imanyia Thomas, Sophomore (Biology, Ashby College)

Faculty Mentor(s): Sara Littlejohn (Strong College)

Fear in itself is a prewired response in all living things within the kingdom of animalia. The topic of fear is one that is vast and unfixed, and many within the scientific community still struggle to understand the origins of particular fears. This is a topic of interest for me as I pertain a personal curiosity to the subject, in regards to my own peculiar phobia which does not stem from any underlying fears. In my research, I have found that fears and phobias like mine are identified, but unlike with common fears and phobias, they have very little research stemming on their psychological place of origin. Of the sources I have compiled thus far I believe that the ones I have found the most useful are the ones that relate to a case study or involve an insight into the mentality of someone who is afflicted by a peculiar phobia. Such as with the book *Constructing Panic: The Discourse of Agoraphobia*, written by the *Harvard University Press*. In conclusion, fear on it's own is a programmed environmental response, whereas in the subject of phobias, it is a generated irrational fear, that stems from an innate stimulus.

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[Acknowledging the Needs of Gen Z: Opening Spaces for Connection and Care](#)

Student Author(s): Qorah Thorner, Junior (Communication Studies, Political Science)

Faculty Mentor(s): Kristen Christman and Jessica McCall (Communication Studies)

In March of 2020, life as we knew it changed for everyone as we entered a global pandemic. Undergraduate students had to make a lot of transitions in a very short period of time. One of those transitions was moving from traditional in-person classrooms to online schooling while finding housing. There were a lot of challenges as everyone tried to find a “new normal” and deal with the obstacles COVID-19 brought. Overall, this study looks at how acknowledgment is seen by students and if the practice of acknowledgment impacts their educational experience. In addition, this study looks at the presence of acknowledgment, or lack of, through a social justice lens and inequities that were, or were not, acknowledged by professors during the time our country was in a crisis. A survey will be sent out to undergraduate students inquiring about the challenges that COVID-19 brought and will include data such as socioeconomic status and demographic data that will allow us to further understand student populations impacted by acknowledgment during this time where online learning has become the norm.

[How Does Implicit Racial Bias Affect Healthcare for African-Americans?](#)

Student Author(s): Andrea Tyson, Sophomore (Pre-Nursing, Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

Though healthcare professionals work together as one big team to care for patients, console their families, and serve the community—there are issues in healthcare that cannot go unnoticed. Disparities in healthcare outcomes for minorities are one of these issues. One explanation for this is implicit bias. Therefore, what I wanted to know is: “How can Healthcare Professionals Work to Close the Gap in Disparities of Healthcare for African-Americans as a Result of Implicit Racial Bias?” With this research question in mind, I explored resources provided by The National Center for Biotechnology Information (NCBI), reviewed academic articles that defined and documented implicit bias, and studied statistical data on the effects of racial bias in healthcare. Using these research methods, I found that not only are African American patients more likely to receive lower quality care than Caucasian patients, but the kinds of treatment they are offered are usually less enticing as well. While other variables are involved, such as economic status, controlling for these other factors shows that the disparity still exists. As a result, I argue that a systemic approach must be used to address racial bias in healthcare.

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Taste and Terroir: Understanding Angevins' Food Culture

Student Author(s): Liliana Vitale, Senior (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. During four-months of fieldwork in Angers, France, I examined Angevin food culture and its' connection to local terroir. Ethnographic methods guided my fieldwork among the local Angevins during pre-Covid-19/Covid-19. Bourdieu's theoretical concepts of "Capital, Field, and Habitus" provide the framework for this research exploring the social, cultural, economic, and symbolic nature of the production, exchange, and consumption of French foods. In the face of globalization and the Covid-19 pandemic, this ethnographic research explores the ways in which Angevins show resilience in honoring and preserving local food culture.

Diagnostic: A Representation of Mental Illness

Student Author(s): David Walls, Senior (Arts)

Faculty Mentor(s): Jennifer Reis (Arts)

In this project I use painting as an artistic outlet to discuss various topics related to mental illnesses and how they affect individuals and those around them. My work is partly inspired by the artworks of Bridget Riley, a pioneer of illusionary "op art", and Andy Warhol, the famous pop artist who consistently used repetition, simplicity, and color in his work. Additionally, the style of my work evokes a sense of imperfection and unease through the lack of tools used when painting lines in a repetitive manner. A unique artistic style along with the use of recognizable symbols and objects prompts viewers to look inward and evaluate their own mental health and perceptions held by others. At a time of great unrest this work emphasizes deteriorating mental health and illness worsened by the Covid-19 pandemic and lack of accessibility.

How trauma impacts our ability to form close relationships

Student Author(s): Breanna Weathers, Sophomore (Nursing, Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

Trauma impacts our lives in a variety of ways, often stripping away our overall quality of life. Something that often lessens the impacts of trauma is support from others and forming close relationships. With that in mind, I believe it is important to ask and answer the question, "How does trauma affect our ability to form close relationships"? To answer my question, I examine the most current medical journals to define trauma. Using a combination of research studies and the most current peer-reviewed articles on trauma, I find that trauma directly impacts the different attachment styles we form and can even alter our current attachment styles. I also investigate the

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physiological reasons behind trauma's impact on our brain and why it impacts our ability to form close relationships. Discovering this answer will create a better understanding of the connection between trauma and its impact on forming interpersonal relationships.

[Making Deliberate Style Choices Affects Our Emotional Wellbeing and How Others Perceive Us](#)

Student Author(s): Katherine Webb, Junior (Art Education, Ashby College)

Faculty Mentor(s): Sara Littlejohn (English)

The choices we make every day when it comes to what we wear has an impact on how we feel as well as those around us. By utilizing sources such as *Power Dressing: First Ladies, Women Politicians & Fashion* as well as *Clothing: A Study in Human Behavior*, I will back up this claim. Everyone in this world wears clothing, so I thought to myself, why not help convince others that they can utilize this everyday practice as a skill to look and feel their best? In my own personal experience, I have utilized different kinds of dress for different situations. For instance, I feel powerful wearing a suit to a job interview, and others are convinced of my credibility due to my appearance. Or perhaps when wearing pastel colors, I feel feminine and dainty, and others may attach words such as “kind” “sweet” and “gentle” to me when I wear clothing such as this. My own personal experiences have propelled myself into exploring this research concept. Many individuals express that participating in deliberate fashion choices have helped them manage their depression and anxiety, become more confident individuals, and feel more comfortable in their own skin.

[Effect of Racial Disparities in Transportation Access on Older Adults in Chatham County](#)

Student Author(s): Krista Westervelt, Junior (Peace and Conflict Studies)

Faculty Mentor(s): Rebecca Adams (Gerontology/Social Work)

Access to reliable transportation is a vital concern for adults as they age. This concern does not affect older adults evenly across racial and ethnic lines. Older adults of color have more limitations on access to transportation as they age than their white peers. Though agencies on aging may offer transit options to help older adults access services, these programs can have limitations in accessibility and spontaneity, which may contribute to segregation along racial lines. A look at the effect of transportation access on participants in one senior center in Chatham County, North Carolina reveals disparities in program accessibility. Such access differences may have negative effects on physical and mental health, potentially deepening existing disparities in aging outcomes. While various factors affect creation of more equitable services for seniors, identifying disparities in the need for and provision of transportation services could help in addressing demographic inequities.

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Analytical Process Model of Language of Dance Lesson Plans

Student Author(s): Kaitlyn Whitaker, Senior (Dance)

Faculty Mentor(s): Teresa Heiland (Dance)

The Language of Dance (LOD) Approach to dance pedagogy integrates learning through dance using 6 Basic Language Skills and LOD Cycles of Literacy Processes. The LOD Approach to teaching dance involves Motif Notation and a constructivist pedagogy. I created an analytical process model for annotating LOD Lesson Plans to examine how the 6 Basic Language Skills and Cycles of Literacy Processes weave together to make a cohesive lesson plan. The 6 Basic Language Skills support the development of student voice and whole-person learning. The Cycles of Literacy Processes support curriculum development using Motif Notation to focus students' awareness and meaning making while performing, creating, and connecting dance in their lives. The analytical process model I developed will help educators analyze LOD lesson plans for their educational components and potential efficacy prior to delivering any lesson. This research reveals the complexities of thinking involved in the development of the LOD lesson plan to reveal the potential of this system to others.

What is preventing people of color from receiving assistance with their mental health

Student Author(s): Maya Whitaker, Sophomore (C.A.M.A.R.E., Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

People of color are less likely to receive help when it comes to mental ailment. Therefore, the objective of this research is to understand "What is preventing people of color from receiving assistance with their mental health." Specifically, I will investigate the reasons why people of color have trouble accessing the resources they deserve. Has racism morphed into a new form of discrimination? Is there a stigma around mental illness in the black community? Does this stigma decrease conversations in this community regarding topics such as depression, anxiety, and eating disorders? If so, what are effective ways to combat the generational persona of what mental health should be in the black community? To address these questions, I draw on various databases to establish the size and scope of the problem. I also look at current peer-reviewed scholarship to consider various explanations for the problem. Finally, I review and evaluate different solutions proposed to address it.

The State of Mental Health Among Deaf People

Student Author(s): Jacara Wiggins, Sophomore (Speech Pathology and Audiology, Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

What is the overall mental state of deaf people? My project was to use research to determine mental health among the deaf community and how health services should improve. This research also motivated me to do more within the deaf community so that their voices can be

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heard. From my research question, my methods were to review scholarly journal articles on the deaf community and their health outcomes, surveyed posts on the deaf community, took ASL classes and reviewed organization websites. I've found that not all deaf people have high English literacy. Many deaf people don't know how to sign and overall have low English literacy. Communication was also the main problem within healthcare and also finding out family histories of deaf people. Deaf people in different deaf communities had increased rates of illness with no support from healthcare. This also included increased rates of illnesses playing a huge role on their perceptions of themselves and also the negative thoughts that they've felt about themselves. The only solution for the benefit of healthcare in the deaf community would have to be improvements within health care. Deaf patients should have places where they're provided the services that they need while also being invited into environments to receive their treatments and the help they need. Health centers should receive deaf patients with open arms and with accessibility to translators, devices for ASL, and access to much more.

Social Media: the New Realm of Political Activism

Student Author(s): Jordan Wilcox, Sophomore (Political Science, Strong College)

Faculty Mentor(s): Sarah Littlejohn (Strong College)

As technology becomes more advanced and intertwined in our day-to-day live, we begin to see an increase in the usage of social media platforms. Social media has been a contributor to the advancement of protest and political engagement, which increased during the 2020 Covid Pandemic. How can these apps and websites that were developed for networking now become a pioneer for increasing the engagement of young adults in politics? The effects of posts on social media are massive and lead to the acknowledgment of other followers that turns into a ripple effect of awareness and support of millions on these social media accounts. Young adults that want to bring attention to a cause or movement have been using their platforms as a voice that can reach a multitude of people to continue to enlighten others about important issues. By using sources such as an article by the *Sociology Compass*, "Social Media and Social Movements", I will explain how young adults are using their social media platforms for political engagement and how it's implementation can lead to the effectiveness of the advancement of political movements.

The Impacts of Stress and Anxiety on Students

Student Author(s): SarahWen Williams, Sophomore (Arts, Ashby College)

Faculty Mentor(s): Sara Littlejohn Coleman (Ashby College)

My goal is to better understand the stressors students face and how that affects their mental health. Stress can help motivate students to get their work done but being overstressed can lead to mental health problems that negatively impact the student's life. It is essential to understand what has caused an increase in mental health problems and how to reduce and manage them. This topic is one that I relate to in my own life. It's also interesting to see how others relate and to learn how they cope. It'll be beneficial to find other resources that help manage the stress from school and life. Sources that are

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referenced are a book written by M. V. Landow called *Stress and Mental Health of College Students* and an article titled *College Students: Mental Health Problems and Treatment Consideration*. There is a lot expected of the current generation but it's hard to always meet those standards. That's where practicing self-care is really important. It's also important to know when to reach out for help as well.

[The Forgotten Heroes: How Can We Talk about Mental Illness in First Responders?](#)

Student Author(s): Glenna Wiseman, Sophomore (Pre-Nursing, Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

The topic of mental illness has been around for a long time; however, only recently have we explored mental illness and its effects on our mind and bodies. It has also been recently discovered that mental illness affects our first responders, if not more due to their service and duty to society. For example, in the year of 2017, more firefighters died by suicide than in the line of duty across the U.S. Given these alarming statistics, my research question is "how can we talk about mental illness in first responders?" In my research study, I gather relevant statistics to understand the scope and depth of the problem. I also examine current scholarly research on this question to consider what can be done about it. My findings suggest that first responders could benefit greatly from strong support from the public, and that we need to create or fund more first responder care networks that include psychiatry, mental health screening, and substance abuse assistance. I hope by answering my research question, I am helping to address the stigma first responders report.

[Japan in the Age of Immigration](#)

Student Author(s): Joy Woods, Senior (International Business and Political Science)

Faculty Mentor(s): Gregory McAvoy (Political Science)

The world is aging, and it is becoming important to examine the impacts it will have on not only the economy, but also on society. As the country with the oldest population, Japan is an example of what is possible in the face of rapid aging. Relying heavily on OECD data and the research of experts throughout the field, this paper focuses on the causes of Japan's shrinking and aging population, as well as its impact on the Japanese economy. It also outlines Japan's history of immigration policy in the 20th and 21st centuries, focusing heavily on the programs for Nikkeijin and foreign nurses and caregivers. Lastly, this paper examines some of the opinions held by the native Japanese population about immigration and provides questions for further research.

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[Our World Bottled in Plastic](#)

Student Author(s): Ruth Woods-Barnes, Sophomore (Communication Studies, Strong College)

Faculty Mentor(s): Sara Littlejohn (Strong College)

You are out and about and realize that you are super dehydrated and you just want some water. You go to your closest convenient store and pick up a bottle of water or two. Little do many people know that drinking from plastic water bottles is doing more harm than good. Drinking from plastic water may be really convenient and helpful when you are thirsty but what happens after you drink the water is essential. Plastic water bottle companies are profiting off of people not wanting to carry around a reusable water bottle with them all day. They know that grabbing a water bottle while you are out and about is convenient and that is what they are rolling with. As many people know the Earth is dying. Yes, the Earth technically has always been dying but this time if we do not actually do something to stop it things can get detrimental. This piece is to urge people to reconsider drinking from plastic water bottles and possibly invest in a reusable water bottle that they carry around with them. To take a step back from how easy it is to simply just go buy a water bottle from the store when you are thirsty and to think about what really happens to the plastic after you are done drinking what was in it.

[How to make money off of social media?](#)

Student Author(s): Kendale Young, Sophomore (Business Administration, Grogan College)

Faculty Mentor(s): John Sopper (Grogan College)

This world is starting to become more digital. For example, social media has become a broad platform that reaches out to anybody and everybody around the world instantaneously. Statistics show that since 2004, social media has been growing at an exponential rate, and still to this day, it has not reached its peak and probably won't for a very long time. As a result, more and more people are turning towards the internet to make money. Yet, there is little guidance available about how to do this successfully. In my research, I look for ways to help people become more educated on how to make money on social media using a business perspective. I will look at these platforms, their algorithms, these so-called influencers, and even the companies that sponsor/pay these influencers just to talk about how great their product is. I expect to find many forms of revenue that can be monetized from social media, and I show that social media is a good way to make some extra money for a business, a brand, or even for just one's self.

[Synthesis of Lactones via Novel Pinner Reaction Conditions](#)

Student Author(s): Kala Youngblood, Junior (Chemistry)

Faculty Mentor(s): Kimberly Petersen (Chemistry)

ABSTRACTS



Medicines and drugs are often taken for granted, one simply takes a pill without considering the challenge in making that compound. Drugs should work as they claim to with minimal side effects and affordable costs. However, the complex structure of drugs makes them difficult to create. These elaborate scaffolds take time to build, increasing the price for consumers. If a medicine is not synthesized correctly, there can be disastrous and deadly repercussions. Existing reactions can be restricted by the requirement of harsh chemicals, limiting the complexity of possible molecules. This also prevents reactions from being used in industrial settings. One type of compound, called lactones, are present in antibiotics, sedatives, and other drug frameworks. My work creates mild conditions for a lactone reaction with previously unfavorable compounds. The impact of these novel conditions is increased by a compound being utilized in a non-traditional manner. This methodology provides a stepping-stone to accessing complex compounds of interest to drug designers.

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Cosmo's Journey

Student Author(s): Leonardo Garcia (New Media & Design)

Faculty Mentor(s): Kelly O'Brien (New Media & Design)

My work takes the viewer on a journey through space, living the dream of being an astronaut learning more about our solar system. Space has interested me since I was a child and to this day, I still find myself looking up at the stars wishing to explore the great unknown. My animated video brings the experience of space exploration to the viewers. It allows them to travel through space and expand their knowledge of the solar system's unique planets with interesting facts they did not know about before.

My animation gives the viewer a new stylized experience when learning about the solar system.

I strayed away from how space is usually depicted and went with a more unrealistic design instead of using a wide variety of color and color gradients to make it more visually appealing. Motion will also play a big component in this project. Throughout the animation, there will be many different objects and components in constant motion to give the environment of space some life. It also helps in making the animation look playful and fun for the viewer to enjoy.

A Date with Destiny

Student Author(s): Miranda Blanton (Painting)

Faculty Mentor(s): Barbara Campbell Thomas (Art- Painting, Printmaking & Drawing)

Color is a big theme in my artwork and an idea that I am trying to further develop. Color can do so many things such as helping set the mood of the painting and describing a certain feeling and object. This past year I have been working to explore all the possibilities that color can achieve. I have been interested a lot in experimenting with limited palettes, different combinations of color, as well as thinking of color in both descriptive and abstract ways in terms of composition. One of my influences are the fauvist painters like Matisse. The way they use color as a form of expression greatly inspires me. Usually when starting a painting, I use photography to figure out the composition. I take a lot of reference pictures. This helps me get an idea of what to paint and serves a similar purpose as sketches would. After this, I like to exaggerate the colors that I see and re-invent the space I am painting. Most of my paintings are of places that I spend a lot of time in and that are of importance to me.

Vessels: Osmosis

Student Author(s): Timothy Boardman, Senior (Arts Administration, Drawing & Printmaking)

Faculty Mentor(s): Chris Thomas (Art)

This is for my senior exhibition for my BFA portfolio. I plan to showcase 2-3 pieces of my work, which will display my focus, growth, and experience as an artist at UNCG. These works will display drawn and rendered figures, animals, and motifs paired with symbolism and a heavy focus on personal and interpersonal relationships, using animals and figures as stand-ins for these emotions and experiences. Human experience is a large factor in my work, along with

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innate, subconscious symbolism and occasionally, automatic drawing. I hope to show at least one piece from different major bodies of work that I plan to refine and expand coming out of my BFA. I pair drawing, printmaking, and watercolor together with mixed media applications and a focus on the medium's unique individual capabilities. These works encompass complex, and simple, feelings ranging from negative experiences: such as the feelings of loss, long-term grief, and regret; to more positive experiences: such as sheer bliss, finding a person in which you share kinship, and respect or appreciation.

Spherical Sustainability

Student Author(s): Ashley Boyd-Hobbs (Art Education)

Faculty Mentor(s): Eun-Hee Lim (Art Education)

It was difficult to pick out two works that were within a year ago, because my last studio class was in the spring of 2019, and the one piece I did before the pandemic spread throughout America, is nowhere to be found. So I picked out two pieces from a ceramics class. I thought these two was something I thought a few people can relate to, and me as well. I also feel that it could be a current event, as many people think that taking care of the environment is important to a degree. I see a lot of things online such as how something as seemingly tame as a gender reveal party can damage wildlife and the environment, for one example. I am also into gardening flowers as well, which is more geared towards my latest 3-D sculpture which features shoes with a flower on each sole. I also think flowers do bring together wildlife and relationships.

Untitled

Student Author(s): Sarah Chen (Photography)

Faculty Mentor(s): Leah Sobsey (Photography)

The works shown represent a time during covid where the world becomes cold, and people are isolated. The images also show how being isolated can freeze time. Growing up in North Carolina allows for different weather and landscapes, which help me create my work. During college, I developed my own independence and freedom, which has helped me pursue my passion for becoming a photographer. These works helped me find my escape from reality when I become stressed, remembering that things come and go in life and bubbles, glass and ice, and all temporary as well.

"Obligation" Animatic Trailer

Student Author(s): Edgar Davila (New Media and Design)

Faculty Mentor(s): Kelly O'Brien (New Media and Design)

I have always been fascinated by fiction and how artists tell their stories. As an artist, for the longest time, I always worked on improving my craft by learning and practicing the fundamentals of art. At one point I realized that my artwork has become static and I wanted to try something completely outside of my comfort zone. Instead of doing only portraits of characters, like how I have been doing for most of my artistic career, I wanted to really experiment with different areas of art. I wanted to focus on relaying emotions, small narratives, and small details that can tell a lot about the artwork. These experimentations will help me tell a more engaging story.

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One Paw At a Time

Student Author(s): Kaiden Davis (New Media and Design)

Faculty Mentor(s): Kelly O'Brien (New Media and Design)

Piper just recently lost their childhood pet cat. After fiddling with a locket, Piper is teleported to another dimension where they must overcome the difficult feelings behind loss as they travel through different worlds, each one representing the stages of grief: denial, anger, bargaining, depression, and acceptance. In order to move forward, Piper must express the more negative feelings that we often shun and show that it's okay to grieve.

Untitled

Student Author(s): Tri Doan (Painting)

Faculty Mentor(s): Barbara Thomas (Painting)

As an Artist I ask myself: What is space? How can we find space on a flat 2d surface and how can we trick our minds into creating such space? Those are feelings of the question I've been exploring through my artwork. Through pushing and pull paint or echoing the marks from our space of the world into the page of the paper. Move away from the restriction of what's right and what is wrong, bend and create that space in any manner. Each marking in space is it a plane of form of the depth of another reality that we have yet to discover.

Rest

Student Author(s): Abigail Dyer (Painting)

Faculty Mentor(s): Barbara Thomas (Painting)

These paintings are a representation of one specific feeling: Peace. In this time of confusion and uncertainty, it is so easy to let anxiety and worry and stress take control of our every thought. I know that it doesn't have to be this way. I have experienced unexplainable peace and it is available to everyone. The God of the universe, who is the Creator of all things (me and you,) sent his only Son to pay the price that I deserve to pay so that I don't have to live in my sorrow and filth, but I can live in peace and joy through Him, knowing that I am fully known, the good and the terrible, and still fully loved by Him. He made a way for me to let go of my pain and struggles as I trust in him and have faith that He will make a way, and he has never failed me and never will. You can live this truth. Believe that Jesus paid your debt and make him your savior. His promises never fail. Psalm 23.

Handmade love of culture

Student Author(s): Christian Ellison (Printmaking & Drawing)

Faculty Mentor(s): Christopher Thomas (Printmaking & Drawing)

Handmade Love of Culture

The collection of work created for this showcase is entitled "Handmade Love of Culture". In it, themes of reuse and repurposed materials form a world seeking to suspend viewers

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in my thoughts of being a gay black artist from the South as I explore identity and culture.

Collage, drawing, printmaking, and bookmaking combine to create a world of textures as textiles interact with each other inviting a viewer into a thought-provoking, but generous experience. My work is a safe place for the viewer as it is handcrafted with care and love. The visual density and physical textures of my work convey both heaviness and beauty, inviting viewers to engage with every layer and every page personally. My work's purpose is to find itself in the reality of this world through seeing my culture as beautiful and holding to its honor in its new life. Through refashioned, cared-for materials a piece of my complex and beautiful identity as a gay black male is revealed.

Revenge of Medusa

Student Author(s): Alexis Faggart (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

Myths have served as a moral guide for centuries. One of the most memorable characters is Medusa, a woman with snakes for hair. She's best known for turning men to stone with a single look. However, in her own origin story, she is the victim of rape and hero powers serve as apunishment.

She devoted her life to being a priestess for the goddess Athena, when alone in the temple she is raped by Posiedon, god of the sea. Athena views this as extremely offensive and turns Medusa into the monster. I question Athena's motives is the intention to punish Medusa or to ensure that no one could ever hurt her again? My work explores an alternative world in which Medusa had been given the option of getting revenge for her rape.

Medusa's story is thousands of years old but society still views women as objects. Framing this story through a modern lens gives the viewer the opportunity to relate to this mythical monster. Through digital collage I explore the potential for Medusa's powers, be it gift or punishment, to be reclaimed.

Cosmo's Travels

Student Author(s): Leonardo Garcia (New Media & Design)

Faculty Mentor(s): Kelly O'Brien (New Media & Design)

I will be creating an animation series following an astronaut named Cosmo and his journey through our solar system. There will be nine animation videos about Cosmo's journey exploring the different planets as well as Pluto. Each animation will be no longer than two minutes. Within those two minutes, each animation will give unique and interesting facts about each topic that Cosmo will discover and learn about. This series is meant to be entertaining as well as educational where the viewer is constantly learning something new in each video.

Learning about the world beyond our planet has always been something that has interested me ever since I was young. I enjoy learning about the different planets in our galaxy, the constellations, the moons, etc. There are so many fascinating things about space that we have discovered and so much left to be discovered. Therefore, I want my

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semester-long project to revolve around the concept of space. Besides being fascinated with the concept, I believe there is much design potential in space-related designs due to the various shapes, colors, and lines that make up the universe.

The Ballad Of Rat Stompin Ralph

Student Author(s): Austin Garner (Graphic Design)

Faculty Mentor(s): Chris Cassidy (Art)

I've always wanted to create and direct movies. 2020 was awful but it gifted me an idea to reach my goal a little sooner and despite my lack of money, resources, people I was able to make it happen so I present to you:

The Ballad Of Rat Stompin Ralph, part 1 of a series I hope to continue, Where the titular character Ralph faces a dilemma with identity and putting on the facade of a crazy exterminator but only does so because it's what he thinks people like and in finding love she shows him he doesn't need to hide behind a mask. While this is going on his archenemy the Rat King and his new love's jealous Sugar Daddy are hellbent on destroying. Facing adversity against these foes and within himself will he prevail?

Kitchen Lux- UX Design

Student Author(s): Deja Goodman (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

I am fascinated by the explorations of the psychology and needs of users to execute strong interactive designs. I am merging the design and experience into one complete project, to make the functionality of technology an easily accessible format for users. It is my goal as a product designer to create innovative concepts while applying modern visionary designs to the works. I focus on generating advanced user methods to create an effortless appealing interaction experience that caters to users. My graphic designs bring new emerging ideas to reality, demonstrating my ultimate goal and with my design knowledge, I feel I can apply new and ingenious approaches to the industry. I want my end product to be a complete high-quality experience that draws more customers to the product. Furthermore, learning and collaborating with a team in my field of work to generate change along with having mentors is an environment I would flourish in, while also contributing my own unique approach to the process. In my contribution, that consists of my willingness to add in artist talks, taking initiative during the design process and motivating my team.

Hope

Student Author(s): Perris Graves (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

Life is all about perspectives.

Most of my work explores the relationship between history, life experiences, and emotion. I like to create digital designs that the audience can connect and engage with while also having questions about the context of the artwork. With influences such as Jean-Michel Basquiat, Andy Warhol, and Daniel Arsham new techniques are used in my design process. In art there is always an underlying meaning or message behind the artwork. I try to attract viewers from different demographics to create their own ideas and interpretations. Ever since undergrad I have been

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fascinated by street art and brand identity and its contribution to the design industry. As I gain more knowledge and versatility I translate my concepts into an aesthetic that has a minimalistic approach.

Rolling Hills

Student Author(s): Antwain Hairston (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

I digitally paint fantasy landscapes using Adobe Photoshop, building upon lighting, material surfaces, and scale to convey the scene. The subject matter is a middle aged man and his dog in search of a new home. Their journey embarks on rolling hills, a mountainous area, and a desert, but it must be done, as they are homeless.

Simple stories such as this can be profound if executed well and that is my goal. My inspirations are environmental concept artists such as Thomas Roisland, Tyler Edlin, and Walid Feghali, all of which work in the entertainment industry as video game artists. My goal is to tell as much of the story through the scene as possible, while leaving the viewer eager to see more.

I enjoy painting digitally for it's ability to make adjustments on the fly and test different ideas without compromise: if the idea doesn't work, delete the layer and move on. For me, painting fantasy landscapes helps me to imagine different possibilities that we don't see every day. Possibilities are endless and my only limits are my technical abilities and imagination, both of which this project will help me work on. I am learning a visual language that I would one day like to speak fluently.

Samantha Harris

Date: 3/9/2021

The University of North Carolina at Greensboro

Abstract

These pieces of artwork range from freshman year all the way to junior year. These pieces feature photography, wet media such as oil paint, and dry media such as colored pencils. Freshman year the artist drew a still life with white color pencil. It was a still life of a knife block with a light source, letting all of the light reflecting off its blade. By Junior year the artist was now using photography, now taking the skills and techniques they have learned from freshman and sophomore year at UNCG to help establish their ideas and grow. They used light trails and exposures to create a breathtaking surreal almost angel wielding a spark within their hands. By the time they reached senior year, they explored more techniques and branched out more with new media such as oil paint. Instead of photographing people or looking at still lifes, the artist took on a much harder role: painting a self-portrait. The artist not only painted a self portrait but put a spin on it. They included a surreal world where a girl in the bottom right was looking into a mirror at her reflection drowning. As the viewer looks closer at the painting, you can see closer at how the artist brings more light reflection within the painting as they have done throughout all of their other pieces. Though that was not all the artist did. The mirror was extending outward into the girl's world, making the viewer question what world was true and what is right and wrong.

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Girls Together

Student Author(s): Rosalie Howell (Painting)

Faculty Mentor(s): Sunny Spillane (Art)

During my time at UNCG, I have been exposed to numerous talented students and professors who have pushed me to challenge myself every day. Working hard and pushing myself past my own personal artistic boundaries in all my studio classes has helped prepare me for going into the field of art education. I am confident in my ability to provide exceptional teaching and art-making practices to K-12 students. In my personal artistic journey, I've discovered that my favorite medium is pencil. I love working with graphite pencils and especially colored pencils, with which I create most of my personal artwork. I'm inspired by fashion, nature, film, and music. I love bold colors and playing around with saturation.

OTG (On the Grid)

Student Author(s): Mia Jones (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

This series explores my love-hate relationship with social media/technology and the fear of missing out. By examining the typical academic phases of life: elementary school, middle school, high school, and college, this project demonstrates how digital media affects an individual's social skills as they mature. There were times I thought social media/technology was a waste, and then there were other times where I wanted it all in order to keep up with my peers.

I make this work digitally, and display it as a series of physical prints to show that information can be absorbed without the use of a screen or an app. For example, traditional hardcover books that are created using laptops and tablets.

These works speak to my journey coming to terms with things I've missed out on or didn't understand because I wasn't fully engaged in Instagram, Snapchat and the latest iPhone growing up. This project allows other people to relate to the fact that we all feel the need to belong, and are scared of missing out on something that has the attention of the rest of the people around us.

Magic Caps

Student Author(s): Jessica Katzen (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

For this project, I created product packaging for the medical use of Psilocybin mushrooms to treat anxiety, depression, PTSD, and various other mental health illnesses. My research into magic mushrooms and their effects on the body is implemented into my designs by carefully choosing the color palette based on how colors are perceived by the brain, for example, I used the color green because it represents healing, balance, and growth. Psilocybin is a naturally occurring psychedelic prodrug found in magic mushrooms that has been proven to increase creativity and empathy. In my research, I found that after microdosing, intelligence remained the same, but both divergent and convergent thinking had been improved.

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This work is inspired by CBD and medical marijuana packaging. I use CBD to help with anxiety and stress so I wanted to explore the potential marketing/packaging strategies for a future world in which microdosing Psilocybin mushrooms will be sold to help with anxiety, depression, PTSD, etc., It is important that we as a society approach mental health with the same urgency as we treat physical illnesses. This exploration into Psilocybin packaging design will encourage others to open their minds and appreciate the details that go unnoticed which reflects the studied effects of magical mushrooms.

Poster #1

Student Author(s): Amaryllis Keo (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

I love mixed media. I love the idea of combining multiple mediums into one because I love how free and adventitious it is together. I enjoy photography, collage, illustration, and graphic design. Through experimentation that I've put in there were definitely some passive times where I either succeeded or failed, but at the end of the day I learned a lot of what I achieved. It makes me feel me; It makes up who and what I am confidently inside and out.

Building Resilience in Education

Student Author(s): Erika Lowrance (Painting, Communication Studies)

Faculty Mentor(s): Barbara Campbell-Thomas (Painting, Printmaking, & Drawing)

This body of work investigates empowerment of self through exploration of the past and connecting it to the present moment as well as looking toward the future. Positive Communication is critical in providing affirming and encouraging messages that help others recognize their strengths and reveal opportunities for growth and resilience.

While working on a BFA in Painting and a BA in Communication Studies, I combine these two disciplines as the basis of my service-learning/experience/research. I focus on showing how using intentionality and creativity brings these disciplines together in a powerful way. My research involves leading students through artistic activities in the local community while connecting my findings to my personal artwork. Through my research and service-learning experience with *Paint the Town Positive*, I have been bridging the distance between what it means to be an individual and use my strengths to build up others in the community as well as myself. For this project, I incorporate painting into leadership development, community building, and positive communication through visual communication. I hope to further enrich my education 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.

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BitterSweet

Student Author(s): Canyi Ma (Studio Art)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

My name is Canyi Ma. I come from China. I mainly learn about how to use the knowledge of new media design. I know more about what I want every year. I learned about graphic design and 3D design, video editing and code design. This knowledge has enriched my brain. It makes me want to observe the world more. I learned that only by gaining more knowledge will there be more new sparks.

My work is inspired by the taste of "sweet". Because I like sweet things very much. So almost there will be sugar in your pocket. This made me want to design a candy about my own brand. Of course, considering the audience, I think not everyone may like my favorite taste. So I still choose to insist on highlighting my favorite flavors. Of course, my own personal characteristics will also become prominent in the packaging. My first product will be gummies. Gummies are specially designed for people with childlike innocence. Will highlight my appearance to show my candy. The second item I want to use candy products to express my views and encouragement for young people, the candy flavor will become "bittersweet". Because I am also a young man, I will feel confused about the age. I hope my design can let young people learn to embrace the world. No longer just disappointed. You can also try to feel the sweetness of the world. The main use is Maya, PS, Ai, Id to show the style of candy. Later, a 3d printer will be used to show the packaging effect of the product and the actual appearance of the candy.

Glitch

Student Author(s): Keeley Martin (Printmaking & Drawing)

Faculty Mentor(s): Christopher Thomas (Printmaking & Drawing)

In the work I've done before, the attention has been external: my photographs focused on color and light; my charcoal drawings on contrast and shadows. The pieces shown here look internally instead, contemplating personal questions and doubts. They seek out the hidden and unspoken things beneath the surface, and explore aspects and facets of who I am that have been, up until now, unexplored and unknown, even to myself.

Tenmoku

Student Author(s): Aliyah McAllister (Ceramics & Sculpture)

Faculty Mentor(s): Nikki Blair (Ceramics & Sculpture)

My work often stems directly from my spiritual beliefs and practices in meditation. I love to reference forms, colors, and subject matter that keeps me grounded in this physical world. The untouched natural occurrences of Earth suggest to me a state of divine order. Many of my works have simply been created to admire woodgrain, naturally occurring earth tones, or the varying shades of melanated skin. I usually find myself creating art depicting the small details of life, emphasizing Black figures, or referencing some form of art practiced in areas linked with my own heritage. In my mind though, I think of my art and its purpose as symbols and identifiers of euphoric states of bliss, made strictly with pure and open intentions. This may be communicated through visual representations of organic elements or through the non-visibility of my intention during the work's creation. The works presented here display in part these concepts through the use of color, content,

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and cultural and spiritual references. I plan to continue creating various forms of art as I encounter new experiences physically and spiritually.

Hyperfixation

Student Author(s): Dani McRae (Graphic Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

I was diagnosed with ADHD when I was 7 was very clarifying as I always knew I was different from my peers, but it also became very isolating. Being on medication for over ten years and having to deal with the negative cultural stigmatization of having ADHD and taking medication has been exhausting since ADHD isn't a disorder you can see easily. For this series of five digital paintings, I represent my symptoms and struggles through the bright color palettes and complex textures such as highly saturated reds and oranges, to draw the viewer in with a representation of my emotions rather than something realistically depicted. For example, using a saturated purple in place of a shadow is something I prefer over realism. The thick brush strokes of my textured illustrations layer over one another organically to draw the viewers' eyes across the composition to various focal points, without outlines. My style is inspired by impressionism artists such as Vincent Van Gogh and Erin Hanson. I use both Hanson's use of bright saturated color palettes and Van Gogh's use of thick brush strokes to sculpt composition and objects. Van Gogh is especially inspirational since he was also neurodivergent as well.

Return

Student Author(s): Annie Miller (Ceramics & Sculpture)

Faculty Mentor(s): Patricia Wasserboehr (Ceramics & Sculpture)

The art I create is based on folklore and attempts to connect those classical tales with our modern world. Folklore, mythology, and fairytales are important to how I approach art, as I make art with the intention to tell a story. Although it may not be said through writing or speech, I believe visuals can communicate any message I want to convey. I make art that is inspirational and entertaining to an audience, much like how folklore and storytelling used to function for listeners. I want to create art that is impactful and can leave a lasting impression on my audience.

This type of storytelling art has always been fascinating to me. I'm inspired by stories that most modern readers and consumers may not be familiar with or know very little about. As time goes on, modern audiences are forgetting original stories that were impactful and guiding for audiences in the past. Research and history is important to my art. I enjoy the challenge of being as accurate as possible to original stories, but adding my own twist for modern audiences to grab their attention.

To combine old fiction with modern ideals is one of the goals I strive for in my work. I look around today and see that media often celebrates new inspirations, yet at the same time forgets the original discourse and progression that life has taken to arrive at that moment. I hope my art can connect modern audiences with older practices to spur inspiration and growth in our community. I also hope that my art is as inspirational to newer audiences as the original tales were for myself when I discovered them.

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Monitoring and Improving Sleep APP

Student Author(s): Ziqi Wu (New Media & Design)

Faculty Mentor(s): Christopher Cassidy (Art)

I am an international student from China. Choosing to study new media and design abroad is the most important life choice I have made. My undergraduate major is New Media and Design, and my main subject is graphic design. During my undergraduate studies, I worked in different types of media, such as photography, video production, and font design I was interested in accidental contact with knowledge related to interaction design. I plan to use my graphic design skills to design interactive applications, and interactive design is the direction I hope to pursue in graduate school.

A recent interactive design project I created was about monitoring and improving sleep. I chose this topic because many people now have some sleep problems, and I do as well. So I wanted to design an app that can monitor behavior before going to bed to determine which factors are causing sleep problems, so as to make suggestions for improvement.

The difference in this application is that it has an automatic screen lock feature that helps people stop social networking. If you turn on the phone and you cannot switch any pages, you can only see the time and music you want to listen to. As the current outbreak is COVID-19, group activities cannot be carried out. Therefore, the social communication platform on the app provides a place for people with insomnia to encourage and help each other on the Internet. I developed this concept to a prototype stage, as I wanted to show my ideas and demonstrate how sleep problems might be addressed through an interactive mobile application.

Contigo Ad. Poster

Student Author(s): Valery Morales-Pasten (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

Per the National Alliance of Mental Illness approximately 34% of Hispanic/Latinx adults with mental illness receive treatment each year compared to the U.S. average of 45%. Cardinal Innovation states the stigma and negative perceptions of mental health illness, as the most common factors to keep Latinx individuals from seeking help. One word, one phrase, regardless of its intention, can have a great impact on our mentality even though context will change its meaning. I explore my Mexican culture & its perception of mental health, while curating a positive self-care box to connect and restructure their thoughts. It inspired me to create something impactful for Mexican individuals who are on a journey to view mental health as something normal rather than something to be ashamed about.

This work is driven by research into art from the different time frames in Mexican Art history. The collection of artworks ranges from 1930-1980's, including some pre-colombian historic art. I explored artists who opened opportunities for future Mexican Artists, their subjects ranged from mental health to politics and mundane life. My work breaks tradition and tries to remove the feeling of fear by restructuring their thoughts of the same words and phrases that made us stronger, hardworking, prideful, and vibrant. Your voice is heard, ignore judgement, and create personal clarity.

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Where is Finley?

Student Author(s): Emily Moser (Painting, Art History, Classical Studies)

Faculty Mentor(s): Michael Ananian (Painting)

As an artist, I make perceptual paintings exploring the space I inhabit, finding the connection between my personal identity and my surroundings. As outlined in Gaston Bachelard's *Poetics of Space*, the phenomenology of space— the meanings and relationships we construct to our homes and objects within them— guide my work. I often use reflection and cropping as a valuable tool to collapse time and space, unifying and scrutinizing memories and the present moment of observation. Inspiration for my work comes partially from a recent move my family has moved into my grandparent's home. Now, I reinvestigate this space as an adult rather than as a child, create and relive memories, and explore how a space changes with its inhabitants. With thick paint and a heavy mark, my exploration of paint materiality is a vital part of my paintings. My accumulation of oil paint on the surface not only celebrates the medium itself, it emphasizes my overt presence while making the painting. In this way, I carve in, on, and through the painted surface, just as I carve out an idea or memory in my mind.

The Reticent and the Outgoing

Student Author(s): Anna Nguyen (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

Sometimes dialogues are not enough to move an audience. In order to move an audience, you have to move yourselves through body language and through the conveyance of emotions. By lifting them off their feet with your gestures, you will exchange a social and familiar connection between each other. I made this animated story to create a parallel between the characters and the viewers that beyond the screen, the viewers can correlate with the figures and their storyline into our interrelations with other people.

The Reticent Character Design

Student Author(s): Anna Nguyen (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

Color does wonders for this world, especially in the world of art. Colors are able to define a person's character. Studying the concept work of the introvert, the blue and purple colors establishes his withdrawn, timid, and reserved personality. His colors let the viewers perceive him as a figure who is mundane in the background and gives off the cold-shoulder.

Untitled

Student Author(s): Erika Radke (Printmaking & Drawing)

Faculty Mentor(s): Christopher Thomas (Printmaking & Drawing)

As an artist my focus has always been on my experience through the world. Many are charged with emotion, fantasy, and whimsical characteristics. These works that I chose to

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display were created with the passion of pressing forward into bettering myself and my craft. My artwork is pushing the boundaries of my internal struggle with bettering myself and my creativity.

The seeds were sewn what did you expect

Student Author(s): Hannah Saseen (Printmaking & Drawing)

Faculty Mentor(s): Christopher Thomas (Printmaking & Drawing)

Everything comes from something. My work engages with the idea that there is a source to everything around us. Where our inspirations, anxieties, anger, etc. come from can show us solutions on how to use them, deal with them and to accept them. The sources to these daily problems are like seeds planted within us that flourish and grow. When we recognize the seed, we are in control of how it grows. My work explores the ways these seeds can flourish on their own, sometimes overtaking us.

The Art of an Art Auction

Student Author(s): Lee St.Clair (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

As a social practice artist the struggle to make sense of the contemporary art world is littered with uncertainties. The space between one's own practice and the high end gallery wall is littered with hypocritical hurdles, hand-shakes greased with hair gel, a wink, a nod and an unpredictableness that no sensible mortal would wager their livelihood on. The auctioneers gavel drops with a sharp and precise flick of the arm as the ultra-rich spend millions swapping the classics back and forth. Are we hypnotized by the illusions of fortune and fame or is financial independence beyond our peripheral as we move through our own processes? My research for this project seeks to confirm or deny my own preconceived ideas about the high end art auction and those who are fortunate enough to participate in it.

Clownstory

Student Author(s): Jocelyn Steslicke (Printmaking & Drawing)

Faculty Mentor(s): Chris Thomas (Art)

Jocelyn Steslicke has spent the semester focusing on making art inspired by vintage circu posters. She was drawn in and inspired by the bold lines, bright colors, and vivid imagery. But most importantly, Jocelyn is interested in the act of taking this collection of imagery that has been used time and time again, and filtering it through her own head and her own hands; putting her touches onto it, before adding it back into that collection. Here are a few examples of this work.

"Vietnam. Tales of Home"

Student Author(s): Kalya Timpson (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

My visual language seeks to build bridges between traditional and contemporary perspectives, providing insight to the livelihood of Vietnamese immigrants in the U.S. During these

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experiences, immigrants seek human interaction and a sense of belonging. Many come to the United States to raise a family, seek freedom, and desire a better livelihood. As the child of an immigrant, I was aware from an early age of my parent's difficulties to interact with a new language and culture. I also struggle with the notions of "home," as my understanding of home has always been in flux, leading to a sense of displacement. I have struggled to justify my identity, however, instances of food, place, or memory have always anchored me in a place that can be called home.

My subject matter seeks to approach communication as a creative process and to produce a dialogue that investigates immigrants' livelihoods. Playing with a form of narrative storytelling by using memories, food, and thoughts as a medium. By generating questions that reflect upon identity and family, my work will exchange critical perspectives between the narrative of parent and child and detailing the invisibility struggles of Vietnamese immigrants and the universal search of home.

Ballicus Throne

Student Author(s): Lucas Varnum (Sculpture & Ceramics)

Faculty Mentor(s): Nikki Blair (Sculpture & Ceramics)

After spending the previous semester away from the studio at home I had nothing but time to think about the impact covid had on me and those around me. With nothing to do I constantly checked the news and other social media platforms seeing that every time there was a new update regarding covid. I would see new messages from the CDC and WHO organizations that at times contradicted each other and I would also see the way society was reacting to these updates. I remember seeing a viral video of a women trying to start a covid viral challenge by recording herself lick a airplanes toilet seat at the hight of the pandemic. Seeing all the different ways people were acting towards covid and the rate at which covid was spreading completely changed my view on shared public spaces. I have always had a fascination with biology and medicine and now I am always thinking about these kinds of things when I am in a public. My view has changed of public toilets something that now seems dangerous more than ever before. I am showing my thoughts on these current times by using my interests in biology and organic forms to create these objects of my mind.

1 in 735 Lost Souls

Student Author(s): Jasmine Vincent (New Media & Design)

Faculty Mentor(s): Kelley O'Brien (New Media & Design)

As someone who is a part of a marginalized community, art is one of the many outlets that helps me comprehend the world around me. The world that we live in is ever changing, however some things unfortunately never change. Social injustices (sexism, classism, etc) continue to plague our society more than we realize. If we never come to terms with this constant problem and change them, they will continue to run amok. It is this very reason that I create the artwork that I do. The purpose of my work has always been to take my complex feelings regarding these social injustices and turn them into something tangible. My aim is that myself, as well as those who view my work, will be able to take a moment and seriously delve deeper into the reasonings behind these issues. It doesn't really matter what the work is made out of, it only matters that I as an artist can bring attention to these issues and start a conversation. Starting a conversation is the best way to dissect an issue, especially those that are as complex as social injustices. That's why my art serves to be a stepping stone for this process.

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Monitoring and Improving Sleep APP

Student Author(s): Ziqi Wu (New Media & Design)

Faculty Mentor(s): Christopher Cassidy (Art)

I am an international student from China. Choosing to study new media and design abroad is the most important life choice I have made. My undergraduate major is New Media and Design, and my main subject is graphic design. During my undergraduate studies, I worked in different types of media, such as photography, video production, and font design I was interested in accidental contact with knowledge related to interaction design. I plan to use my graphic design skills to design interactive applications, and interactive design is the direction I hope to pursue in graduate school.

A recent interactive design project I created was about monitoring and improving sleep. I chose this topic because many people now have some sleep problems, and I do as well. So I wanted to design an app that can monitor behavior before going to bed to determine which factors are causing sleep problems, so as to make suggestions for improvement.

The difference in this application is that it has an automatic screen lock feature that helps people stop social networking. If you turn on the phone and you cannot switch any pages, you can only see the time and music you want to listen to. As the current outbreak is COVID-19, group activities cannot be carried out. Therefore, the social communication platform on the app provides a place for people with insomnia to encourage and help each other on the Internet. I developed this concept to a prototype stage, as I wanted to show my ideas and demonstrate how sleep problems might be addressed through an interactive mobile application.

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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 Jasmin Ochoa-Benitez
Bachelor in Fine Arts majoring in New Media & Design
Graduation: Dec 2021



“I like to encourage the audience to look deeper into the significance of each element in my illustrations. It's fascinating how differently art can be perceived by each individual.”



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